

Table 5.5 Summary of Risks and Residual Impacts and Mitigation Measures – Airstrip

ENVIRONMENT	Component	Ecological Context	Impact Source	Description of Potential Impact	Element Value	Degree of Distur-bance	Impact Intensity	Impact Extent	Impact Duration	Impact		Mitigation/Improvement Measures	Residual Impact
										+/-	Impact Significance		
PHYSICAL ENVIRONMENT	Surface & Groundwater	The plateau on which the airstrip will be located is bound by the Ciamco River.	Construction: • Earthworks. • Re-routing of Route N-1. • Materials management (construction debris, earth, etc.). • Presence of machinery and temporary storage of hydrocarbons.	• Risk of water quality deterioration by sediment contribution and re-suspension. • Risk of contamination by accidental spilling of hydrocarbons. • Modification of surface drainage patterns.	Eco. Value: Medium Socio. Value: High Value: High	Low	Medium	Local	Short	-	Low	• Preferably, work during the dry season. Otherwise, intercept and channel runoff water into vegetated areas to promote sedimentation before it reaches a body of water. • Refuel vehicles and construction machinery in designated areas a minimum distance of 50 m from waterways. • Ensure emergency spill kits are available on-site for immediate intervention in the event of a spill. • Ensure emergency spill kits are available on-site for immediate intervention in the event of a spill. • Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Very Low
			Operation: • Wastewater management. • Presence of a diesel tank.	• Risk of contamination by domestic wastewater. • Risk of water contamination in event of a hydrocarbon spill (storage tanks).	Eco. Value: Medium Socio. Value: High Value: High	Low	Medium	Local	Long	-	Medium	• Transport wastewater (by truck) to the Canga East treatment plant. • Leak-proof the ground surface in the aircraft parking area or build retention basins under tanks containing hydrocarbons. • Install double-wall tanks or a retention basin (with a containment capacity of 110% of tank volume). • Ensure emergency spill kits are available on-site for immediate intervention in the event of a spill. • Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Low
	Soil	Airstrip area will have no activity likely to contaminate the soil. Lateritic hardpan is unlikely to be subjected to erosion. No installation for refuelling planes is foreseen.	Construction: • Topsoil removal. • Earthworks. • Material management (debris, topsoil, etc.). • Presence of machinery and temporary storage of hydrocarbons.	• Risk of erosion of stripped ground surfaces during the rainy season. • Risk of soil contamination in the event of a hydrocarbon spill.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Low	Low	Local	Short	-	Very Low	• Preferably, work in dry season; otherwise intercept & channel runoff water into vegetated areas for erosion prevention. • Preserve topsoil for rehabilitation of disturbed areas. • Ensure secure storage of hydrocarbons on-site. • Ensure emergency spill kits are available on-site for immediate intervention in the event of a spill. • Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Negligible
			Operation: • Wastewater management. • Waste management. • Presence of a reservoir containing hydrocarbons.	• Risk of soil contamination from domestic wastewater. • Risk of soil contamination in the event of a hydrocarbon spill.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	• Ensure proper waste and wastewater management by transport (truck) to the Canga East treatment plants. • Leak-proof the ground surface in the aircraft parking area. • Install double-wall tanks or build retention basins under tanks containing hydrocarbons. • Keep emergency spill kits on-site for immediate response in the event of a spill. • Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Very Low

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PHYSICAL ENVIRONMENT	Air Quality	Air quality in the study zone is good, except during brush fire season.	Construction: - Earthworks. - Equipment traffic.	Air quality deterioration associated with re-suspension of dust.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Short	-	Very Low	Use water to minimize dust emissions (as needed).	Negligible
		Atmospheric emissions from the generators will be equivalent to those of a diesel truck.	Operation: - Aircraft takeoffs and landings. - Passenger transport. - Operation of generators.	- Re-suspension of dust during use of laterite airstrip and Route N-1. - Emissions of very low concentrations of NOx, CO, SO₂.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	- Limit vehicle speed to 40 km/h in villages. - Monitor the effects of dust in the villages. - Conduct a feasibility study for the construction of a village-bypass road for the Simandou Project (as needed). - Select the grain-size of the material covering the airstrip to optimize dust emission reduction.	Very Low
	Noise	Background noise at the airstrip site and nearby villages will comply with ambient noise level guidelines during the day and at night. Background noise is higher at night from the chirping of insects.	Construction: - Earthworks. - Construction activities.	Increased noise levels during construction.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Short	-	Very Low	Limit activities to during the day (7:00-20:00).	Very Low
			Operation: Aircraft takeoffs and landings (small aircrafts, type Dash 8).	Increased ambient noise levels in neighbouring villages during airstrip operation.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	Limit air transport activities to during the day (7:00 – 20:00), except in the case of emergency.	Low

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BIOLOGICAL ENVIRONMENT	Vegetation	Airstrip is located on a plateau occupied by grassland savanna interspersed with shrubs.	Construction and Operation: - Site clearing (airstrip and section of road to be re-routed). - Presence of machinery and temporary storage of hydrocarbons.	- Loss of 56 ha of grassland savanna (airstrip: 50 ha, road: 3 ha, area for debris and material storage: 3 ha). - Destruction of some shrubs <i>Vitex Doniana</i> (<i>Monographie nationale</i> classified endangered species).	Eco. Value: Low Socio. Value: Low Value: Low	Medium	Low	Local	Long	-	Low	- Mark the projected site footprints with stakes and ribbons to ensure deforestation and land clearing are limited to the required areas. - Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers).	Low
			Operation: - Aircrafts flying over the area. - Presence of diesel for fuelling generators.	Fire-hazard, spreading by vegetation following an aircraft crash or by incorrect handling of diesel.	Eco. Value: Low Socio. Value: Low Value: Low	Low	Low	Local	Medium	-	Low	- Maintain firewall zones inside the fenced-in area and around the tanks. - Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers). - Avoid disturbing the wooded area southwest of the airstrip.	Negligible
	Fauna	The grassland savanna has low faunal habitat potential. Habitat degradation and site disturbance (by farmers) also contributes to minimal faunal use.	Construction: Earthworks and construction.	Disturbance of peace in the area during construction.	Eco. Value: Low Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low		Low
			Operation: Air traffic (takeoffs and landings).	- Disturbance of peace in the area from air traffic. - Risk of collision with livestock.	Eco. Value: Low Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	Fence-in the aerodrome (airstrip, buildings, infrastructure).	Low
	Biodiversity	The site planned for the airstrip does not constitute an essential habitat; but a modified habitat. <i>Vitex doniana</i> is the only species of vegetation with precarious status identified at the proposed site (this species is abundant throughout Guinea).	Construction and operation: - Site-clearing and earthworks. - Operation of facilities.	- Destruction of approx. 56 ha of modified habitat with a low-ecosystem value. - Destruction of some species of the <i>Vitex doniana</i> shrub (classified as a threatened species in the <i>Monographie nationale</i>).	Eco. Value: Low Socio. Value: Low Value: Low	Medium	Low	Local	Long	-	Low	- Clean the construction machinery before transporting it into the Simandou project area to avoid propagation of invasive foreign species or other undesirable contaminants. - Mark the projected site footprints with stakes and ribbons to ensure deforestation and land clearing are limited to the required areas and to protect the small wooded area southwest of the airstrip.	Very Low

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HUMAN ENVIRONMENT	Vulnerable Groups	Vulnerable and/or disadvantaged groups/individuals can be found in the project area.	Construction and operation: - Construction activities. - Aerodrome operation.	- Risk that vulnerable and/or disadvantaged groups/individuals will not be able to benefit from the project because of social exclusion. - Increased security risk for vulnerable persons (e.g., sick, handicapped). - Increased significance of harmful impacts of the project on vulnerable groups/individuals.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Short	-	Low	- Before project works begin, identify vulnerable and/or disadvantaged groups/individuals through the Community Liaison Officers. - Consult vulnerable and/or disadvantaged groups/individuals to ensure they are adequately informed so that the objectives, impacts, potential dangers, and security measures of the project are understood. - When necessary, offer assistance to more vulnerable groups who could experience stress from the overhead flying of aircrafts at low altitude.	Negligible
	Gender	Traditional social customs are such that women are less involved in decision making and distribution of wealth.	Construction and operation: - Construction activities. - Aerodrome operation.	- Improve the conditions of women through social investment initiatives. - Development of income-generating activities for women.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	+	Medium	- Ensure that the women are consulted and sufficiently informed (within the framework of the consultation program, associated with the implementation of a plan for mitigation and improvement of project impacts and risks). - Improve the conditions of women through social investment initiatives (see <i>Community Development Plan</i>, section 7.3.4).	Medium
	Induced Migration	The local population lives on subsistence agriculture. Currently, the availability of land and natural resources is sufficient.	Construction and operation of the Preparatory Works' infrastructure.	Increased migratory population into the adjacent villages, potentially creating: - Risk of social tension if workers are hired from outside the area. - Land-access problems, accompanied usually by conflict between current owners and newcomers. - Increased pressure on natural resources and cultivable lands that currently ensure the livelihoods of the local population, possibly compromising availability. - Increased pressure on existing public service infrastructure, possibly compromising quality. - Risk of social and cultural transformation.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	-	Medium	Migratory control in conformance with the New Arrivals Management Plan (section 7.3.5) : - On a regular basis, inform the local and national populations about the development of the project, the project's schedule, the amount and type of work needed and the recruitment periods. - Monitor the demographics of the Simandou zone in order to plan interventions based on the population capacity of the area. - Through publicity campaigns (for the entire project), specify that no one will be hired without registering at the project office beforehand. - Hiring for Rio Tinto will be done on a priority basis for the local population (in the case of equal competency) in order to reduce immigration. - Train the local population so that they are qualified to gain employment.	Low
	Health	There is currently a doctor and an HIV/AIDS policy at Canga East camp.	Construction: Presence of workers.	Risk of increased contagious disease transmission (STI, HIV/AIDS, etc.).	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Short	-	Low	- Implement an awareness/prevention program on health risks with a local NGO that targets the workers and communities. - Implement Rio Tinto's HIV/AIDS strategy.	Low
		Existing Rio Tinto HIV/AIDS, malaria & health policies.	Operation: - Aircraft takeoffs and landings. - Night-time lighting (during medical emergencies).	- Increased risk on stress levels in communities, related to the presence of aircraft flying overhead at low altitudes. - Disturbance caused by emission of dust caused by aircraft manoeuvring and traffic on rural paths. - Nuisance due to night lighting in the event of a medical emergency.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	-	Medium	- Select the grain-size of the material covering the airstrip to optimize dust emission reduction. - Limit the air transport activities to during the day (between 7:00 and 20:00), except for emergencies. - Limit the speed of vehicles in the villages to 40 km/h. - Direct emergency lighting in the direction of the track and towards the ground, to avoid disturb the nearby communities. - Monitor the disturbances caused by the airstrip (noise, dust, light). - When needed, implement measures for dust abatement or investigate the possibility of covering the airstrip.	Low

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HUMAN ENVIRONMENT	Safety	Rio Tinto's existing safety policy.	Construction: • Earthworks and construction. • Route N-1 relocation. • Presence of machinery and temporary hydrocarbon storage.	• Safety risk for farmers crossing the construction area to get to their fields (using their usual path). • Safety risk for Route N-1 users. • Fire hazard caused by the presence of hydrocarbons.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Short	-	Medium	• Fence-in construction area to protect farmers and livestock. • In cooperation with communities concerned, clear new trails to replace those cut off by the airstrip to enable farmers' access to their fields. • Keep existing road in operation until new section is commissioned. • Block access to old country trail after new section is commissioned. • Implement <i>Operational Guideline – Hydrocarbon Management</i>. • Ensure secure storage of hydrocarbons on-site. • Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers).	Low
			Operation: • Aircraft takeoffs and landings. • Transport of passengers to and from Canga East Camp. • Presence of the airstrip. • Presence of diesel for fuelling generators.	• Increased traffic through villages (passengers and service vehicles). • Risk of aircraft crashes, causing injury or death. • Risk of accident if a person or livestock should enter the airstrip area. • Risk of theft or vandalism on the site.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Long	-	High	• Fence-in the aerodrome (airstrip, buildings, infrastructure). • Security guard present on-site. • Limit vehicle speed to 40 km/h in villages. • Monitor the volume of traffic and safety in the villages along the course. • Conduct a feasibility study for the construction of a village-bypass road for the entire Simandou project, if necessary. • Maintain fire-wall zones inside the fenced-in area and around the tanks. • Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers).	Medium
	Land Use	Regional economy is based on agropastoral activities (farming and herding).	Construction: • Site clearing and earthworks. • Route N-1 relocation.	• Loss of approximately 56 ha of grassland savanna with potential use as pasture.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	-	Medium	• Mark the projected site footprints with stakes and ribbons to ensure deforestation and land clearing are limited to the required areas. • Implement the Community Compensation Program for the loss of natural resources (e.g. agricultural lands).	Low

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HUMAN ENVIRONMENT	Public Utility Infrastructure		Construction: • Site clearing and earthworks. • Relocation of Route N-1.	• Disturbance of traffic on Route N-1. • Interruption of trails used by farmers to access their fields.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Medium	Medium	Local	Short	-	Low	• Maintain traffic on rural trails and provide adequate road signs during construction. • Rehabilitate rural trails and other public infrastructure when construction is complete.	Very Low
			Operation: • Presence of airstrip. • Passenger transport.	• Increased traffic volume on Route N-1 and rural trails/	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	• In consultation with affected communities, clear new trails to replace those cut off by the airstrip to enable farmers to access their fields. • Limit vehicle speeds to 40 km/h in villages. • Monitor traffic in the villages, and if necessary, conduct a feasibility study for the construction of a village-bypass road for the entire Simandou project.	Very Low
	Employment	Limited employment is available in the Simandou region. Very high expectations from the population regarding job creation.	Construction and Operation: • Construction activities for proposed project infrastructure. • Operation of infrastructure.	• Strengthening of the relationship between Rio Tinto, its employees, and the local communities.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	+	Medium	• Implement the Labour and Working conditions management plan (see section 7.3.7). • Priority given to hiring of local workers, including women. • Train the local population so that they are qualified to gain employment. • Offer work conditions that exceed the standards of the Guinean Republic's Labour Code.	Medium
	Economic Benefits	High expectations from the population regarding socio-economic spin-offs.	Construction: • All construction activities.	• Creation of temporary construction jobs. • Local and regional socio-economic spin-offs generated by the presence of workers. • Poverty reduction.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Short	+	Medium	• Give preference to highly labour-intensive work techniques. • Grant contracts to local companies and communities. • Adopt a local goods and services purchasing policy. • Inform the population of available positions and prioritize local recruitment.	High
			Operation: • Operation of infrastructure.	• Permanent job creation. • Socio-economic spin-offs generated by the presence and maintenance of the aerodrome. • Poverty reduction.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	+	Medium	• Train the local population so that they are qualified to gain employment.	Medium
	Landscape	Airstrip location is only visible form the country trail and hamlet of Morisangarédou.	Operation: • Presence of airstrip and infrastructure.	• Alteration of the visual landscape.	Eco. Value: N/A Socio. Value: Low Value: Low	Low	Low	Local	Long	-	Low	• Harmonize the integration of the new infrastructure into the landscape.	Very Low