

Intended for

**Bugesera Airport Company Limited**

Date

**February 2018**

Project Number

**UK11-24483**

# **NEW BUGESERA INTERNATIONAL AIRPORT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT- ENVIRONMENTAL AND SOCIAL MANAGEMENT**

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## **20. ENVIRONMENTAL AND SOCIAL MANAGEMENT**

### **20.1 Introduction**

BAC is committed to developing and operating NBIA in an environmentally and socially responsible manner. This chapter sets out the framework for the management of the environmental and social elements of the Proposed Project throughout its lifecycle to ensure that it is constructed and operated in accordance with relevant Rwandan regulatory and legislative requirements, international guidance and good international industry practice (GIIP), which are collectively referred to as the Project Standards.

The management of environmental and social issues will be achieved through the development and implementation of the following elements:

- An Environmental and Social Management System (Developer ESMS);
- A Commitments Register summarising the commitments set out in this ESIA Report;
- Developer Overarching Construction and Operation Phase Environmental and Social Management Plans (Developer C-ESMP and Developer O-ESMP) along with a suite of other (topic specific) Developer C-ESMPs and O-ESMPs;
- Contractor Construction Implementation Plans (CIPs) and Contractor Operation Implementation Plans (OIPs); and
- Summary of residual impacts, mitigation measures, monitoring and responsible party.

This chapter sets out what each of the various environmental and social management components will entail and describes how the various environmental and social management activities fit into the Developer's wider systems and corporate organisational structure. The summary of residual impacts, mitigation measures, monitoring and responsible party that is included in Section 20.7 has been prepared to, in part, meet the RDB's requirements for an Environmental Management and Monitoring Plan (EMMP)/ESMP. The nominated responsible party may be subject to change as the Project develops. Estimated costs for the mitigation and monitoring measures will be provided by BAC as an addendum to this ESIA Report to fully meet this requirement.

### **20.2 Developer Company Structure, Principles and Policies**

#### **20.2.1 BAC Company Structure and Roles and Responsibilities**

As stated previously, the Proposed Project is being developed by BAC, which is a joint venture between Mota-Engil Engenharia e Construção (75%) and the Government of Rwanda (GOR) (25%).

Mota-Engil Engenharia e Construção Africa-Rwanda has been appointed by the Developer as the Engineering, Procurement, and Construction (EPC) Contractor for the Project. For the purposes of this chapter, the EPC Contractor and its sub-contractors are referred to as the 'Contractor' in line with the C-ESMPs.

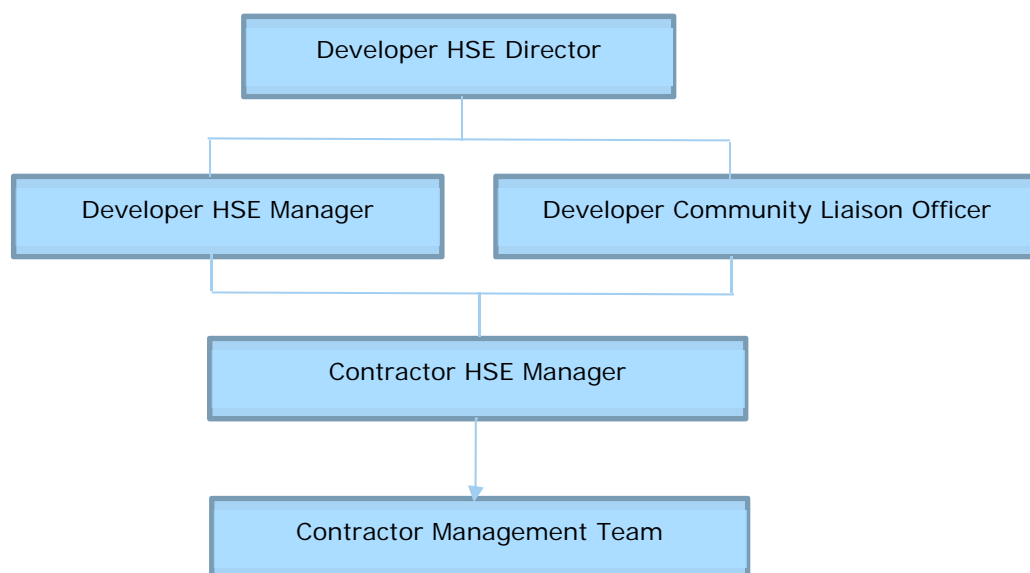
As the Developer, BAC has ultimate responsibility for overall Project delivery and E&S governance. This includes assurance that the Contractor aligns with the Developer ESMS and this Developer C-ESMP. This includes undertaking formal and informal audits/checks of the Contractor's activities and performance as part of the ESMS to evaluate environmental and socio-economic (E&S) performance throughout construction.

BAC is the primary custodian of stakeholder engagement for the Project through the appointment of a Community Liaison Officer.

BAC will engage with the operators of the Associated Facilities<sup>1</sup>, the Water and Sanitation Corporation (WASAC) and Rwanda Energy Group (REG) who will respectively provide the permanent supply of water and electricity to the airport during the operation phase.

Figure 20.1 **Error! Reference source not found.** illustrates the structure of the E&S management roles, for the implementation of the C-ESMPs, and how they interface with one another. Further detail on the Contractor Health, Safety and Environment (HSE) management roles will be provided in the Contractor CIPs. The roles covered include:

- Developer Director responsible for HSE;
- Developer Community Liaison Officer – reports to the Developer Director responsible for HSE;
- Developer Manager responsible for HSE - reports to the Developer Director responsible for HSE, interfaces with the Contractor Manager responsible for HSE, communicates and interacts with government bodies; and
- Contractor Manager responsible for HSE – reports to and interfaces with Developer Manager responsible for HSE, communicates and interacts with government bodies, security teams, field engineers, field supervisors, contract administrators, commercial service providers, human relations managers and relevant industrial entities.



**Figure 20-1: Organisation Chart for C-ESMP Implementation**

<sup>1</sup> As per the IFC PS1, Associated Facilities are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.

### 20.2.2 BAC Environmental and Social Principles and Policies

BAC has established and will maintain the following environmental and social policies for the Project:

- Environmental and Social Policy;
- Human Resources (HR) Policy;
- Drug and Alcohol Policy;
- HIV/ AIDS Policy; and
- Community Grievance Policy.

These policies have been developed to align with all regulatory requirements, international standards and good practices, including IFC standards and AfDB safeguards, and to communicate the Developer's expectations with respect to environment, social and HR management.

## 20.3 Environmental and Social Management System

As described in the IFC ESMS Implementation Handbook<sup>2</sup>, the ESMS is a set of processes and practices to consistently implement the developer company's E&S principles and policies. It can be integrated in the developer company's existing management systems for quality or health and safety. The aim is to ensure that appropriate E&S policies and procedures are in place and that people consistently follow them. The ESMS also helps to assess and control E&S risks. The ESMS should be based around the requirements of ISO 14001. A key feature is the idea of continual improvement, with an ongoing process of reviewing, correcting and improving the system; through for example the Plan-Do-Check-Act cycle described in Section 20.5.1.

A solid, functioning ESMS is made up of the following interrelated parts:

- Policy;
- Identification of risks and impacts;
- Management programmes;
- Organisational capacity and competency;
- Emergency preparedness and response;
- Stakeholder engagement;
- External communications and grievance mechanisms;
- Ongoing reporting to Affected Communities; and
- Monitoring and review.

The overarching and topic-specific Developer ESMPs for construction and operation and the subsequent more detailed Contractor CIPs and OIPs will form an important part of the Proposed Project's ESMS.

BAC's ESMS will serve as the Project ESMS and will align with International Standards Organisation (ISO) 14001 and OHSAS 18001.

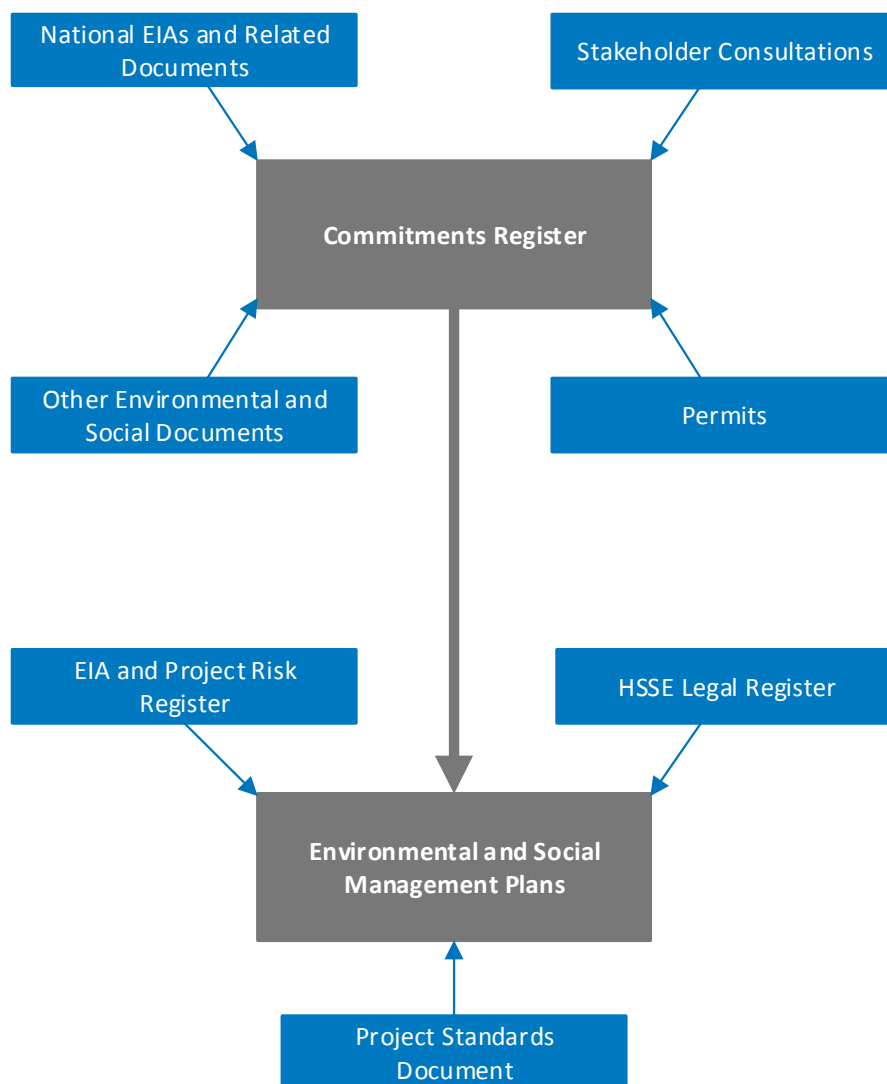
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<sup>2</sup> IFC, 2015. Environmental and Social Management System Implementation Handbook - General

## 20.4 Commitments Register

BAC will evaluate environmental and social aspects for the Proposed Project, as reported in this ESIA Report, and as a result will prepare a Commitments Register. This register will list mitigation and monitoring measures required to manage the significant environmental and social impacts identified in the ESIA Report.

The Commitments Register will provide a focus for the Developer C-ESMPs, Developer O-ESMPs and the Contractor CIPs and OIPs as shown in **Error! Reference source not found..** Changes and additional sources of commitments (e.g. permit conditions) will be incorporated to the Commitments Register throughout the Proposed Project lifecycle.



**Figure 20-2: ESMP Development Flow Diagram**

The ESIA Commitments Register template provided below is indicative and will be adjusted to fit the project-specifics e.g. activities, type and size. It indicates how management, mitigation and monitoring measures from the ESIA will be actively implemented on the ground by BAC, the Contractor and sub-contractors.

Management / Mitigation Measures								
Commitment ID	Original Commitment Text (as stated in ESIA/project documents)	Aspect, Potential impact /issue	Source Reference e.g. Section, page	Requirement (Commitment re-written so that the specific actions are very clear)	Party responsible for ensuring commitment implementation (e.g. Developer Company or Contractor or both)	Means of verification that commitment has been met	Reporting requirements	Related plans (for more detail)
Phase: Construction (include all project phases: design, construction, operation and decommissioning)								
Activity/Topic: Ecology (include each relevant activity/topic area under each phase)								

Management / Mitigation Requirement

- **Commitment ID:** Unique identifier linking to the Commitments Register. Format of ID will be decided when formulating the Commitments Register. Suggest use of topic e.g. ECO, then ESIA chapter number e.g. 01, then sequential numbering e.g. 001 (ECO-01-001).
- **Project phase, activity, topic:** The arrangement of an ESMP is of paramount importance and must be thought through carefully before it is set. An ESMP can be organised in several different ways and should be discussed with the developer as it needs to be logical and fit with the project. It can be arranged by phase, contractor activity or contracts (e.g. offshore pipe lay) or topics as per the ESIA e.g. ecology or cultural heritage.
- **Commitment text:** This should reflect the exact text as it was used in the ESIA or project document. This is to uphold transparency/tracking and enable amendments to be undertaken with ease.
- **Aspect, potential impact/issue:** Describe the potential impact that prompted the need for this management/mitigation measure, i.e. what is it that the requirement is trying to prevent from happening
- **Source reference:** Cross-reference to the ESIA (or other project document) and section in which this management/mitigation measure is originally introduced and described, to help the reader place it into context and enable ease of identification.
- **Requirement:** If necessary, re-write a clear requirement that can be logically understood and implemented by others. Commitments written in an ESIA are not always implementable without further clarity.
- **Overall responsible party:** Name the party who is responsible for primary implementation of this measure (e.g. EPC Contractor or Developer Company or Both).
- **Means of verification:** Identify the specific action or evidence needed to verify effective implementation of the mitigation measure.
- **Reporting requirements:** Identify any legally required or other reporting requirements (to/by whom, in what form, how often, etc.).
- **Related plans:** Cross reference to any other plans within the management system such as a Biodiversity Action Plan, Traffic Management Plan, Pollution Prevention Plan, etc.

Monitoring Measures										
Com- mit- ment ID	monitoring activity	Timing and fre- quency of monitoring (routine, how often, continuous or in emergency situations only)	Parameters to be monitored (in- cluding units if relevant)	Location & GIS ID (for map plot- ting)	Relevant regula- tions/ stand- ards / thresh- olds	Responsibility for implemen- tation of mon- itoring  (Responsibility for supervision of monitoring)	Corrective ac- tion to be taken if thresh- olds breached	Training/ re- sources re- quired	Reporting re- quirements	Related plans (for more de- tail)
<b>Phase:</b> Construction <i>(include all project phases: design, construction, operation and decommissioning)</i>										
<b>Activity/Topic:</b> Ecology <i>(include each relevant activity/topic area under each phase)</i>										

### Monitoring Requirement

- **Related Monitoring Activity:** This may not be relevant for all entries. Include any related monitoring associated with the main management / mitigation requirement.
- **Timing and frequency of monitoring:** Identify the frequency (hourly, daily, weekly etc.) and duration (during construction only, until compliance achieved, whole project life) of monitoring.
- **Parameters:** What is being measured to verify compliance, e.g. water/air quality at certain levels. Be as precise as possible to enable ease of verification of success and include units if applicable.
- **Location(s) and GIS ID:** Where will monitoring take place (this could be fixed locations for e.g. air quality monitoring around a factory or mobile e.g. noise levels at a set distance from a road construction area that is always moving along the construction route). If possible, engage the in-house GIS team to help plot the monitoring requirements on to the project maps. This will greatly assist monitoring implementation and tracking later on.
- **Relevant regulations:** Identify the relevant legal or other standards which must be adhered to.
- **Responsibility for monitoring:** As with responsible person for implementation of the mitigation measure, identify someone responsible for monitoring as this will be more specific.
- **Corrective action:** If the identified standards are breached, define what must be done
- **Training/resources required:** Identify any training or other resources that may be required to support effective implementation of the mitigation measure and/or monitoring.
- **Reporting requirements:** Identify any legally required or other reporting requirements (to/by whom, in what form, how often etc).
- **Related plans:** Cross reference to any other plans within the management system such as a Biodiversity Action Plan, Traffic Management Plan, Community Relations Management Plan etc.



## **20.5 Environmental and Social Management Plan**

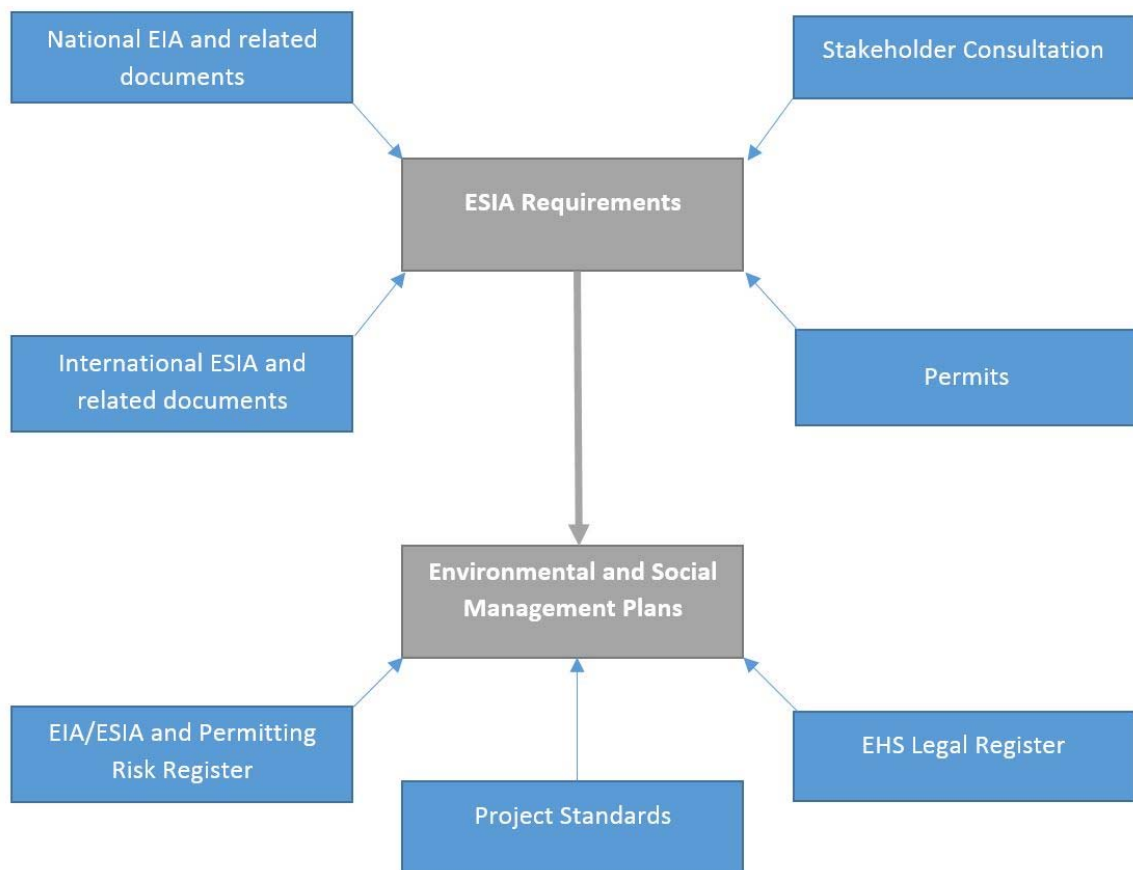
### **20.5.1 Introduction**

The overarching Developer C-ESMP and O-ESMP along with the other (topic specific) Developer C-ESMPs and O-ESMPs that will be appended to the overarching (C-ESMP and O-ESMP) will provide reference documents to guide the Proposed Project to manage and control environmental aspects of the Proposed Project during construction and into the Proposed Project's operation. These ESMPs will be subject to regular reviews to determine adequacy and effectiveness.

The ESMPs will draw on the elements of the established business management process, outlined in IFC PS 1, of "plan, do, check, and act," which provides a methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis:

- Plan – Establish the objectives, and design the processes necessary to achieve those objectives and their associated targets;
- Do – Implement the plan and execute the processes;
- Check – Monitor implementation (usually through regular monitoring procedures or through audit), and analyse data against targets and requirements. Determine root causes of non-conformity where necessary, and design and implement corrective actions where required in order to achieve objectives and targets; and
- Act – Management Review of system performance to determine if policy, objectives and targets have been met, and where necessary to adapt these to reflect changing circumstances. The requirements of the system (e.g. organisational structure, resources and competence) that will enable it to achieve policy, objectives and targets, are also reviewed. The Management Review process concludes on the suitability, adequacy, and effectiveness of the management system, and decisions are made in order to improve the overall system.

The inputs to the ESMPs are shown in Figure 20.3. These include national and international requirements, the ESIA commitments, stakeholder consultation, permitting requirements. The ESMPs will form the basis for subsequent, more detailed Contractor CIPs and OIPs to be prepared and implemented by the Contractor, .



**Figure 20-3: Inputs to Environmental and Social Management Plans**

#### 20.5.2 Purpose of the Developer C-ESMPs and O-ESMPs

The main objective of the Developer C-ESMPs and O-ESMPs is to provide a robust framework for meeting environmental, social, health and safety objectives during the entire Proposed Project lifecycle, from development to decommissioning. More specifically they will be designed to:

- Manage environmental, social and health and safety issues in an integrated manner;
- Clearly define the interface with other management systems (e.g. quality assurance, corporate management system);
- Ensure high standards of management;
- Provide a mechanism to ensure that contractors and sub-contractors meet performance requirements;
- Establish procedures to allow BAC to monitor its EHS performance and to report such information to its stakeholders;
- Provide BAC with a mechanism to meet its EHS policy and associated corporate goals; and
- Allow BAC to demonstrate to its stakeholders that it is committed to effective EHS management through adopting the requirements of the relevant national and international standards.

These documents will be applicable to all persons employed directly and indirectly by BAC, including the Contractor and sub-contractor personnel.

### 20.5.3 Development of the ESMP

The Proposed Project Developer HSE Management will be responsible for developing and implementing the Developer C-ESMPs and O-ESMPs post-ESIA.

#### 20.5.3.1 Structure of the ESMPs

##### *Developer Construction Phase ESMPs*

The overarching Developer C-ESMP will be prepared and will include:

- A summary of the policies, legal and regulatory requirements and other applicable standards relevant to construction;
- C-ESMP roles and responsibilities;
- Training requirements and standards;
- Performance monitoring, evaluation and reporting strategies including inspection and audit; and
- General instructions as to how the Developer C-ESMP should be used.

The overarching Developer C-ESMP will include a suite of appended Developer C-ESMPs as follows:

- Developer Labour, Working Conditions and Employment Management Plan;
- Developer Waste Management Plan;
- Developer Biodiversity Management Plan;
- Developer Community Health, Safety and Security Plan;
- Developer Stormwater Management Plan;
- Developer Pollution Prevention Plan;
- Developer Soil Management Plan;
- Developer Traffic Management Plan; and
- Developer Cultural Heritage Plan.

Each of the above topic-specific Developer C-ESMPs will describe environmental and social management and monitoring controls in relation to construction phase activities.

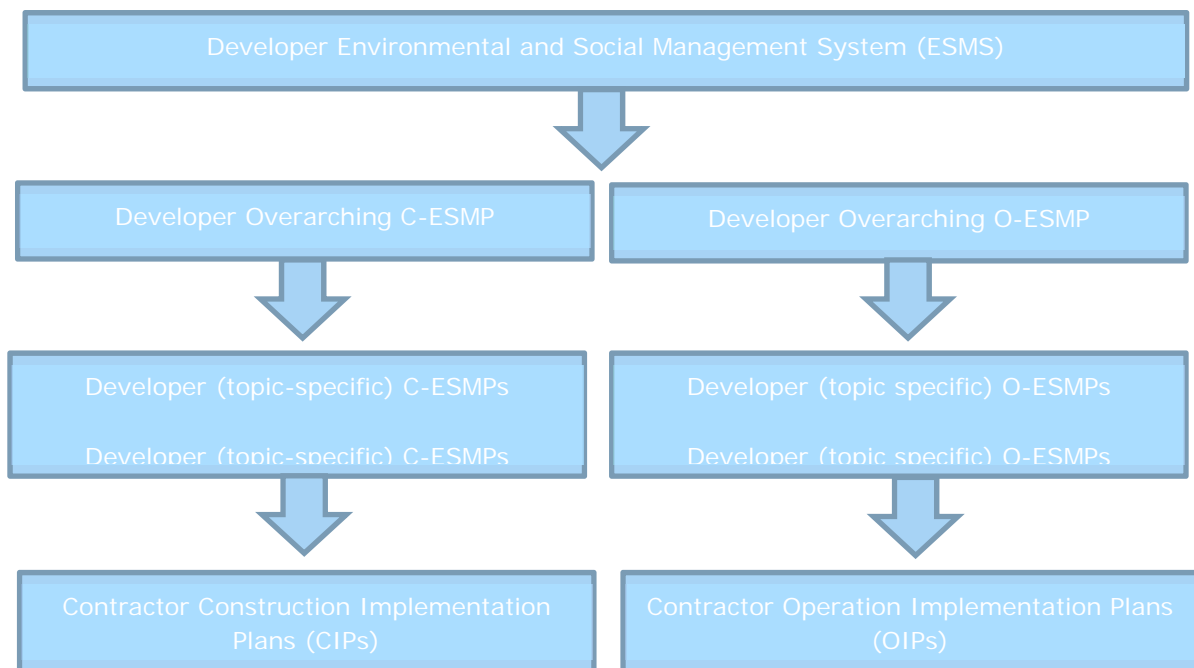
##### *Developer Operation Phase ESMPs*

The Developer Overarching O-ESMP will be developed towards the end of the construction phase before operations start and will follow a similar structure as the Developer Overarching C-ESMP and be accompanied by a suite of other (topic specific) Developer O-ESMPs. Many are likely to be updated from the topic-specific Developer C-ESMPs listed above.

##### *Contractor CIPs and OIPs*

The Developer C-ESMPs and O-ESMPs will form the basis for subsequent, more detailed Contractor CIPs and OIPs to be prepared and implemented by the Contractor .

Figure 20.4 illustrates the relationship between the Developer ESMS, the Developer Overarching C-ESMP and appended suite of (topic specific) C-ESMPs, the Developer Overarching O-ESMP and other (topic specific) O-ESMPs, the Contractor CIPs and OIPs.



**Figure 20-4: Environmental and Social Management Flowchart**

#### *Additional Supporting Plans*

Additional plans will include the following:

- Stakeholder Engagement Plan;
- Resettlement Action Plan or Livelihood Restoration Plan for the Expressway and possible Supplemental Resettlement Plan for Airport Area; and
- Biodiversity Action Plan.

#### *Decommissioning*

Decommissioning activities will be covered by specific management plans to be developed during the operation phase, if necessary.

#### 20.5.4 Sub-Contractor Management

Sub-contractors will be held responsible as a condition of contract for the compliance of their workers and any sub-contractors with the requirements of the Developer ESMPs and Contractor CIPs and OIPs and other relevant commitments defined in their contracts. All sub-contractors will be required to provide their workers and sub-contractors with the means to ensure compliance, e.g. information, instruction and training, work equipment and personal protective equipment.

The specific management plans/programmes, or relevant parts thereof, will be issued to sub-contractors who will be required to demonstrate how they will comply with the Developer ESMPs and Contractor CIPs and OIPs. Compliance will be assured through a range of means, including audits and inspections.

#### 20.5.5 ESMP Audit, Reporting and Corrective Action

The aim of the Developer ESMPs and Contractor CIPs and OIPs is for them to be live tools to allow environmental and social performance to be managed and monitored. Continual improvement of the Developer ESMPs and Contractor CIPs and OIPs will be achieved by the

continual evaluation of environmental and social management performance against relevant policies, objectives and targets for the purpose of identifying opportunities for improvement.

The Developer and Contractor HSE Management will be responsible for analysing the monitoring data to assess compliance. Where non-conformance is detected:

- The results will be analysed by the relevant HSE Management in more detail with the view of determining possible causes for the non-conformance;
- A site inspection will be undertaken by the relevant HSE Management or nominee;
- Relevant personnel will be contacted and advised of the problem;
- An agreed action will be identified;
- Action will be implemented to rectify the problem;
- A non-conformance report will be issued by the relevant HSE Management or nominee

The Developer or Contractor HSE Management will also be involved in regular surveillance inspections to assess compliance, review the effectiveness of the Developer ESMPs and Contractor CIPs and OIPs and identify issues and/or improvements. These inspections will be undertaken as part of internal and external audits. The outcomes of any (internal or external) audit will be documented and reported in an Audit Report. Any corrective actions and/or observations will be addressed through the same mechanisms as non-conformances as detailed above. Resolutions of corrective actions and/or observations will be documented and filed with the Audit Report.

The effectiveness and proper implementation of the Developer ESMPs and Contractor CIPs and OIPs will be reviewed approximately annually or as required by the management team. The review will comprise:

- Reviewing the results of audits;
- Evaluating the system, including which improvements and corrective actions will be sought; and
- Evaluating the operation of the Developer ESMPs and Contractor CIPs and OIPs.

#### 20.5.6 Change Management Principles

Changes can occur during the lifetime of the Proposed Project in accordance with the Developer ESMS that must be fed into the Developer ESMPs and/or Contractor CIPs and OIPs. These changes will be incorporated into the Developer ESMPs and/or Contractor CIPs and OIPs following the review process detailed above or earlier as required.

### 20.6 Summary of Residual Impacts, Mitigation, Monitoring and Responsible Party

A summary of the residual impacts, mitigation, monitoring and responsible party is presented in Table 20.1. Cost estimates for mitigation and monitoring measures will be provided separately to this ESIA Report by BAC.

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impact	Receptor	Impact Magnitude	Receptor Sensitivity	Pre-Mitigation Impact Significance	Design, Enhancement or Mitigation Measures	Management Plan	Residual Significance	Responsible Party
Previously Proposed Development								
Socio-economics								
Land acquisition and involuntary resettlement impacts (Airport Area)	Property owners and land occupiers/ users with assets or access to assets	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> One-off <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b> (based on evidence to date)	<ul style="list-style-type: none"><li>Follow-on ‘outcomes audit’ to supplement the Post Resettlement Audit already completed.</li></ul>	<ul style="list-style-type: none"><li>Supplemental Resettlement Plan (if required)</li></ul>	<b>Minor to Moderate Adverse</b>	RTDA/ MININFRA with input/ support from BAC
Pre-Construction								
Socio-Economics								
Land Speculation (Expressway)	Existing landowners/occupiers Government of Rwanda (RTDA)	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary	Low	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>BAC will use its best endeavours to ensure that a cut-off date for compensation purposes is set as soon as possible, by RTDA, and disseminated widely, along with a map of the Expressway route showing the 44-m wide reservation to be expropriated, in Kigali city as well as in communities located close to the Expressway route.</li></ul>	<ul style="list-style-type: none"><li>Resettlement Action Plan or a Livelihood Restoration Plan</li></ul>	<b>Negligible</b>	RTDA/ MININFRA with input/ support from BAC
Influx (unplanned in-migration)	Local residents and communities	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Reversibility:</b> Irreversible	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>Managing expectations, outside the local area, by reducing/ removing any perception that a prospective in-migrant may hold that he/she will benefit from BAC activities by a speculative move to the vicinity of the Proposed Project.</li><li>Dissemination of information, via media announcements at regional and national-level, of BAC/Contractor’s policy on local recruitment.</li></ul>	<ul style="list-style-type: none"><li>Labour, Working Conditions and Employment Management Plan</li></ul>	<b>Minor to Moderate Adverse</b> (considerable uncertainty exists about efficacy of the mitigation measures)	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Construction Phase								
Traffic and Transport								
Severance	Local community, vulnerable road users	<b>Impact Magnitude:</b> Very Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Week days <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>The design of the Expressway will take cognisance of safety aspects such as traffic lights, stop signs, speed humps, traffic calming zones, street lights, etc. The Expressway design will be developed and approved by engineers as per Rwanda requirements and GIIP.</li><li>The quarry road will be shortened with the upgrade of an existing link to the road, which will result in shorter distances travelled and will alleviate transport through the centre of the Kabukuba Village and in the minimisation of potential accidents to the surrounding community and cattle.</li><li>Ensure all vehicles are maintained regularly and are road worthy; and</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads.</li></ul>	<ul style="list-style-type: none"><li>Construction Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	BAC
Driver Delay	Local community, road users on KK-15 (also referred to as the RN 15) and Expressway	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Week days <b>Reversibility:</b> Reversible	Low	<b>Negligible to Minor Adverse</b>	<ul style="list-style-type: none"><li>The design of the Expressway will take cognisance of safety aspects such as traffic lights, stop signs, speed humps, traffic calming zones, street lights, etc. The Expressway design will be developed and approved by engineers as per Rwanda requirements and GIIP;</li></ul>	<ul style="list-style-type: none"><li>Construction Traffic Management Plan</li></ul>	<b>Negligible</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
					<ul style="list-style-type: none"><li>• The quarry road will be shortened with the upgrade of an existing link to the road, which will result in shorter distances travelled and will alleviate transport through the centre of the Kabukuba Village and in the minimisation of potential accidents to the surrounding community and cattle;</li><li>• Ensure all vehicles are maintained regularly and are road worthy; and</li><li>• Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads.</li></ul>			
Transport User Safety	Local community, road users on KK-15 (also referred to as the RN 15) and Expressway	<b>Impact Magnitude:</b> Very Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Week days <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>• The design of the Expressway will take cognisance of safety aspects such as traffic lights, stop signs, speed humps, traffic calming zones, street lights, etc. The Expressway design will be developed and approved by engineers as per Rwanda requirements and GIIP;</li><li>• The quarry road will be shortened with the upgrade of an existing link to the road, which will result in shorter distances travelled and will alleviate transport through the centre of the Kabukuba Village and in the minimisation of potential accidents to the surrounding community and cattle;</li><li>• Ensure all vehicles are maintained regularly and are road worthy; and</li></ul>	<ul style="list-style-type: none"><li>• Construction Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	BAC



Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
					<ul style="list-style-type: none"><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads.</li></ul>			
Transport User Amenity	Local community, road users on KK-15 (also referred to as the RN 15) and Expressway	<b>Impact Magnitude:</b> Very Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Week days <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>The design of the Expressway will take cognisance of safety aspects such as traffic lights, stop signs, speed humps, traffic calming zones, street lights, etc. The Expressway design will be developed and approved by engineers as per Rwanda requirements and GIIP;</li><li>The quarry road will be shortened with the upgrade of an existing link to the road, which will result in shorter distances travelled and will alleviate transport through the centre of the Kabukuba Village and in the minimisation of potential accidents to the surrounding community and cattle;</li><li>Ensure all vehicles are maintained regularly and are road worthy; and</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads.</li></ul>	<ul style="list-style-type: none"><li>Construction Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Noise and Vibration								
Noise annoyance	Existing dwellings along Proposed Expressway	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Periodic <b>Reversibility:</b> Irreversible	Low	Minor Adverse	<ul style="list-style-type: none"><li>Vehicles, machinery and equipment will be of good working condition and submitted to routine maintenance and repair.</li></ul>	<ul style="list-style-type: none"><li>Construction ESMP</li></ul>	Minor Adverse	BAC/ Contractor
Noise annoyance	Existing dwellings outside Airport Area boundary  Existing dwellings along quarry road	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Periodic <b>Reversibility:</b> Irreversible	Low	Negligible		<ul style="list-style-type: none"><li>Construction ESMP</li></ul>	Negligible	
Vibration annoyance	Existing dwellings outside Airport Area boundary  Existing dwellings along quarry road  Existing dwellings along Proposed Expressway	<b>Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Periodic <b>Reversibility:</b> Irreversible	Low	Negligible	<ul style="list-style-type: none"><li>Vehicles, machinery and equipment will be of good working condition and submitted to routine maintenance and repair.</li></ul>	<ul style="list-style-type: none"><li>Construction ESMP</li></ul>	Negligible	BAC/ Contractor
Noise	Dwellings adjacent to quarry area	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term	High	Minor Adverse	<ul style="list-style-type: none"><li>Quarry equipment and machinery such as crushes are to be enclosed to minimise noise within the area.</li></ul>	<ul style="list-style-type: none"><li>Construction ESMP</li></ul>	Negligible	

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
		<b>Frequency:</b> Periodic <b>Reversibility:</b> Reversible						
Air Quality								
Deterioration of ambient air quality (due to fugitive dust emissions and notably PM <sup>10</sup> ) resulting from earthworks and construction equipment	The primary affected receptors are the communities located downwind and close to the emissions sources: Mwogo, Locale 2, Locale 3, Locale 4 and Quarry Road 1.	<b>Impact Magnitude:</b> High <b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Reversibility:</b> Reversible	Medium	<b>Moderate to Major Adverse</b>  <b>Major Adverse</b> impact to communities downwind	<ul style="list-style-type: none"><li>Vehicle speed limitations, particularly close to sensitive receptors (typically &lt; 20-30 km);</li><li>Restriction on vehicular usage in off-road areas (e.g. tracking vehicles with GPS system);</li><li>Limiting earthwork activities during high winds;</li><li>Minimising dust from material handling sources, such as conveyors and bins, by using covers and/or control equipment (water suppression, bag house filters or cyclones);</li><li>Minimising dust from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content;</li><li>Dust suppression techniques, such as applying water or non-toxic chemicals to minimise dust from vehicle movements;</li><li>Management of emissions from mobile sources, including adequate maintenance of vehicle and equipment; and</li><li>Visual monitoring for dust emissions.</li></ul>	<ul style="list-style-type: none"><li>Pollution Prevention Plan</li></ul>	<b>Minor Adverse</b>  <b>Moderate Adverse</b> residual impact cannot be completely excluded for closest receptor to unpaved roads and open area sources (e.g. Quarry Road 1)	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Biodiversity								
Direct habitat loss, changes in hydrology, water abstraction, disturbance, water quality, invasive species and air quality Impacts from induced access, loss of farmland and population influx	Nyabarongo Wetlands IBA	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Periodic <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"><li>• Employment of EHS Officers;</li><li>• Offsetting, to be detailed in BAP; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• Biodiversity Management Plan (BMP)</li><li>• Biodiversity Action Plan (BAP)</li></ul>	<b>Major Adverse</b> <sup>1</sup>	BAC/ MEECARW
Direct habitat loss, sediment runoff, invasive species and air quality	Modified Habitats: Anthropogenic landscapes, Grassland, Wooded grassland, Bush land and thicket	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long-term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Low	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>• Employment of EHS Officers; and</li><li>• Landscaping using native plant species.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li></ul>	<b>Minor Adverse</b>	BAC/ Contractor
Direct habitat loss, changes in hydrology, water abstraction, disturbance, invasive species, water quality and air quality  Impacts from induced access, loss of farmland and population influx	Natural Habitats: Swamp and aquatic vegetation	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"><li>• Employment of EHS Officers;</li><li>• Offsetting, to be detailed in BAP; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• BAP</li></ul>	<b>Major Adverse</b> <sup>1</sup>	BAC/ Contractor
Changes in hydrology, water abstraction, water quality  Impacts from induced access and population influx	Ningu <i>Labeo victorinus</i>	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct and indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long-term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"><li>• Offsetting, to be detailed in BAP if confirmed to be present; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• Pollution Prevention Plan</li></ul>	<b>Major Adverse</b>	BAC/ Contractor

Changes in hydrology, water abstraction, water quality	<i>Varicorhinus ruandae</i>	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct and indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long-term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Low	Minor Adverse		<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• Pollution Prevention Plan</li></ul>	Minor Adverse	BAC/ Contractor
Construction Phase impacts including site clearance and loss of habitat	Grey Crowned-crane <i>Balearica regulorum</i>	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Medium	Moderate Adverse	<ul style="list-style-type: none"><li>• Employment of EHS Officers; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• BAP</li></ul>	Moderate Adverse	BAC/ Contractor
Construction Phase impacts including site clearance and loss of habitat	Pallid Harrier <i>Circus macrourus</i>	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Low	Minor Adverse	<ul style="list-style-type: none"><li>• Employment of EHS Officers; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• BAP</li></ul>	Minor Adverse	BAC/ Contractor
Direct habitat loss, changes in hydrology, water abstraction, disturbance, water quality, invasive species and air quality  Impacts from induced access, loss of farmland and population influx.	IB A trigger species assemblage and Madagascar Pond Heron	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	Major Adverse	<ul style="list-style-type: none"><li>• Employment of EHS Officers;</li><li>• Offsetting, to be detailed in BAP; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BMP</li><li>• BAP</li></ul>	Major Adverse	BAC/ Contractor
Construction phase impacts mainly related to changes in hydrology	Hippopotamus	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Low	Minor Adverse	<ul style="list-style-type: none"><li>• Employment of EHS Officers;</li><li>• Offsetting, to be detailed in BAP; and</li><li>• Biodiversity Monitoring Strategy.</li></ul>	<ul style="list-style-type: none"><li>• C-ESMP</li><li>• BAP</li></ul>	Negligible	BAC/ Contractor
Note: Biodiversity residual impact assessment excludes offsetting strategy that will compensate for losses and deliver a net gain as required.								

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Water Resources								
Surface Water Pollution arising from construction processes	<ul style="list-style-type: none"><li>Mwesa Stream</li><li>Kibilizi Stream</li><li>Nyabarongo River</li><li>Nyabarongo Wetland Area</li><li>Lake Kidogo</li></ul>	<b>Impact Magnitude:</b> Very low to low <b>Nature:</b> Adverse <b>Type:</b> Direct and indirect <b>Duration:</b> Temporary and Permanent <b>Reversibility:</b> Reversible	Moderate to High	<b>Minor Adverse</b>  <b>Moderate Adverse</b> for Nyabarongo Wetland Area	<ul style="list-style-type: none"><li>Oil interceptors and silt traps;</li><li>No discharge to the lake of any kind;</li><li>No contractor vehicles will access the lake or any other watercourse or surface water body;</li><li>Site compounds and storage areas situated away from surface water receptors; and</li><li>Storage of materials and waste in accordance with international best practice.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP</li><li>Pollution Prevention Plan</li></ul>	<b>Minor Adverse</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Water Supply Demand	<ul style="list-style-type: none"><li>Lake Kidogo</li></ul>	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Duration:</b> Short term <b>Reversibility:</b> Reversible	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>Water levels and quality monitored on a weekly basis; and</li><li>Reduce, or in an unlikely event, cease extraction if lake levels reduce below nominated trigger level to be defined in the C-ESMP, and water then sourced from elsewhere if necessary.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP</li><li>Pollution Prevention Plan</li></ul>	<b>Moderate Adverse</b>	BAC/ Contractor
Increased surface water runoff arising from construction processes	<ul style="list-style-type: none"><li>Mwesa Stream</li><li>Kibilizi Stream</li><li>Nyabarongo River</li><li>Nyabarongo Wetland Area</li><li>Lake Kidogo</li></ul>	<b>Impact Magnitude:</b> Very low <b>Nature:</b> Adverse <b>Type:</b> Direct and indirect <b>Duration:</b> Short term <b>Reversibility:</b> Reversible or irreversible	Moderate to High	<b>Minor Adverse</b>  <b>Moderate Adverse</b> for Nyabarongo Wetland Area	<ul style="list-style-type: none"><li>Temporary drainage infrastructure;</li><li>Avoid use of scaffolding and temporary structures in river, where possible and practical;</li><li>Bridge piers designed so that there are not significant effects; and</li><li>Culverts designed so no increased risk of upstream flooding.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP</li><li>Pollution Prevention Plan</li></ul>	<b>Minor Adverse</b>	BAC/ Contractor
<b>Geology and Soils</b>								
Contamination of soil resources due to unplanned release event (e.g. release of hazardous substance due to spillage or catastrophic tank failure)	Soil resources (other environmental receptors such as water resources, and ecology are discussed in the associated chapters), Human Health	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent to periodic <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>  <i>Likelihood (as unplanned event): 'Possible'</i>	<ul style="list-style-type: none"><li>Adoption of management plans (as detailed in the next column);</li><li>Implementation of procedures and defined schedules for maintenance of assets and ageing asset replacement criteria, in particular for fuel storage and distribution, interceptors, drainage and hazardous material containment measures; and</li><li>Installation of boreholes to assess the potential for shallow perched groundwater to be present, allowing for improvement conceptual understanding of potential pathways for soil contamination.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP</li><li>Pollution Prevention Plan</li><li>Hazardous Substance Management Plan</li><li>Occupational Health and Safety Management Plan</li><li>Emergency Response Plan</li><li>Emergency Spills and Abatement Management Plan</li><li>Waste Management Plan</li><li>Soil Management Plan</li><li>Site Clearance, Excavations and Earthworks Management Plan</li></ul>	<b>Minor Adverse</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Identification of previously unidentified soil contamination	As above	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Adoption of management plans (as detailed in the next column);</li> <li>Targeted assessment of areas of identified contamination (if identified as an unexpected find or through further site walkover and assessment); and</li> <li>Development of unexpected find protocol and education of staff implementing reactive control measures.</li> </ul>	<ul style="list-style-type: none"> <li>C-ESMP</li> <li>Occupational Health and Safety Management Plan</li> <li>Site Clearance, Excavations and Earthworks Management Plan</li> <li>Environmental Induction and Training Plan</li> </ul>	<b>Minor Adverse</b>	BAC/ Contractor
Soil disturbance and loss of topsoil resources	Soil resource	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent to periodic <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Adoption of materials management measures; and</li> <li>Control of areas in which vehicle trafficking can occur through the addition of temporary or permanent barricading and application of good industry practice when handling soil resource and trafficking in proximity to soil stripping/storage areas.</li> </ul>	<ul style="list-style-type: none"> <li>C-ESMP</li> <li>Soil Management Plan</li> <li>Site Clearance, Excavations and Earthworks Management Plan</li> <li>Traffic Management Plan</li> </ul>	<b>Minor Adverse</b>	BAC/ Contractor
<b>Archaeology and Cultural Heritage</b>								
Destruction of Archaeological sites	Local communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short Term <b>Frequency:</b> Infrequent <b>Reversibility:</b> Irreversible	Low	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>The Chance Finds Procedure provides measures to follow should any archaeological or cultural heritage findings be identified. Should an artefact be identified, all work is to stop and the INMR will be contacted.</li> <li>Relocation of burials, if found, within the Proposed Project Area will be done in consultation with the INMR and the Affected Community, and all the ritual requirements for the</li> </ul>	<ul style="list-style-type: none"> <li>Chance Finds Procedure</li> </ul>	<b>Negligible</b>	BAC/ Contractor



Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Destruction and Exposure of Human Remains and Burials	Local communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent <b>Reversibility:</b> Reversible	Medium	<b>Major Adverse</b>	relocation will be followed; and <ul style="list-style-type: none"><li>Consultation with the area elders on requirements needed in case of relocation of human remains.</li></ul>		<b>Minor Adverse</b>	
Landscape and Visual								
Impact on form and cover of landscape	Landscape Fabric	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Regional <b>Duration:</b> Long term <b>Reversibility:</b> Irreversible	Medium	<b>Major Adverse</b> (Significant)	<ul style="list-style-type: none"><li>Phased development;</li><li>Positioning of the proposed Water Pipeline above ground;</li><li>Use of dust suppressant;</li><li>Sympathetic, low rise terminal building designs;</li><li>Appropriate lighting management;</li><li>Control of working areas/widths;</li><li>Restriction on the size and duration of spoil heaps and stockpiles;</li><li>Concurrent construction and re-instatement process.</li></ul>	<ul style="list-style-type: none"><li>Construction Management Plan</li></ul>	<b>Minor to Moderate Adverse</b>	BAC/ Contractor
Impact upon baseline character/characteristics of landscape	Landscape Character	<b>Impact Magnitude:</b> High (within the Airport Area) and medium in the surrounds <b>Nature:</b> Negative <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium term <b>Reversibility:</b> Impacts associated with loss or alteration of key characteristics will be medium term	Medium	<b>Minor to Major Adverse</b> (Significant within the Airport Area and Expressway and at locations within 2 km)	<ul style="list-style-type: none"><li>Phased development;</li><li>Use of dust suppressant;</li><li>Use of existing tracks and roads;</li><li>Restriction on the size and duration of spoil heaps and stockpiles;</li><li>Control of construction lighting; and</li><li>Concurrent construction and re-instatement.</li></ul>	<ul style="list-style-type: none"><li>Construction Management Plan</li></ul>	<b>Minor to Moderate Adverse</b> (Moderate within the Airport Area and Expressway and at locations within 2 km)	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impact upon Visual Amenity of settlements	Surrounding Communities including: <ul style="list-style-type: none"> <li>Kinazi</li> <li>Kayumba</li> <li>Mwogo</li> <li>Rilma</li> <li>Nyamata</li> </ul>	<b>Impact Magnitude:</b> None to very low <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium term <b>Reversibility:</b> Impacts would be long term or permanent	High	<b>None to Minor Adverse</b> (Not significant)	<ul style="list-style-type: none"> <li>Phased development;</li> <li>Use of dust suppressant;</li> <li>Use of existing tracks and roads;</li> <li>Control of working areas/widths;</li> <li>Restriction on the size and duration of spoil heaps and stockpiles;</li> <li>Control of construction lighting; and</li> <li>Concurrent construction and re-instatement.</li> </ul>	<ul style="list-style-type: none"> <li>Construction Management Plan</li> </ul>	<b>None</b>	BAC/ Contractor
Impact upon Visual Amenity of road users	Road users on: <ul style="list-style-type: none"> <li>KK-15 Road</li> <li>DR73 route</li> <li>DR74 route</li> </ul>	<b>Impact Magnitude:</b> None to very low <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Rare/short and Medium term <b>Reversibility:</b> Impacts would be long term or permanent	Medium/ High	<b>None to Minor Adverse</b> (Not significant)	<ul style="list-style-type: none"> <li>Phased development;</li> <li>Use of dust suppressant;</li> <li>Use of existing tracks and roads;</li> <li>Control of working areas/widths;</li> <li>Restriction on the size and duration of spoil heaps and stockpiles;</li> <li>Control of construction lighting; and</li> <li>Concurrent construction and re-instatement.</li> </ul>	<ul style="list-style-type: none"> <li>Construction Management Plan</li> </ul>	<b>None to Minor Adverse</b> (Not significant)	BAC/ Contractor
<b>Waste</b>								
Deterioration of water quality resulting from the improper disposal of waste in unlicensed facilities or using inappropriate disposal methods	Regional groundwater aquifer systems and surface water bodies	<b>Impact Magnitude:</b> Low <b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Salvageable materials will be diverted from disposal where possible;</li> <li>Designated area reserved for bins will be provided;</li> <li>HSE officers will inspect containers for compliance with requirements;</li> <li>Wood cutting will occur in centralised locations to maximise reuse and make collection easier;</li> </ul>	<ul style="list-style-type: none"> <li>C-ESMP</li> <li>Construction Phase Waste Management Plan</li> </ul>	<b>Negligible</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impacts on local communities including loss of land, nuisance, disturbance through increased vehicle movements, indirect impacts as a result of negative impacts on the surrounding environment	Local communities within the Proposed Project Area of Influence	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional/National <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>Hazardous waste will be managed by a licensed waste vendor and will be stored separately;</li><li>Quantified waste inventory will be prepared;</li><li>Legal compliance will be met and sufficient capacity available for contractors and facilities will be provided;</li><li>Effective segregation and safeguarding will take place for waste;</li><li>Detailed plans for routing of traffic transporting waste, in order to minimise impacts on communities will be provided;</li><li>Training and protection measures to be implemented; and</li><li>Audits by the BAC Environment Officer will be undertaken.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP</li><li>Construction Phase Waste Management Plan</li></ul>	<b>Minor Adverse</b>	BAC/Contractor
Improper disposal of waste due to existing waste management facilities being unable to process high volumes of waste arising from the Proposed Project	Local waste management facilities within the Proposed Project Area of Influence	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional/National <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	Medium	<b>Moderate Adverse</b>		<ul style="list-style-type: none"><li>C-ESMP</li><li>Construction Phase Waste Management Plan</li><li></li></ul>	<b>Minor Adverse</b>	BAC/Contractor
Health-related impacts on employees of the Proposed Project as a result of improper handling, storage and disposal of waste	Proposed Project employees	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	<b>Negligible</b>		<ul style="list-style-type: none"><li>C-ESMP</li><li>Construction Phase Waste Management Plan</li></ul>	<b>Negligible</b>	BAC/Contractor
Improper disposal of waste leading to the release of substances which may be harmful to the environment impacting upon local flora and fauna and migrating fauna	Local flora and fauna and migrating fauna	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>		<ul style="list-style-type: none"><li>C-ESMP</li><li>Construction Phase Waste Management Plan</li></ul>	<b>Negligible</b>	BAC/Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Resource Efficiency								
Increase fuel and energy demand associated with construction vehicles, equipment and welfare facilities	Local communities and land-users	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Short Term <b>Extent:</b> Regional/ National <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	Adoption of ESMP to include the following measures: <ul style="list-style-type: none"><li>Implement staff training;</li><li>Use of equipment and machinery that is in good condition and perform regular maintenance;</li><li>Ensure that machinery is not kept running while in use;</li><li>Identify, regularly measure and monitor the principal energy uses associated with both construction vehicles and equipment onsite;</li><li>Define and regularly review performance targets adjusted to account for the type of construction activity;</li><li>Adoption of transport measures such as regular inspection of vehicles, adoption of speed restrictions to optimise fuel efficiency of vehicles; and</li><li>Regularly compare energy use with performance targets to identify where action should be taken to reduce energy use.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP and relevant topic specific ESMPs</li></ul>	<b>Negligible</b>	BAC/Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Increase water demand associated with construction, vehicles, and equipment and welfare facilities	Local communities and land-users	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Short Term <b>Extent:</b> Local/ Regional <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	Adoption of ESMP to include the following measures: <ul style="list-style-type: none"><li>Implement staff training;</li><li>Identify, regularly measure and monitor the principal flows within construction works;</li><li>Define and regularly review performance targets adjusted to account for the type of construction activity; and</li><li>Regularly compare water flows with performance targets to identify where action should be taken to reduce water use.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP and relevant topic specific ESMPs</li></ul>	<b>Negligible</b>	BAC/Contractor
Increase material demand associated with earthworks and construction of the Project	Local communities and land-users	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Short Term <b>Extent:</b> Regional/ National <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>Adoption of Waste Management Plan;</li><li>Sourcing of materials that have low embodied energy use, are locally sourced, are durable etc.; and</li><li>Adoption of a Traffic and Transport Management Plan to minimise traffic movements associated with importation of building materials, concrete and aggregate from off-site sources.</li></ul>	<ul style="list-style-type: none"><li>C-ESMP and relevant topic specific ESMPs (i.e. Waste Management Plan, Traffic Management Plan)</li></ul>	<b>Negligible</b>	BAC/Contractor
<b>Socio-Economics</b>								
Land acquisition and involuntary resettlement impacts (the Expressway)	Property owners and land occupiers/ users with assets or access to assets in the Expressway reservation area	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> One off <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"><li>Support to RTDA in preparing and implementing a PS5-compliant Resettlement Action Plan or a Livelihood Restoration Plan (as necessary)</li></ul>	<ul style="list-style-type: none"><li>Resettlement Action Plan or a Livelihood Restoration Plan</li></ul>	<b>Minor Adverse</b>	RTDA/ MINIFRA with input/ support from BAC/Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Land acquisition and involuntary resettlement impacts (Upgraded quarry road and the water abstraction facility and Water Pipeline)	Property owners and land occupiers/ users with assets or access to assets in located in the land to be acquired	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent for quarry road and temporary for water abstraction and Water Pipeline <b>Frequency:</b> One off <b>Reversibility:</b> Irreversible	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>BAC will investigate the land take situation for the upgraded quarry road the water abstraction facility and Water Pipeline. Should it be found that land was acquired, and compensation paid, in a manner that is not compliant with PS 5 requirements then any remedial measures, required for PAPs, will be incorporated into the Airport Area Supplemental Resettlement Plan; if such a Plan is required. Alternatively, a bespoke Supplemental Resettlement Plan may be prepared for the upgraded quarry road and the water abstraction facility and Water Pipeline.</li></ul>	<ul style="list-style-type: none"><li>Supplemental Resettlement Plan</li></ul>	<b>Negligible</b>	RTDA/ MINIFRA with input/ support from BAC/Contractor
Employees being exposed to risks that labour and working conditions fall short of IFC PS2 requirements	Project workforce	<b>Impact Magnitude:</b> Low to very low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Reversible	High (worker welfare and feelings of self -worth)	<b>Minor to Moderate Adverse</b>	<ul style="list-style-type: none"><li>Development of a Human Resources Policy addressing all IFC PS2 requirements deemed applicable to the Proposed Project (including, no use of forced and child labour; provisions in terms of workers employed by third parties and supply chain);</li><li>Provision of a workers' Grievance Mechanism;</li><li>Development of an Employee Handbook (or equivalent) addressing all IFC PS2 requirements on working conditions and management of worker relationships not already incorporated into the existing suite of human resources documentation;</li><li>Revisions, as necessary, to key documents provided to employees, to provide information on BAC/Contractor obligations and employee rights regarding the role of Workers' Organisations (and collective bargaining</li></ul>	<ul style="list-style-type: none"><li>Labour, Working Conditions and Employment Management Plan</li><li>Human Resources Policy</li><li>Occupational Health and Safety Management Plan</li></ul>	<b>Minor Adverse</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
					<div>if in place) and the principle of BAC/Contractor non-interference with workers’ rights to form or join workers’ organisations.</div> <ul style="list-style-type: none"><li>• Ensure that OHS arrangements are compliant with IFC PS2 are in place</li><li>• For catering facilities provided onsite, ensure that those are managed and maintained in compliance with the local legislation, and good international practice (i.e. regular controls of food/facilities hygiene; Training of the catering staff; Establishment of rodent and vector management/controls, Prohibition on feeding of wildlife, etc.)</li></ul>			
Influx	Local residents and communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"><li>• Managing expectations, outside the local area, by reducing/removing any perception that a prospective in-migrant may hold that he/she will benefit from BAC activities; and</li><li>• Dissemination of information, via media announcements at regional and national-level, of BAC/Contractor’s policy on local recruitment.</li></ul>	<ul style="list-style-type: none"><li>• Labour, Working Conditions and Employment Management Plan</li><li>• Human Resources Policy</li></ul>	<b>Moderate to Major Adverse</b>  <i>(high receptor sensitivity with considerable uncertainty whether the mitigation measures will have a noticeable effect on impact magnitude)</i>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Economy, Employment and Livelihood Impacts: Job creation and equity	Local residents and communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> -	Low	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>Declared priority of local hiring, meeting targets for local recruitment by both BAC and the Contractor;</li><li>BAC/Contractor will manage employment expectations by explaining the number and type of opportunities to local communities in advance;</li><li>Advertising job vacancies in rural communities;</li><li>Recruitment points established in key locations;</li><li>Clear job descriptions provided in advance of recruitment which will explain the skills required for each post;</li><li>Transparent and non-discriminatory recruitment procedure, with respect to ethnicity, sex, sexuality, or disability; and</li><li>All workers will have contracts describing their job description, conditions of work and will have the contents explained to them.</li></ul>	<ul style="list-style-type: none"><li>Labour, Working Conditions and Employment Management Plan</li><li>Human Resources Policy</li></ul>	<b>Negligible</b>	BAC/ Contractor
Economy, Employment and Livelihood Impacts: Local-level inflation	Local residents and communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> - <b>Frequency:</b> - <b>Reversibility:</b> Irreversible	Medium for most people  High for vulnerable people	<b>Minor Adverse</b> significant for most people and of <b>Major Adverse</b> significance for vulnerable individuals and groups	<ul style="list-style-type: none"><li>There are no realistic mitigation measures within the control of BAC and/or the Contractor that can manage local-level inflation.</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<b>Minor Adverse</b> significant for most people and of <b>Major Adverse</b> significance for vulnerable individuals and groups	



Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Economy, Employment and Livelihood Impacts: Local level loss of existing employees	Local residents and communities	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> -	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>There are no realistic mitigation measures within the control of BAC and/or the Contractor that can manage avoid/prevent or reduce the impact of loss of existing employees on existing public or private sector organisations/enterprises.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Minor Adverse</b>	
Economy, Employment and Livelihood Impacts: Loss of construction jobs	Local residents and communities	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Irreversible	Medium	<b>Moderate Adverse</b>	<p>Workers are aware that:</p> <ul style="list-style-type: none"> <li>Their contract is temporary with a specified end date; and</li> <li>They will need to plan how to manage their earnings and expenditures so that they can adopt to changed situation after their employment is terminated.</li> </ul>	<ul style="list-style-type: none"> <li>Labour, Working Conditions and Employment Management Plan</li> <li>Human Resources Policy</li> </ul>	<b>Minor to Moderate Adverse</b>	BAC/ Contractor
Economy, Employment and Livelihood Impacts: Loss of access	Local residents and communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Irreversible	Medium	<b>Moderate Adverse</b>	<ul style="list-style-type: none"> <li>Identify routes that will require closure;</li> <li>Undertake a survey of users (covering such factors as age, sex, starting location, intended destination and trip purpose for each user);</li> <li>Discuss options to 'replace' lost access with local governments; and, to extent feasible,</li> <li>Replace lost access.</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Management Plan</li> </ul>	<b>Minor to Moderate Adverse</b>	BAC/ Contractor
Food Security and Livelihoods Impacts: An increasing lack of agricultural land	Local residents and communities	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary/permanent <b>Frequency:</b> - <b>Reversibility:</b> Reversible/Irreversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Advising workers about the risks of neglecting their agricultural land and the importance of planning ways by which agricultural production can be maintained during their absences.</li> </ul>	<ul style="list-style-type: none"> <li>Labour, Working Conditions and Employment Management Plan</li> </ul>	<b>Negligible</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Food Security and Livelihoods Impacts: Threats to water/fisheries-based livelihoods	Communities and households dependent on water/fisheries-based livelihoods	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary <b>Frequency:</b> - <b>Reversibility:</b> Reversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"> <li>Application of the mitigation measures presented in Chapter 12: Water Resources is required.</li> </ul>	<ul style="list-style-type: none"> <li>Pollution Prevention Plan</li> </ul>	<b>Moderate Adverse</b>	BAC/ Contractor
Food Security and Livelihoods Impacts: Bee-keeping/ honey production	Households in certain villages dependent on bee-keeping/honey production	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary <b>Frequency:</b> - <b>Reversibility:</b> Reversible	Medium	<b>Moderate Adverse</b>	<ul style="list-style-type: none"> <li>Measures to control dust</li> <li>BAC/ Contractor will identify any beekeepers whose hives are within 300 m of the Expressway or an access route to the Expressway before the start of the honey production season. These beekeepers will be asked to move their hives (both mobile hives and stationary hives) a suitable distance (at least 300 metres) from the Expressway and/or access routes for the season. If necessary, BAC/Contractor will aid the relocation; and</li> <li>BAC will inform the beekeepers about using the community-level Grievance Mechanism to submit any complaints regarding BAC/Contractor actions considered by the complainant to have adversely affected bee-keeping/honey production.</li> </ul>	<ul style="list-style-type: none"> <li>Dust Control Plan</li> <li>Resettlement Action Plan</li> <li>Grievance Mechanism</li> </ul>	<b>Minor Adverse</b>	BAC/ Contractor
Food Security and Livelihoods Impacts: Increased livestock casualties	Communities and households dependent on livestock-based livelihoods	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Irreversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Series of mitigation measures as presented in Chapter 8: Transport and Traffic.</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Management Plan</li> </ul>	<b>Negligible</b>	BAC/ Contractor
Community Health Safety and Security Impacts: Risk of an increase in STIs and other non-communicable diseases	Host local communities  Workforce	<b>Impact Magnitude:</b> Low to Medium <b>Nature:</b> Adverse <b>Type:</b> Direct	Low to Medium	<b>Minor to Moderate Adverse</b>	<ul style="list-style-type: none"> <li>Establishing a clinic to manage minor ailments of construction workers and operate a personnel health programme;</li> </ul>	<ul style="list-style-type: none"> <li>Community Health, Safety and Security Management Plan</li> </ul>	<b>Negligible to Moderate Adverse</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
		<b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> <b>Reversibility:</b> Reversible/Irreversible			<ul style="list-style-type: none"> <li>A worker education and awareness programme regarding the risks and prevention measures associated with STIs, including HIV/AIDS;</li> <li>Medical screening of all employees prior to hiring and then on a regular basis; and</li> <li>Prepare, approve and implement an HIV/AIDS Policy.</li> </ul>			
Community Health Safety and Security Impacts: Health impacts resulting from changes in air quality (1) and changes to Water Resources (2)	Local communities	<b>Impact Magnitude:</b> Varies <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary and Permanent <b>Frequency:</b> - <b>Reversibility:</b> Reversible/Irreversible	Medium to High	<b>(1) Moderate to Major Adverse</b>  <b>(2) Minor Adverse</b>	<ul style="list-style-type: none"> <li>Use of low emission vehicles for all BAC-related transport purposes, including buses for workers travelling to/from the Construction Camp;</li> <li>Regular vehicle maintenance with monitoring and enforcement of emission standards;</li> <li>In case of vehicle-related spills a rapid response team will be formed, trained and be on standby to be mobilised in the event of spillage of hazardous materials; and</li> <li>Spill response equipment (absorbents etc.) will be available in all vehicles carrying hazardous cargo.</li> <li>Application of all mitigation measures as per Chapter 12: Water Resources</li> </ul>	<ul style="list-style-type: none"> <li>Dust Control Plan</li> <li>Pollution Prevention Plan</li> <li>Emergency Spills and Abatement Plan</li> </ul>	<b>(1) Minor to Moderate Adverse</b>  <b>(2) Negligible Adverse</b>	BAC/ Contractor
Community Health Safety and Security Impacts: Increase in road traffic accidents	Local communities	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> Frequent <b>Reversibility:</b> Reversible/Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"> <li>Series of mitigation measures as presented in Chapter 8: Transport and Traffic</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Management Plan</li> </ul>	<b>Moderate Adverse</b>	BAC/ Contractor
Community Health Safety and Security Impacts:	Local communities	<b>Impact Magnitude:</b> Low <b>Nature:</b>	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"> <li>Implementation of the 'Voluntary Principles on</li> </ul>	<ul style="list-style-type: none"> <li>Community Health, Safety</li> </ul>	<b>Minor Adverse</b>	BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Potential for conflicts between security providers and the locals		Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> - <b>Reversibility:</b> Irreversible			<div>Security and Human Rights’;<ul style="list-style-type: none"><li>During construction (and operations), due diligence will be applied to selection of security providers, rules of engagement will be devised, and training provided to all personnel. Performance will be monitored and audited periodically;</li><li>Use of force will not be sanctioned except when used for preventive and defensive purposes in proportion to the nature and extent of the threat;</li><li>Safety signage will be provided in both Kinyarwanda and English;</li><li>Ensuring fencing of active and inactive construction sites until rehabilitated or the threat posed by the sites is removed by some other means; and</li><li>Sensitisation of school children under 12 years of age in nearby schools.</li></ul></div>	and Security Management Plan		

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Infrastructure and Utility Services impacts: Potential damage to community infrastructure and utility services	Local residents and communities  Local infrastructure	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Temporary <b>Frequency:</b> - <b>Reversibility:</b> Reversible	Medium	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>• Application of the mitigation measures proposed under 'Influx' will help to mitigate impacts on infrastructure and utility services;</li><li>• Working Method Statements, relating to infrastructure/utilities that include measures to protect the integrity of the third-party services and which are acceptable to the service operator/s;</li><li>• Any damage to third-party services should be repaired promptly in consultation with the service operator;</li><li>• Any planned diversion of services (for example, electricity or water) will be communicated to local government authorities and villages in advance.</li></ul>		<b>Minor Adverse</b>	BAC/ M-E

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Operation Phase								
Traffic and Transport								
Severance	Local community, vulnerable road users	<b>Impact Magnitude:</b> Low to High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Daily <b>Reversibility:</b> Reversible	High	<b>Moderate to Major Adverse</b>	<ul style="list-style-type: none"><li>Ensure that all non-road worthy airport vehicles do not make use of public roadways;</li><li>Suitably designed pedestrian, vehicle and animal crossing points must be developed at regular intervals along the Expressway;</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads;</li><li>Provide adequate maintenance of crossing signals, slow traffic lanes and paved shoulders for pedestrians and non-motored transportation.</li></ul>	<ul style="list-style-type: none"><li>Airport Traffic Management Plan</li><li>Expressway Maintenance Plan</li></ul>	<b>Minor Adverse</b>	RDTA/ MININFRA  BAC/ Contractor
Driver Delay	Local community, road users on KK-15 (also referred to as the RN 15) and Expressway	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Daily <b>Reversibility:</b> Reversible	Low	<b>Minor to Moderate Adverse</b>	<ul style="list-style-type: none"><li>Ensure that all non-road worthy airport vehicles do not make use of public roadways;</li><li>Suitably designed pedestrian, vehicle and animal crossing points must be developed at regular intervals along the Expressway;</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads;</li><li>Provide adequate maintenance of crossing signals, slow traffic lanes and paved shoulders for pedestrians and non-motored transportation;</li><li>Shuttles will be employed from the airport to Kigali.</li></ul>	<ul style="list-style-type: none"><li>Airport Traffic Management Plan</li><li>Expressway Maintenance Plan</li></ul>	<b>Minor Adverse</b>	RDTA/ MININFRA  BAC/ Contractor
Transport User Safety	Local community, road users on KK-15 (also	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>Ensure that all non-road worthy airport vehicles do</li></ul>	<ul style="list-style-type: none"><li>Airport Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	RDTA/ MININFRA

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
	referred to as the RN 15) and Expressway	<b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Daily <b>Reversibility:</b> Reversible			<div>not make use of public roadways;</div> <ul style="list-style-type: none"><li>Suitably designed pedestrian, vehicle and animal crossing points must be developed at regular intervals along the Expressway;</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads; and</li><li>Provide adequate maintenance of crossing signals, slow traffic lanes and paved shoulders for pedestrians and non-motored transportation.</li></ul>	<ul style="list-style-type: none"><li>Expressway Maintenance Plan</li></ul>		BAC/ Contractor
Transport User Amenity	Local community, road users on KK-15 (also referred to as the RN 15) and Expressway	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Daily <b>Reversibility:</b> Reversible	High	<b>Minor to Moderate Adverse</b>	<ul style="list-style-type: none"><li>Ensure that all non-road worthy airport vehicles do not make use of public roadways;</li><li>Suitably designed pedestrian, vehicle and animal crossing points must be developed at regular intervals along the Expressway;</li><li>Signs and lights are to be provided to warn motorists of hazardous driving conditions created by construction interference with existing roads; and</li><li>Provide adequate maintenance of crossing signals, slow traffic lanes and paved shoulders for pedestrians and non-motored transportation.</li></ul>	<ul style="list-style-type: none"><li>Airport Traffic Management Plan</li><li>Expressway Maintenance Plan</li></ul>	<b>Minor Adverse</b>	RDTA/ MININFRA  BAC/ Contractor

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Air Quality								
Daily deterioration of ambient air quality due to SO <sub>2</sub> emissions	Populations surrounding the Project Area and notably the receptors location Quarry Road 1 and Locale 2	<b>Impact Magnitude:</b> Negligible for the 2020 Scenario Low for the 2045 Scenario  <b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local (Quarry Road 1 and Local 2) <b>Duration:</b> Short Term (few days a year) <b>Reversibility:</b> Reversible	Low	<b>Negligible to Minor Adverse</b> for the 2020 Scenario <b>Minor Adverse</b> for the 2045 Scenario	<ul style="list-style-type: none"><li>Optimise the aircraft ground movements in order to reduce taxiing and therefore reduce NO<sub>x</sub> and SO<sub>2</sub> air emissions;</li><li>Implement landing and take-off procedures that minimise air emissions impact by respectively reducing the duration of the landing phase or increasing the climb angle;</li><li>Ensure that aircraft fleets are the latest and maintained according to best practices dictated by aircraft manufacturers;</li><li>GSE must be the best possible in terms of pollutant air emissions and electrical GSE should be preferred when possible. The maintenance procedures proposed by suppliers must be respected;</li></ul>	<ul style="list-style-type: none"><li>Pollution Prevention Plan</li></ul>	<b>Negligible</b> for both Scenarios	BAC
Long term deterioration of ambient air quality due to NO <sub>2</sub> emissions	Residential areas surrounding the Project Area	<b>Impact Magnitude:</b> Low to medium for the 2020 Scenario Mainly Medium for the 2045 Scenario <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Regional <b>Duration:</b> Long term (significant contribution to the annual air quality guideline value) <b>Reversibility:</b> Reversible	Low to High depending on the receptors location	<b>Negligible to Moderate Adverse</b> (for three receptors) for the 2020 Scenario  <b>Mainly Negligible to Major Adverse (at one receptor, Mwogo) for the 2045 Scenario</b>	<ul style="list-style-type: none"><li>Implement ATC ground delay procedures to minimise ATC delays and flight time in holding patterns;</li><li>Technically and financially validate the use of jet fuel with the lowest possible sulphur content (i.e. use of GTP Jet Fuel); and</li></ul> <p>Air quality monitoring programme at key locations, including sensitive receptor locations.</p>	<ul style="list-style-type: none"><li>Pollution Prevention Plan</li></ul>	<b>Negligible Adverse</b> for 2020 Scenarios  <b>Minor Adverse</b> for 2045 Scenarios	BAC



Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Deterioration of ambient air quality due to PM <sub>10</sub>	Residential areas surrounding the Proposed Project Area	<b>Impact Magnitude:</b> Very Low for both scenarios  <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short term (daily) and Long term (annual) impact <b>Reversibility:</b> Reversible	High	<b>Major Adverse for both scenarios</b> Due to poor existing baseline conditions	<ul style="list-style-type: none"><li>Optimise aircraft movements on the ground in order to reduce taxiing and therefore reduce NOx and SO2 air emissions;</li><li>Implement landing and take-off procedures that minimise air emission impacts by reducing the duration of the landing phase or increasing the climb angle;</li><li>Ensure that aircraft fleets are the latest models and maintained according to GIIP as dictated by aircraft manufacturers;</li><li>Select GSE with a consideration of low pollutant air emissions and efficient energy consumption where possible, and maintained according to the manufacturers' recommendations;</li><li>Implement Air Traffic Control (ATC) ground delay procedures to minimise ATC delays and flight times in holding patterns;</li><li>Use jet fuel with the lowest possible sulphur content (i.e. use of GTP jet fuel), where possible, in order to further reduce aircraft SO2 air emissions; and</li><li>Greenhouse gas reporting.</li></ul>	<ul style="list-style-type: none"><li>Pollution Prevention Plan</li></ul>	Moderate to <b>Major adverse</b> for both Scenarios due to poor existing baseline conditions	BAC
Deterioration of ambient air quality due to CO emissions	Populations surrounding the Proposed Project Area	<b>Impact Magnitude:</b> Very Low for both scenarios  <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Short term (8 hr period) <b>Reversibility:</b> Reversible	Medium	<b>Negligible Adverse</b> both Scenarios			<b>Negligible Adverse</b> for both Scenarios	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Deterioration of ambient air quality due to benzene emissions	Populations surrounding the Proposed Project Area	<b>Impact Magnitude:</b> Very Low to Low for the 2020 Scenario Mainly Low (for 11 receptors) for the 2045 Scenario <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long term (annual average) <b>Reversibility:</b> Reversible	Medium	<b>Negligible to Minor Adverse</b> (for three receptors) for the 2020 Scenario Mainly <b>Minor Adverse</b> (for 11 receptors) for the 2045 Scenario	<ul style="list-style-type: none"><li>Optimise aircraft movements on the ground in order to reduce taxiing and therefore reduce NOx and SO2 air emissions;</li><li>Implement landing and take-off procedures that minimise air emission impacts by reducing the duration of the landing phase or increasing the climb angle;</li><li>Ensure that aircraft fleets are the latest models and maintained according to GIIP as dictated by aircraft manufacturers;</li><li>Select GSE with a consideration of low pollutant air emissions and efficient energy consumption where possible, and maintained according to the manufacturers' recommendations;</li><li>Implement Air Traffic Control (ATC) ground delay procedures to minimise ATC delays and flight times in holding patterns; and</li><li>Use jet fuel with the lowest possible sulphur content (i.e. use of GTP jet fuel), where possible, in order to further reduce aircraft SO2 air emissions.</li></ul>	<ul style="list-style-type: none"><li>Pollution Prevention Plan</li></ul>	<b>Negligible</b> For both Scenarios	BAC
Noise and Vibration								
Noise annoyance	Existing dwellings along Proposed Expressway	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	<b>Moderate Adverse</b>	<ul style="list-style-type: none"><li>Speed limiting structures such as speed humps and stop signs will lower vehicle speed resulting in lower noise generation.</li></ul>	<ul style="list-style-type: none"><li>Operation ESMP</li></ul>	<b>Moderate Adverse</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Noise annoyance	Existing dwelling under and near airport flight paths	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	Major Adverse	<ul style="list-style-type: none"> <li>New engine technologies, general noise requirements and regulations on the aircraft type that are allowed to be used at airport;</li> <li>Departure and approach procedures, including noise preferential routes/runways; and</li> <li>Use of night time or other operating restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>IFC Guidelines on Environment, Health and Safety for Airports</li> <li>Pollution Prevention Plan</li> <li>Noise Monitoring System.</li> </ul>	Major Adverse	BAC
<b>Biodiversity</b>								
Operation impacts of airport including noise disturbance, pollution, lighting and hydrology changes, and bird strike management  Impacts from induced access and population influx	Nyabarongo Wetlands IBA	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Regional <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	Major Adverse	<ul style="list-style-type: none"> <li>Employment of EHS Officers;</li> <li>Bird management system;</li> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	Major Adverse	BAC
Operation impacts of airport including disturbance, air quality, lighting and hydrology changes  Impacts from induced access and population influx	Natural habitats Swamp and aquatic vegetation	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	Major Adverse	<ul style="list-style-type: none"> <li>Employment of EHS Officers;</li> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	Major Adverse	BAC
Operation impacts of airport including disturbance, air quality, lighting and hydrology changes	Modified Habitats: Anthropic landscapes, Grassland, Wooded grassland, Bush land and thicket	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	Low	Minor Adverse	<ul style="list-style-type: none"> <li>Employment of EHS Officers.</li> </ul>		Negligible	BAC
Impacts from induced access and population influx	Ningu	<b>Impact Magnitude:</b> Medium <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Reversible	High	Major Adverse	<ul style="list-style-type: none"> <li>Employment of EHS Officers;</li> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	Major Adverse <sup>1</sup>	

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Operation phase impacts including noise disturbance	Grey Crowned-crane <i>Balearica regulorum</i>	<b>Impact Magnitude:</b> Very Low <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Reversible	Medium	<b>Negligible</b>	<ul style="list-style-type: none"> <li>Employment of EHS Officers; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	<b>Negligible</b>	BAC
Operation phase impacts including noise disturbance	Pallid Harrier <i>Circus macrourus</i>	<b>Impact Magnitude:</b> Very Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Reversible	Low	<b>Negligible</b>	<ul style="list-style-type: none"> <li>Employment of EHS Officers;</li> <li>Bird management system;</li> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	<b>Negligible</b>	BAC
Operation phase impacts including noise disturbance Impacts from induced access and population influx	IBA trigger species and Madagascar Pond Heron	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Irreversible	High	<b>Major Adverse</b>	<ul style="list-style-type: none"> <li>Employment of EHS Officers;</li> <li>Bird management system;</li> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	<b>Major Adverse</b> <sup>1</sup>	BAC
Operation impacts of airport including disturbance Impacts from induced access and population influx	Hippopotamus	<b>Impact Magnitude:</b> High <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Extent/Scale:</b> Local <b>Duration:</b> Long Term <b>Frequency:</b> Constant <b>Reversibility:</b> Reversible	Low	<b>Moderate Adverse</b>	<ul style="list-style-type: none"> <li>Offsetting, to be detailed in BAP; and</li> <li>Biodiversity Monitoring Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>O-ESMP</li> <li>BAP</li> </ul>	<b>Minor Adverse</b>	BAC
<sup>1</sup> Residual impact assessment excludes offsetting strategy that will compensate for losses and deliver a net gain as required.								
<b>Water Resources</b>								
Surface water pollution arising from operation activity	<ul style="list-style-type: none"> <li>Mwesa Stream</li> <li>Kibilizi Stream</li> <li>Nyabarongo River</li> <li>Nyabarongo Wetland Area</li> <li>Lake Kidogo</li> </ul>	<b>Impact Magnitude:</b> Very low <b>Nature:</b> Adverse <b>Type:</b> Direct and indirect <b>Duration:</b> Short term or Long term <b>Reversibility:</b> Irreversible or Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Detention basins designed to minimise potential risks;</li> <li>Oil separation systems, where feasible;</li> <li>Foul wastewater treated onsite; and</li> <li>Expressway designed to control quantity and quality of water leaving road.</li> </ul>	<ul style="list-style-type: none"> <li>Pollution Prevention Plan</li> </ul>	<b>Minor Adverse</b>	BAC
Increased surface water runoff due to increase in impermeable areas	<ul style="list-style-type: none"> <li>Mwesa Stream</li> <li>Kibilizi Stream</li> <li>Nyabarongo River</li> </ul>	<b>Impact Magnitude:</b> Very low <b>Nature:</b> Adverse	Moderate to High	<b>Minor Adverse</b>	<ul style="list-style-type: none"> <li>Sufficient capacity for surface water runoff;</li> </ul>	<ul style="list-style-type: none"> <li>Design Controls to be</li> </ul>	<b>Minor Adverse</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
		<b>Type:</b> Direct and indirect <b>Duration:</b> Short term <b>Reversibility:</b> Reversible or irreversible			<ul style="list-style-type: none"><li>• Flows restricted prior to discharge offsite;</li><li>• Surface water discharge offsite appropriately distributed;</li><li>• Expressway and crossings designed to not increase flood risk; and</li><li>• Expressway designed to control quantity and quality of water leaving road.</li></ul>	implemented as per O-ESMP		
Geology and Soils								
Contamination of soil resources due to unplanned release event (e.g. release of hazardous substance due to spillage or catastrophic tank failure)	Soil resources (other environmental receptors such as water resources, and ecology are discussed in the associated chapters), Human Health	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>  <i>Likelihood (as unplanned event): 'Possible'</i>	<ul style="list-style-type: none"><li>• Adoption of management plans (as detailed in the next column); and</li><li>• Implementation of procedures and defined schedules for maintenance of assets and ageing asset replacement criteria, for fuel storage and distribution, interceptors, drainage and hazardous material containment measures.</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP</li><li>• Occupational Health and Safety Management Plan</li><li>• Emergency Spills and Abatement Plan</li><li>• Waste Management Plan</li><li>• Hazardous Substance Management Plan</li><li>• Pollution Prevention Plan</li><li>• Emergency Response Plan</li></ul>	<b>Minor Adverse</b>	BAC
Identification of previously unidentified soil contamination	As above	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Periodic <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>  <i>Likelihood (as unplanned event): 'Unlikely'</i>	<ul style="list-style-type: none"><li>• Adoption of management plan (as detailed in the next column);</li><li>• Targeted assessment of areas of identified contamination (if identified as an unexpected find or through further site walkover and assessment); and</li><li>• Clean up and remediation as appropriate.</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP</li><li>• Occupational Health and Safety Management Plan (to include unexpected finds protocol)</li></ul>	<b>Minor Adverse</b>	BAC
Soil disturbance and loss of topsoil resources	Soil resource	<b>Impact magnitude:</b> Low <b>Extent:</b> Local <b>Duration:</b> Short term <b>Frequency:</b> Infrequent to periodic <b>Reversibility:</b> Reversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>• Adoption of permanent or temporary barricading and appropriate signage to prevent traffic movements on unsurfaced ground;</li><li>• Soil materials management to be factored into the Pollution Prevention Plan; and</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP</li><li>• Pollution Prevention Plan</li><li>• Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
					<ul style="list-style-type: none"><li>Application of good industry practice in handling and management of soil resource during operations.</li></ul>			

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Landscape and Visual								
Impact upon baseline character/characteristics of landscape	Landscape Character	<b>Impact Magnitude:</b> low to high <b>Nature:</b> Adverse <b>Type:</b> Direct and Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium term <b>Reversibility:</b> Impacts associated with loss or alteration of key characteristics will be medium term	Medium	<b>Minor to Major Adverse</b> (Locally significant)	<ul style="list-style-type: none"><li>• Location of tallest structure from neighbouring receptors;</li><li>• Low lying position of Expressway;</li><li>• Incorporation of tree planting and suitable landscaping within the Airport complex;</li><li>• Selective reinstatement of shrub species adjacent to the main Airport Footprint and along the side of the Expressway;</li><li>• Design of internal and external lighting that reduces potential glare, light spill and sky glow;</li><li>• Use of non-reflective materials and surfaces (both within airport buildings, and externally to reduce the potential for the proposed development to add to potential sky glow;</li><li>• Minimisation of the illumination of building facades to lessen their prominence after dark.</li><li>• Incorporation of blind or louvres to any roof lights and positioning/angling of interior lights away from openings to avoid light leakage.</li></ul>	<ul style="list-style-type: none"><li>• A detailed landscape design and management plan and lighting specification</li></ul>	<b>Minor to Moderate Adverse</b> (Moderate within the Airport Area and Expressway) <b>None to Minor Adverse</b> (not significant at locations within 2 km)	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impact upon Visual Amenity of settlements	Surrounding Communities including: <ul style="list-style-type: none"><li>Kinazi</li><li>Kayumba</li><li>Mwogo</li><li>Rilma</li><li>Nyamata</li></ul>	<b>Impact Magnitude:</b> very low <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium term <b>Reversibility:</b> Impacts would be long term or permanent	High	<b>Minor Adverse</b> (Not significant)	<ul style="list-style-type: none"><li>Location of tallest structure from neighbouring receptors;</li><li>Low lying position of Expressway;</li><li>Incorporation of tree planting and suitable landscaping within the Airport complex;</li><li>Selective rein-statement of shrub species adjacent to the main Airport Footprint and along the side of the Expressway;</li><li>Design of internal and external lighting that reduces potential glare, light spill and sky glow;</li><li>Use of non-reflective materials and surfaces (both within air-port buildings, and externally to reduce the potential for the proposed development to add to potential sky glow;</li><li>Minimisation of the illumination of building facades to lessen their prominence after dark; and</li><li>Incorporation of blind or louvres to any roof lights and positioning/angling of interior lights away from openings to avoid light leakage.</li></ul>	<ul style="list-style-type: none"><li>A detailed landscape design and management plan and lighting specification</li></ul>	None	BAC



Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impact upon Visual Amenity of road users	Road users on: <ul style="list-style-type: none"><li>• KK-15 Road</li><li>• DR73 route</li><li>• DR74 route</li></ul>	<b>Impact Magnitude:</b> none to very low <b>Nature:</b> Adverse <b>Type:</b> Indirect <b>Extent/Scale:</b> Localised/Regional <b>Duration:</b> Medium term <b>Reversibility:</b> Impacts would be long term or permanent	High	<b>Minor Adverse</b> (Not significant)	<ul style="list-style-type: none"><li>• Location of tallest structure from neighbouring receptors;</li><li>• Low lying position of Expressway;</li><li>• Incorporation of tree planting and suitable landscaping within the Airport complex;</li><li>• Selective rein-statement of shrub species adjacent to the main Airport Footprint and along the side of the Expressway;</li><li>• Design of internal and external lighting that reduces potential glare, light spill and sky glow;</li><li>• Use of non-reflective materials and surfaces (both within airport buildings, and externally to reduce the potential for the proposed development to add to potential sky glow;</li><li>• Minimisation of the illumination of building facades to lessen their prominence after dark; and</li><li>• Incorporation of blind or louvres to any roof lights and positioning/angling of interior lights away from openings to avoid light leakage.</li></ul>	<ul style="list-style-type: none"><li>• Work scheme Construction Management Plan</li></ul>	<b>None</b>	BAC
Waste								
Deterioration of water quality resulting from the improper disposal of waste in unlicensed facilities or using inappropriate disposal methods	Regional groundwater aquifer systems and surface water bodies	<b>Impact Magnitude:</b> Low <b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>• Allocated waste storage areas will be provided;</li><li>• Disposal will be to licensed and audited facilities;</li><li>• A Waste Management Plan will be developed and implemented;</li><li>• Confirmation of waste streams detailed estimation of quantities for each waste stream</li><li>• Finalisation of licensed waste management contractors and facilities,</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP</li><li>• Operation Phase Project Waste Management Plan</li></ul>	<b>Negligible</b>	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Impacts on local communities including loss of land, nuisance, disturbance through increased vehicle movements, indirect impacts as a result of negative impacts on the surrounding environment	Local communities within the Proposed Project Area of Influence	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Regional/National <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	Minor Adverse	and auditing of all waste facilities <ul style="list-style-type: none"><li>Detailed plans for routing of traffic transporting waste will be provided;</li><li>Solid waste management storage areas during operation for each waste stream including hazardous waste will be provided;</li><li>Detailed training will be undertaken and protection measures to be implemented; and</li><li>Regular audits by the airport Environment Officer will be undertaken.</li><li></li></ul>	<ul style="list-style-type: none"><li>O-ESMP</li><li>Operation Phase Project Waste Management Plan</li></ul>	Minor Adverse	BAC
Improper disposal of waste due to existing waste management facilities being unable to process high volumes of waste arising from the Proposed Project	Local waste management facilities within the Proposed Project Area of Influence	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Regional/National <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	Moderate Adverse		<ul style="list-style-type: none"><li>O-ESMP</li><li>Operation Phase Project Waste Management Plan</li></ul>	Minor Adverse	BAC
Health-related impacts on employees of the Proposed Project as a result of improper handling, storage and disposal of waste	Proposed Project employees	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	Medium	Moderate Adverse		<ul style="list-style-type: none"><li>O-ESMP</li><li>Operation Phase Project Waste Management Plan</li></ul>	Minor Adverse	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Improper disposal of waste leading to the release of substances which may be harmful to the environment impacting upon local flora and fauna and migrating fauna	Local flora and fauna and migrating fauna	<b>Nature:</b> Negative <b>Type:</b> Direct <b>Extent/Scale:</b> Local/Regional <b>Duration:</b> Medium/Long Term <b>Frequency:</b> Potentially continuous <b>Reversibility:</b> Reversible	High	Moderate Adverse		<ul style="list-style-type: none"><li>• O-ESMP</li><li>• Operation Phase Project Waste Management Plan</li></ul>	Minor Adverse	BAC

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Resource Efficiency								
Increase fuel and energy demand associated with the operation of airport (i.e. aviation fuel and within buildings)	Local communities and global communities	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Long Term <b>Extent:</b> National <b>Reversibility:</b> Irreversible	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>• Adoption of O-ESMP to include the following measures:</li><li>• Implement staff training;</li><li>• Reducing energy demand by use of efficient systems and through building design;</li><li>• Regular inspection, maintenance and repair of any distribution system leaks;</li><li>• Insulation of all distribution pipework, in addition to insulation all valves and flanges, where appropriate;</li><li>• Demand/Load Side Management by reducing loads on the energy system;</li><li>• Identification, regular measurement and reporting of principal energy flows within the terminal building;</li><li>• Setting and review of energy performance targets, adjusted to account for major influencing factors on energy use;</li><li>• Regular comparison and monitoring of energy flows with performance targets to identify where action could be taken to reduce energy use; and</li><li>• Regular review of targets, which may include comparison with benchmark data to confirm that targets are set at appropriate levels.</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP and relevant topic specific ESMPs</li></ul>	<b>Minor Adverse</b>	BAC
Increased water demand associated with operation of airport (welfare facilities)	Local communities and land-users	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Long Term	Medium	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>• Implement staff training;</li><li>• Regular maintenance of plumbing to identify and repair leaks;</li><li>• Shut off water to unused areas (e.g. WC areas);</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP and relevant topic specific ESMPs</li></ul>	<b>Minor Adverse</b>	BAC

		<b>Extent:</b> Local/Regional <b>Reversibility:</b> Irreversible			<ul style="list-style-type: none"><li>• Installation of water-efficient appliances including self-closing taps, automatic shut-off valves, spray nozzles, and water conserving sanitary fittings (e.g. taps, shower heads, toilets, urinals) and white goods;</li><li>• Operation of any commercial dishwashers and laundries on full loads where possible;</li><li>• Re-use of treated wastewater for appropriate purposes, such as irrigation of landscaped areas; and</li><li>• Setting and review of water consumption performance targets.</li></ul>			
Increase material demand associated with operation of the Project	Local communities and land-users	<b>Impact Magnitude:</b> Low <b>Type:</b> Negative <b>Duration:</b> Long Term <b>Extent:</b> Regional/ National <b>Reversibility:</b> Irreversible	Low	<b>Negligible</b>	<ul style="list-style-type: none"><li>• Implement staff training;</li><li>• Selection of materials (e.g. flooring) to protect against the effects of high pedestrian traffic in main entrance, public areas and thoroughfares;</li><li>• Protection against any internal vehicular/trolley movements within 1 m of the internal building fabric in storage, delivery, corridor and service areas;</li><li>• Design to prevent any potential vehicular collision in vehicular parking and manoeuvring in all car parking and delivery areas; and</li><li>• Selection of building elements from material degradation effects from environmental factors (e.g. precipitation, wind, temperature variation, solar radiation and extreme weather conditions).</li></ul>	<ul style="list-style-type: none"><li>• O-ESMP and relevant topic specific ESMPs</li></ul>	<b>Negligible</b>	BAC
Socio-economics								

Table 20-1: Summary of Residual Impacts, Mitigation and Responsible Party								
Health impacts resulting from changes in air quality (1 and 2) and Water Resources (3)	Local residents and communities	<b>Impact Magnitude:</b> Varies <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> <b>Reversibility:</b> Irreversible	Medium to High	(1) <b>Moderate Adverse</b> (NO <sub>2</sub> )  (2) <b>Negligible to Minor Adverse</b> (other air pollutants)  (3) <b>Minor Adverse</b> (water quality)	<ul style="list-style-type: none"><li>As per Chapter 9: Air Quality</li><li>As per Chapter 12: Water Resources</li></ul>	<ul style="list-style-type: none"><li>Dust Control Plan</li><li>Pollution Prevention Plan</li></ul>	(1) <b>Minor Adverse</b> (NO <sub>2</sub> )  (2) <b>Negligible to Minor</b> (other air pollutants)  (3) <b>Negligible Adverse</b> (water quality)	BAC
Road Traffic Accidents	Local residents	<b>Impact:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> Frequent <b>Reversibility:</b> Irreversible	High	<b>Minor to Moderate</b>	<ul style="list-style-type: none"><li>As per Chapter 8: Traffic and Transport.</li></ul>	<ul style="list-style-type: none"><li>Traffic Management Plan</li></ul>	<b>Minor Adverse</b>	RTDA  BAC/Contractor
Security and interactions with local residents /communities	Local residents and communities	<b>Impact Magnitude:</b> Low <b>Nature:</b> Adverse <b>Type:</b> Direct <b>Scale:</b> Local <b>Duration:</b> Permanent <b>Frequency:</b> Frequent <b>Reversibility:</b> Irreversible	High	<b>Minor Adverse</b>	<ul style="list-style-type: none"><li>As per construction phase.</li></ul>	<ul style="list-style-type: none"><li>Community Health, Safety and Security Management Plan</li></ul>	<b>Minor Adverse</b>	BAC