

Table 6.5 Summary of Risks and Residual Impacts and Mitigation Measures – Ouéléba Access Road

ENVIRONMENT	Component	Ecological Context	Impact Source	Description of Potential Risks/Impacts	Element Value	Degree of Disturbance	Impact Intensity	Impact Extent	Impact Duration	Impact		Mitigation/Improvement Measures	Residual Impact
										+/-	Impact Significance		
PHYSICAL ENVIRONMENT	Surface Water and Groundwater	No runoff water on the ridge of Simandou chain; water infiltrates directly into the substrate. Lowland streams are not extensive.	Construction: - Earthworks. - Disposal of construction debris. - Construction of nine (9) stream crossings. - Presence of machinery and temporary hydrocarbon storage.	- Risk of water quality deterioration due to sediment contribution and re-suspension. - Modification of surface drainage patterns. - Risk of contamination by accidental spilling of hydrocarbons.	Eco. Value: Medium Socio. Value: High Value: High	Low	Medium	Local	Short	-	Low	- Carry out works during the dry season, as much as possible. Otherwise, intercept and redirect surface run-off into vegetated areas to promote sedimentation. - Dispose of construction debris at a minimum distance of 50 m from waterways. - Design the infrastructures for crossing water courses based on the maximum flood levels. - Ensure secure storage of hydrocarbons on-site. - Refuel vehicles and construction machinery at 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. - Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Very Low
			Operation: - Road maintenance. - Fuel transport to the Ouéléba camp.	- Risk of sedimentary erosion along the road, thereby risking deterioration of water quality. - Risk of contamination in the event of a hydrocarbon spill during transport.	Eco. Value: Medium Socio. Value: High Value: High	Low	Medium	Local	Short	-	Low		Very Low
	Soil	Soil is of good quality as there is no industrial activity in the area.	Construction: - Deforestation and clearing of the work's site footprints. - Topsoil removal. - Earthworks. - Presence of machinery and temporary storage of hydrocarbons.	- Risk of erosion of stripped ground surfaces during the rainy season. - Risk of contamination in the event of a hydrocarbon spill.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Medium	Medium	Local	Short	-	Low	- Reduce the need for earthworks. - Preferably, work during the dry season. Otherwise, intercept and channel runoff water into vegetated areas to prevent erosion. - Re-use topsoil and non re-usable excavation material for rehabilitation of disturbed areas. - On unconsolidated deposit sites, protect sides and bottom of peripheral ditches with aggregate, riprap, or other materials to prevent erosion. - 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>.	Very Low
			Operation: - Road maintenance. - Fuel transport to the Ouéléba camp.	- Risk of erosion of stripped ground surfaces during the rainy season. - Risk of contamination in the event of a hydrocarbon spill.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Low	Low	Local	Short	-	Very Low	- Preferably, work during the dry season. Otherwise, intercept and channel runoff water into vegetated areas to prevent erosion. - Implement <i>Operational Guideline – Hydrocarbon Management</i>. - Ensure emergency spill kits are available on-site for immediate intervention in the event of a spill.	Negligible
	Air Quality	Air quality in the study zone is considered good, though brush fires in the dry season (Dec. to Feb.) can generate dense smoke plumes.	Construction: - Earthworks. - Machinery 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
			Operation: Machinery and vehicle traffic.	Air quality deterioration associated with re-suspension of dust from vehicle traffic on dirt roads.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low		Very Low
	Noise	There is no industrial activity in the study area. The closest facilities are located 1.5 km from Moribadou.	Construction: - Earthworks. - Operation of machinery.	Increased noise levels during construction.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Short	-	Very Low	Limit the construction activities to during the day (between 7:00 and 20:00).	Very Low
			Operation: Machinery and vehicle traffic.	Increased noise levels when road is in use.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	Limit speed of traffic.	Very Low

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BIOLOGICAL ENVIRONMENT	Vegetation	The road traverses mainly savanna habitat, disturbed by human activity and brush fires.	Construction: - Deforestation and site-clearing (access road right-of-way and debris disposal areas). - Presence of machinery and temporary hydrocarbon storage.	- Estimated loss of 15 ha of grassland savanna and disturbed savanna mosaic. - Risk of fire spreading through vegetation.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Medium	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. - Avoid disturbing gallery forest near the road right-of-way on the peak of the Simandou chain. - Ensure the timber from trees cut for the right-of-way is available to locals (based on consultation with traditional rights representatives from the village of Moribadou). - Restore altered landscapes with indigenous species of vegetation.	Low
			Operation: - Traffic. - Fuel transport to the Ouéléba camp.	- Increased pressure on forest resources caused by induced migration and facilitated land access. - Risk of fire spreading through vegetation.	Eco. Value: Medium Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	- Implement <i>Operational Guideline – Hydrocarbon Management</i>. - Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers). - Prohibit workers from exploiting forest resources. - Support the forest rangers of the classified forest of Pic de Fon.	Very Low
	Fauna	Habitat degradation on the east slope of Simandou chain and site traffic contribute to a low faunal potential.	Construction: - Deforestation. - Earthworks. - Presence of machinery and temporary hydrocarbon storage.	- Loss of faunal habitat. - Disturbance of the peace in the area during construction. - Sedimentary erosion along road risks impacting aquatic communities. - Risk of habitat destruction by fire.	Eco. Value: Low Socio. Value: Medium Value: Medium	Medium	Medium	Local	Short	-	Low	- Limit clearing to minimum required areas. - Preferably, work during the dry season. Otherwise, intercept and channel runoff water into vegetation areas for decantation. - Ensure surface water circulation is unobstructed. - Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Low
			Operation: - Road traffic. - Fuel transport to the Ouéléba camp.	- Increased pressure on faunal resources, associated with increased access to the hunting area, also linked to induced migration. - Disturbance of peace in the area. - Risk of collisions with animals. - Risk of habitat destruction by fire.	Eco. Value: Low Socio. Value: Medium Value: Medium	Low	Low	Local	Long	-	Low	- Prohibit workers from exploiting faunal resources. - Support the forest rangers of the classified forest of Pic de Fon. - Limit the speed of traffic, particularly in the zones of reduced visibility (bends in the road). - Implement <i>Operational Guideline – Hydrocarbon Management</i>.	Very Low
	Biodiversity	The site planned for the road 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. - Use of the road.	- Estimated loss of 15 ha of modified habitat with a medium faunal value. - Risk of introducing invasive foreign species. - Increased pressure on natural resources, caused by population migration into the area.	Eco. Value: Medium Socio. Value: Low Value: Medium	Medium	Medium	Local	Long	-	Medium	- Reduce the disturbance of (and encroachment into) the host communities to minimum required areas. - Avoid disturbing the gallery forests near the right-of-way on the Simandou chain. - Clean the construction machinery before transporting it into the Simandou project area to avoid propagation of invasive foreign species or other undesirable contaminants.	Low
				- Estimated loss of 0.2 ha of montane grassland (high ecosystem value). - Destruction of some species of <i>Vitex doniana</i> (species listed on the <i>Monographie Nationale</i>).	Eco. Value: High Socio. Value: Low Value: High	Medium	High	Local	Long	-	High	- Reforest the temporary construction areas and disturbed landscapes with indigenous species. - Prohibit workers from exploiting natural resources or depending upon them for food or other means, and implement a public awareness campaign. - Optimize the layout of the road in a way that protects the trees listed on the <i>Monographie Nationale</i> and the species used by the local population.	Medium

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HUMAN ENVIRONMENT	Vulnerable Groups	Vulnerable and/or disadvantaged groups/individuals can be found in the project area, who may suffer social exclusion from the rest of the population.	Construction and Operation: - Construction activities. - Dynamite activities. - Flow of traffic.	- Risk that vulnerable and/or disadvantaged groups and 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 the project's disturbances 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. - Pay particular attention to vulnerable groups, prior to carrying out activities involving dynamite (specifically, deaf individuals or those with reduced hearing). - In the case where compensation should be offered to vulnerable persons, provide additional assistance in thoroughly explaining the compensatory procedure in order to ensure understanding, and thus, proper compensation.	Negligible
	Gender	Traditional social customs are such that women are less involved in decision making and distribution of wealth.	Construction and operation of the Preparatory Works' infrastructure.	- 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). - Take into account women's concerns by identifying measures to limit the inequalities between men and women. - Favorize access to the women for direct and indirect employment opportunities of the preparatory works. - Equal treatment to both women and men if compensation is required. Offer additional assistance to ensure the security of the compensation measure. - 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 agricultural land that currently ensures 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	Existing Rio Tinto HIV/AIDS, malaria & health policies.	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. - Monitor the occurrences of malaria and implement a malaria control program conforming with Rio Tinto's corporate policy. - Implementation of Rio Tinto's HIV/AIDS strategy.	Low

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HUMAN ENVIRONMENT	Safety	The area through which the Ouéléba access road will pass is used by farmers to access their fields. Existing Rio Tinto safety policies.	Construction: - Dynamite activities. - Machinery traffic. - Presence of machinery and temporary hydrocarbon storage.	- Safety risk for farmers crossing the construction area to access their fields (pedestrian trails cut off). - Risk to the safety of workers and population during dynamiting (projection of debris). - Risk of accidents from increased traffic through villages. - Fire hazard from the construction site.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Short	-	Medium	- Ensure secure storage of hydrocarbons on-site. - Ensure the availability of fire-fighting equipment in case of accident (e.g., extinguishers). - Increase security of areas near existing fields & trails by using protective barriers, signs and surveillance. - Implement <i>Operational Guideline – Hydrocarbon Management</i>. - Use competent and highly-qualified personnel for blasting operations. - Implement a communication program to inform the local population of the dynamiting activities (in particular, vulnerable individuals).	Low
			Operation: - Traffic on road and through Moribadou village. - Fuel transport to the Ouéléba camp.	- Increased traffic through the village. - Increased risk of accidents for local population and livestock. - Fire hazard related to fuel transport.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Long	-	High	- Establish a safety perimeter around the dynamite zone and deploy security guards to ensure that no one enters the safety perimeter. - Give audible warnings before dynamiting operations. - Limit traffic speed to 40 km/h in pedestrian crossing areas. - Implement safety measures and train the personnel in conformance with Rio Tinto's corporate safety policy.	Medium
	Land Use	Crops are in lowlands several kilometres from Moribadou village. Grassland savannas near village liable to be used as pasture. Use of the forest and forest resources by the population.	Construction: - Deforestation and site-clearing. - Earthworks.	- Estimated loss of 0.6 ha of farmland (affecting a dozen farmers). - Loss of 10 ha of tree and bush savanna, its natural resources used by villagers (e.g., gathering of wood and medicinal plants, hunting). - Loss of grassland savanna (5 ha) potentially used for agriculture. - Loss of income for communities.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Long	-	High	- Optimize the site of the right-of-way in order to reduce the amount of agricultural land affected and number of persons affected. - Implement the compensation plan for loss of cultivable grounds and natural resources. - Carry out compensatory activities with adequate communication. - Ensure that trees cut down during deforestation activities on the projected work sites are made available to the local population (based on consultation with representatives of customary rights in the affected villages).	Medium
			Operation: Road network expansion.	Improved access to farmland and facilitated harvest transport.	Eco. Value: N/A Socio. Value: Medium Value: Medium	Medium	Medium	Local	Long	+	Medium	-	Medium
	Cultural Heritage	Presence of old village de Mamouroudou.	Construction: Construction work.	Access road runs close to the old village of Mamouroudou.	Eco. Value: N/A Socio. Value: High Value: High	-	-	-	-		Undetermined	- Study in progress to layout the path of the access road and determine the value of the old village site and smelter of Mamouroudou. - If necessary, optimize the route layout to protect elements of interest. - If site preservation is not feasible, the cultural heritage management plan will be implemented (see section 7.3.6).	Undetermined
	Employment	Limited employment is available in the Simandou region. Very high expectations from the population regarding job creation.	Construction and Operation: - Road construction activities. - Road maintenance.	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

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HUMAN ENVIRONMENT	Economic Benefits	Local population greatly values job creation.	Construction: Construction activities.	- Creation of temporary construction jobs associated with an estimated US\$1.5 million investment. - Local and regional socio-economic spin-offs generated by presence of workers. - Poverty reduction.	Eco. Value: N/A Socio. Value: High Value: High	Medium	High	Local	Short	+	Medium	- Hire local workers on a priority basis. - Give preference to highly labour-intensive work techniques. - Grant contracts to local companies and communities (e.g., road maintenance). - Adopt a local goods and services purchasing policy. - Inform the population of available positions. - Train the local population so that they are qualified to gain employment.	High
			Operation: Road use.	- Socio-economic spin-offs from maintenance of the access road. - Poverty reduction.	Eco. Value: N/A Socio. Value: High Value: High	Low	Medium	Local	Long	+	Medium		Medium
	Landscape	Moribadou village is screened by woods that greatly limit visual line of sight.	Operation: Presence of the new road.	Alteration of the visual landscape.	Eco. Value: N/A Socio. Value: Low Value: Low	Low	Low	Local	Long	-	Medium		Low