ENVIRONMENTAL ASSESSMENT

FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES ON 6710 IN BETHANIE CONSTITUENCY, ||KHARAS REGION-NAMIBIA

ENVIRONMENTAL SCOPING REPORT

FINAL

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junior baiano
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Today for Tomorrow CC/2011/7445

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Contents

List of Figures

List of Tables

Acronyms

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs
USTs	Underground Storage Tanks

EXECUTIVE SUMMARY

Junior Baiano Industrial Consultants (JBIC) cc has been engaged by **Luxury Investments Two Hundred and Sixty-Four (Pty) Ltd** to conduct an Environmental Impact Assessment (EIA) and develop an Environmental Management Plan (EMP) for the proposed minerals exploration activities on EPL 6710 in Bethanie Constituency, ||Kharas Region and to apply for an Environmental Clearance Certificate for the proposed projects.

The proposed establishment triggered the application for an environmental clearance certificate.

Anticipated Environmental Impacts

- Low potential environmental impacts because mineral exploration drilling and pits do not require vast pieces of land.
- Some of the areas are already disturbed farming lands in Bethanie.
- Adding on a management plan has been developed to mitigate any anticipated possible impacts of the project to the environment.
- Relative or moderate social impact (positive)

Social Impact

The project is generally expected to improve the socio-economic environment of Bethanie constituency through a major boost in business by means of integrations, employment and improved transport system on the long term. Interested and Affected Parties were notified of the project through site notices and newspaper adverts and all relevant information on consultation is covered in Chapter 4 of this document and Appendix A of the document.

Recommendation

It is concluded that most of the impacts identified during this Environmental Assessment can be addressed through the recommended mitigation and management actions for the proposed mineral exploration activities. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and durations. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

In this respect it is recommended that the proposed mineral exploration activities gets an approval and receive Environmental Clearance, provided that the recommendations described above and the EMP are implemented.

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Luxury Investments Two Hundred and Sixty-Four Pty Ltd herein referred to as proponent intends to explore further the graphite deposit that was found by J. Eloff in early 1928. Currently, there is mineral exploration going on EPL 3895 as well as a mining License within the EPL area. The proponent, looks forward to fully establish mining activities in the project area and they intent to explore the surrounding areas for further mineral deposits of graphite.

In this respect, the proponent intends to conduct mineral exploration activities on EPL 6710, in Bethanie constituency, ||Kharas Region-Namibia. However, mineral exploration is a prescribed activity under the Environmental Management Act (2007) that requires an environmental impact assessment to be carried out before project implementation, as such this Environmental Impact Assessment (EIA) was conducted to authorize the listed activities triggered by the project in terms of the Environmental Management Act (EMA), 2007, the EIA Regulations – 2012, the EIA policy of 1995 and international environmental treaties and conventions binding Namibia.

According to the Environmental Management Act (2007) and its Regulations (2012) the existing development requires an Environmental Clearance Certificate as specified in the following sections of the Act shown in Table 1: Listed Activities relevant to the project on the next page:

Table 1: Listed Activities relevant to the project

ACTIVITY	RELEVANT SECTIONS
MINING AND QUARRYING ACTIVITIES	- 3.1 The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992. -3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not. -3.3 Resource extraction, manipulation, conservation and related activities.

In respect of the commissioning of the mineral exploration activities, Junior Baiano Industrial Consultants cc has been consulted by the proponent to conduct an Environmental Impact Assessment to develop an Environmental Management Plan (EMP) for the undertaking of mineral exploration activities and to apply for an Environmental Clearance Certificate with the Directorate of Environmental Affairs under the Ministry of Environment, forestry and Tourism-Namibia.

1.2. PROJECT LOCATION

The mineral exploration activities are proposed on EPL 6710 covering Heigums, Akam 103 and Aukum Farms in Bethanie Constituency, ||Kharas Region.

The map below (Fig 1) gives an Arial view of the project site and exact project locality map.

1.3. INFRASTRUCTURE AND SERVICES

1.3.1. ACCESSIBILITY

An open road network exists. Access to the site is through the B4 highway to Lüderitz and the D446 road to Roshpinah.

1.3.2. TOPOGRAPHY, STORM WATER AND EXISTING USAGE

The area is relatively undulated, because of the landscape and surface terrain the storm water and floodwater flow channels flows from the west to East. The area is not prone to flooding but experience rain water runoff during the wet season.

1.3.3. INFRASTRUCTURE AND SERVICES

- Borehole water capability of the area allows for borehole drilling to satisfy the operation's water requirements.
- During exploration phase, mobile temporary toilets will be used and these will be managed by an independent contractor.
- Diesel and solar power will be used to power the operations.

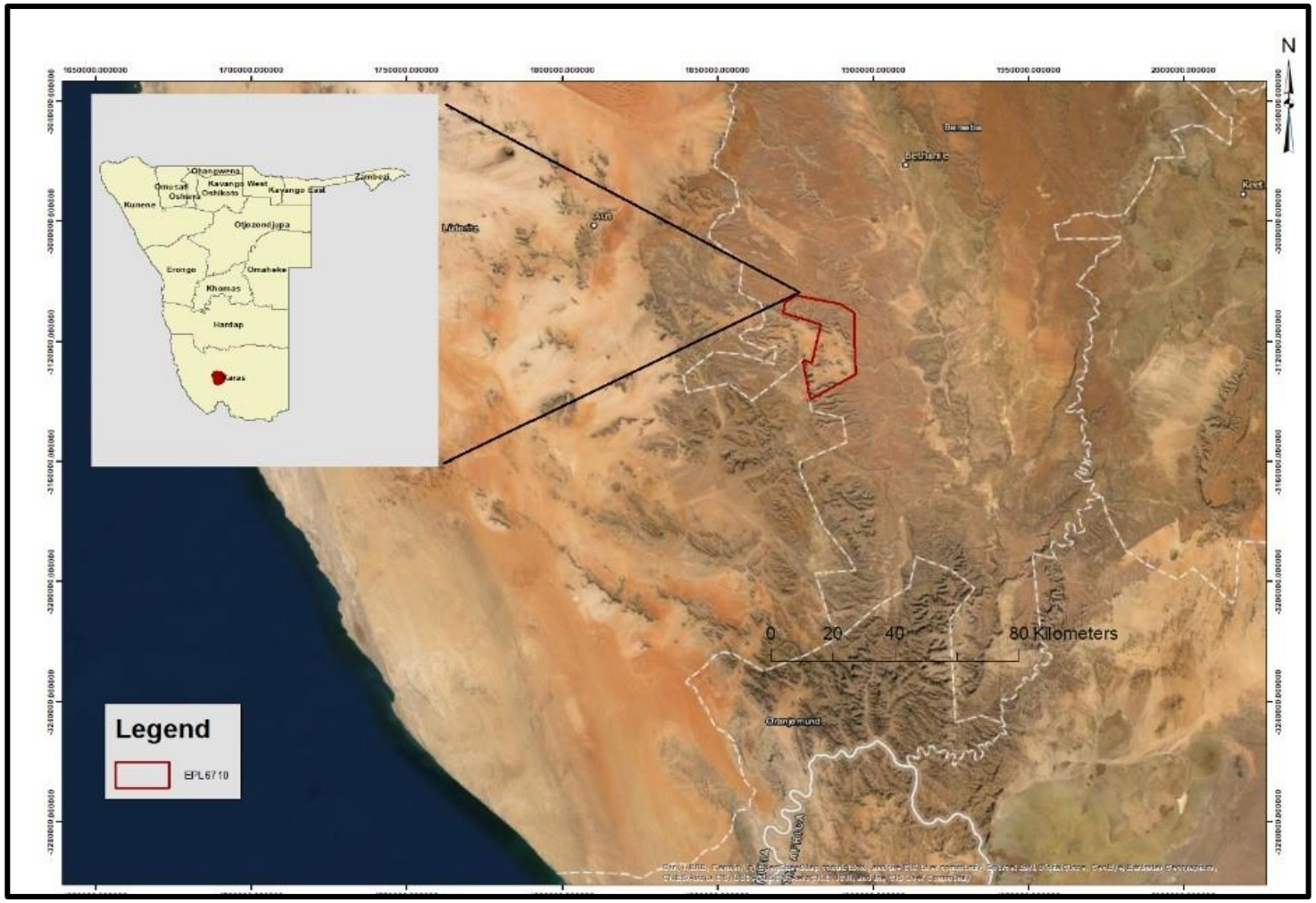

Figure 1: Proposed EPL Sites.

1.4. PROPOSED EXPLORATION METHODS

The following is the summary of the proposed exploration methodologies by Luxury Investments Two Hundred and Sixty-Four Pty Ltd with respect to EPL 6710:

- Satellite imagery;
- Geochemical sampling and analysis;
- Transient pulse;
- Radiometric;
- Ground Tellurics;
- Well Drilling (Stratigraphic).

The exploration methodology is aimed at delivering the highest probability of drilling success at the lowest cost – within an African frontier context, where little is known about the geology and where onshore seismic would not be effective or technically feasible. Layers of satellite, airborne and surface exploration data where direct and indirect indications of minerals can be found at low cost. The combination of these layers gives understanding of the geological trap geometry, the nature of the base metals available and a 3D model of the potential reserve. We list five of the most important layers in the diagram.

The overall aim of the proposed project activities (exploration / prospecting programme) is to search for potential mineral resources within prospect area, especially graphite.

The field-based support and logistical activities will depend on the levels of the regional, local or site-specific activities being undertaken. The activities will be supported by existing tracks and campsites / farmstead.

In the absences of existing tracks, the field team will created such new tracks depending on the scale of exploration (regional, local or site-specific activities).

In the absences of existing suitable campsite / farmstead, temporary camp will be setup at suitable locations in line with the EMP provisions. The size of the exploration camp will depending on the scale (regional, local or site-specific activities) of exploration being undertaken.

1.5. OBJECTIVES OF THIS STUDY

This Environmental Impact Assessment is being undertaken in compliance with the Environmental Management Act No.7 of 2007 and the Environmental Impacts Assessments Regulations (GN 30 in GG 4878 of 6 February 2012). It is a prerequisite by the law to have an Environmental Impact Assessment carried out before the implementation of the prescribed projects as elaborated in the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012). The main objectives of this study are as follows:

- To identify and provide mitigation measures of the expected impacts of the proposed establishment to protect the environment;
- To brief the Project Proponent of the legal and policy framework govern the proposed activity;
- To identify the possible changes in bio-diversity index that might be because of Project implementation in the area;
- To reflect on the various public concerns which will help the National Environmental Action Planners, economist and concerned stakeholders to make decisions;
- To come up with preventive and precautionary measures for the expected physical and biological environmental negative impacts associated with the proposed activities;
- To structure an effective environmental management plan for the sub division and servicing of the land facet to minimise and prevent negative impacts and maximise the positive impacts.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

An important part of the EIA is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed mineral exploration activities.

This section looks at the legislative framework within which the proposed development will operate under. The focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in Table 2 below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project

Table 2 - Legal Compliance

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	– Article 16(1) guarantees all persons the right to property, to acquire, own and dispose of property, alone or in association with others and to bequeath such property. – "The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes and the biological diversity of Namibia. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future." (Article 95(l)).	– The project will enable the full execution of right to practice any profession, or carry on any occupation, trade or business by availing necessary provisions such as practising any profession, or carry on any occupation, trade or business in the country. – Through implementation of the environmental management plan, the proposed mineral exploration activities will ensure conformity to the constitution in terms of environmental management and sustainability.
National Development Plans		– Namibia's overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP's) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The	– The proposed project will propel NDP4 targets in mining and development, adding on this will come with increased employment opportunities in the local communities.

		Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation.	
Archaeology	National Heritage Act 27 of 2004	– Section 48(1) states that "A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object"	– Any heritage resources discovered would require a permit from the NHC for relocation.
	National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	– "No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: – Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or – any other archaeological or palaeontological finds	– The proposed site of development is not within any known monument sites, both movable and immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission. – An archaeological impact assessment was deemed not necessary for this piece of land because of its locality and field reconnaissance survey conducted.
Environmental	Environmental Management Act 7 of 2007	– Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). – Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)).	– This Act and its regulations should inform and guide this EIA process. – The project proponent will ensure that all provisions of the mining EMP are implemented and regular environmental compliance auditing conducted by independent consultants.

		– According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment and Tourism or in a manner prescribed by the Minister. – Details principles which are to guide all EIAs	
	EIA Regulations GN 57/2007 (GG 3812)	– Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). – Details the requirements for what should be included in a Scoping Report (GN No 30 S8) an EIA report (GN No 30 S15).	– This Act and its regulations should inform and guide this EIA process.
	Pollution and Waste Management Bill (draft)	– This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. – The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable.	– The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste during construction or operation. – A waste management strategy that follows recycling, reuse and reducing will be commissioned throughout the operations.
	Soil Conservation Act 76 of 1969	– This acts makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia.	– The Project impact on soil will rather be localised, however this document aims at guiding the proponent during their mineral exploration activities to prevent soil

			erosion and contamination during operation.
	National Biodiversity Strategy and Action Plan (NBSAP2)	– The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	– Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and long term, and will propose methods and ways to sustain the local biodiversity.
	Hazardous Substance Ordinance 14 of 1974	– Provisions for hazardous waste are amended in this act as it provides "for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance; and to provide for matters connected therewith"	– The proposed Mineral exploration operations will ensure that all possible "hazardous" categorised substances and waste will be handled by a certified hazardous waste handler.
	Atmospheric Pollution Prevention Ordinance 11 of 1976;	– This regulation sets out principles for the prevention of the pollution of the atmosphere and for matters incidental thereto. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part	– The proposed mineral exploration activities will involve the use of combustible engines for vehicles and machinery, and thus appropriate vehicle servicing should be ensured to minimise pollution

		V outlines provisions for Atmospheric pollution by gases emitted by vehicles.	– Dust generation and release of other particulate matter should be minimised by following the dust suppression procedures in the EMP.
	Parks and Wildlife Management Bill of 2006;	– The act enacts the legal framework, to provide for and promote the maintenance of ecosystems, essential ecological processes and the biological diversity of Namibia, and the utilisation of living natural resources on a sustainable basis for the benefit of Namibians, both present and future, and to promote harmonious and mutually beneficial co-existence of humans with wildlife, to give effect to Namibian's obligations under relevant international legal instruments including the Convention of Biological Diversity – Provisions with regard to declaration of protected areas, entry into and residence are made in chapter V. Regulations on the protection of species of wildlife and plants are provided in Chapter VII of the Act.	– Because the proposed activities are to be conducted in proximity to protected areas, there is need to ensure that the Parks and Wildlife management bill is taken into consideration with great emphasis and compliance.
Forestry	Forest Act 12 of 2001	– Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1) – Provision for the protection of various plant species.	– The clearing of vegetation is prohibited (subject to a permit) 100m either side of a river. Certain tree species occurring in the area are protected under this Act. Permits must be obtained from MEFT in accordance with the Act.

			However, on site there are no trees that require clearing permit.
Water	Water Act 54 of 1956	– The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: – A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. – Prohibits the pollution of underground and surface water bodies (S23(1). – Liability of clean-up costs after closure/ abandonment of an activity (S23(2)). – Protection from surface and underground water pollution	– The proposed mineral exploration activities will be using a dry process, hence water requirements for operations are minimal since most of the water will be for sanitation and domestic usage. – All relevant permits for envisaged boreholes will be applied for with the relevant department.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.	– 135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the structure of such buildings of otherwise to prevent or extinguish fires, and to ensure the safety in the event of fire, of persons in such building;" (Ministry of Labour and Social Welfare). – This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.	– The proponent will employ several people from the local and shall ensure securing a safe environment and preserving the health and welfare of employees at work. This will include applying appropriate hazard management plans and enforcing Occupational Health and Safety (OHS) enforcement by contractors.

	Public Health and Environmental Act, 2015	– Under this act, in section 119: "No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	– The project will ensure compliance to the terms of the Act.
Mining	Minerals (Prospecting and Mining) Act, 1992	– The Minerals Act governs minerals prospecting and mining. The Act provides for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over minerals in Namibia; and to provide for matters incidental thereto. – The Act also ensures that mining entities undertake environmental responsibility which includes rehabilitation and waste management. – A new Minerals Bills is currently under preparation.	– This document has been conducted in compliance to the requirements of the Act, as well as ensuring that the sought-after mineral exploration authorisation is granted by the ministry of Mines-Namibia.
	Minerals Policy 2004	– The Minerals Policy is developed to ensure long-term sustainable growth in the mining sector of Namibia. One of the objectives of the Policy, relevant to EIAs is to ensure compliance with national environmental policy and other relevant policies to develop a sustainable mining industry.	– The fact that mining involved extraction/interaction with the natural resources, environmental responsibility will be ensured by the proponent as part of compliance to the Minerals policy. – Further on the policy calls for value addition, and the proposed project will entail mineral processing.
	Road Ordinance 1972	– Width of proclaimed roads and road reserve boundaries (S3.1)	– Although the project will not directly affect the major roads, the ore

Services and Utilities Infrastructure	(Ordinance 17 0f 1972)	– Control of traffic during operational activities on trunk and main roads (S27.1) – Infringements and obstructions on and interference with proclaimed roads. (S37.1) – Distance from proclaimed roads at which fences are erected (S38)	carrying trucks will at some point use the major roads. – No new road developments, power lines or sewer reticulation systems will be constructed, thus there will be minimal environmental impacts from Services and utilities infrastructure.

N.B: All identified crucial pieces of legislations will have to be adhered to by the proponent using different provisions and vehicles of compliance as indicated in their respective pieces of legislations. Where there is need to engage private consultants to facilitate compliance, the proponent is encouraged to consult qualified and certified personnel. Legal compliance auditing is to be done as part of all bi-annual reports to be conducted by the Environmental consultant.

Permits and licenses that are required, as part of compliance and authorization will have to be in place before operations commences. The most crucial license to be required before operations are as follows;

- Removal, destruction of indigenous trees, bushes or plants within 100 yards of stream or watercourse.
- Water abstraction permit, Effluent disposal permit
- Hazardous waste Storage/disposal /transportation permit
- Mineral Prospecting License

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. OVERVIEW

The proposed EPL 6710 falls within the Karas Region. //Karas is the southernmost region of Namibia, covering 161,235km² and 20% of the total surface area of the country. The region comprises of six constituencies: Keetmanshoop Urban and Rural, Berseba, Lüderitz, Oranjemund, and Karasburg.

The relief in the region is characterised by undulating hills with a variation in height above mean sea level. Height above mean sea level ranges from 434m in the south, to 526m in the west.

Figure 2: Current state of the receiving environment

Currently, EPL 6710 is covering several farm areas, all of which have some farming activities being conducted. In existence are Top-left: Farm houses, Top-right: Water supply and storage infrastructure, Bottom left-pre-existing access roads, which will be utilised during exploration and Bottom Right: Access control which will also be utilised during exploration prior to adequate consultation with the farm owner.

Additionally, the receiving environment has been disturbed by some farming and construction activities, hence the exploration will not threaten pristine environment.

3.2. CLIMATE

The The average annual rainfall varies from less than 50 mm in the south west (Namib Desert) to 250 mm in the northeast of the region. Not only is the average rainfall low, rainfall is also very unpredictable and localised. Western Karas region is part of a winter rainfall area, and is characterised by a climate regime that is quite different to the rest of the country. Notably this rainfall regime has led to the development of the distinct succulent Karoo biome, which is a global biodiversity hot spot of high conservation value.

Extremely high maximum temperatures above 360°C are recorded for this region – overall among the highest in Namibia. At the other extreme, the coldest average minimum temperatures are recorded for this region at below 20oC. People in Karas Region mainly practise small-stock farming with sheep, goats and cattle.

The nearest town is Aus, 86km away from Aukam. The climate around Aus is a typical desert climate with warm to hot days and cooler nights and little rainfall. Summer temperatures often rise above 40°C while winter temperatures are typically 20° C to 25° C during the day, but can drop below 0°C at night. Rainfall can occur in all seasons, but is predominant in the summer months of January to March. The average annual rainfall is around 150 mm.

3.2.1. FAUNA

Important fauna species identified around the EPL 6710 are described in detailed in Annex 2. It is estimated that at least 72 species of reptile, 6 amphibian, 62 mammal and 134 bird species occur in the general/immediate EPL 6710 area of which a large proportion are endemics species. Endemics species include at least 58% of the reptiles, one (17%) of the amphibians, 17% of the mammals and 1.5% of all the birds known, or estimated to occur in the general area. Although endemics species are known to occur from the general area, it is currently not clear if any of these are associated with the proposed EPL area.

The reptile diversity is varied in the area with a high percentage of unique and/or endemic species (58%). Species such as the various endemic *Pachydactylus* geckos, *Meroles* lizards, Nama Padloper tortoise (*Homopus solus*) and Mountain Adder (*Bitis xeropaga*), often associated with rocky substrates, are important in the general area. Altogether 27 reptile species are expected to occur in the general area.

Due to the lack of permanent surface water, amphibians are not well represented in the general area although will emerge after rains and be associated with rock pools and other temporary water bodies in the area. The marbled Rubber Frog (*Phrynomantis annectens*) is the only endemic expected from the general area. Altogether 1 amphibian species was observed/confirmed in the general area. No endemics were observed/confirmed in the general area.

Mammals, especially small mammals (bats and rodents) and carnivores are well represented in the area although only 16% is classified as endemic to Namibia. Due to the persecution, fencing and competition with domestic stock over years, very few larger mammal species, especially bigger carnivores, abound. Mountain zebra (endemic) are often also persecuted as “fence destroyers” in the mountainous areas of southern Namibia. Altogether 28 mammal species are expected to occur in the general area, no endemic species are expected to occur within the EPL 6710 area.

Birds are well represented in the general area with many more species known and expected to occur in the area, but excluded here due to either being aquatic or highly nomadic and not necessarily permanently associated with the area. It is expected that only two bird species known or expected to occur in the general area are endemic species. Altogether 67 bird species are expected to occur in the general area.

The eventual actual prospecting (mining/excavation) area(s) would be relatively small and thus only have localised negative implications on the environmental and associated fauna. The associated infrastructure (e.g. roads & other associated infrastructure, etc.) would have a similar effect. The overall impact on the local fauna (e.g. reptiles, amphibians, mammal & birds) and associated habitat destruction would be relatively small. Good planning prior to prospecting (infrastructure development) and access route(s) development as well as adhering to proposed mitigation measures.

3.3. FLORA

The general Aukam/Bethanie area is commonly referred to as the Dwarf Shrub Savannah (Giess, 1971), or the Karas Dwarf Shrub land. The vegetation structure is classified as sparse shrub land, dominated by grasslands and low shrubs (Mendelsohn et al., 2002).

Important flora species identified around EPL 6710 are described in detailed in Annex 2(Fauna and Flora Study).

It is estimated that at least 37-59 species of larger trees and shrubs (>1m) (Coats Palgrave 1983, Curtis & Mannheimer 2005, Van Wyk & Van Wyk 1997) and at least 31-43 (approximately 49 species) grasses (Müller 2007, Van Oudshoorn 1999) occur in the general area. If herbs and “lower” plants (e.g. algae, lichens, etc.) were to be included, this would undoubtedly increase the floral composition of the area tremendously.

The three main habitats (this study) as identified in the general area (i.e. plateau, drainage lines (ephemeral rivers) & pan areas) resulted in the Plateau area(s) with at least 10 common shrub/tree species compared to 7 common shrub/tree species in the drainage lines and 4 common shrub/tree species in the pan areas.

Unique habitat (e.g. rocky outcrops & ridges) are often habitat to unique and endemic plants such as lithops colonies. Knowledge and identification of such areas beforehand could be used to prevent localised destruction and development in these potentially sensitive areas.

The area has been heavily over utilised in the past as a result of continuous heavy stocking rates with domestic stock consequently affecting the vegetation in the area. Palatable grasses have declined at the expense of unpalatable annual species and herbs. All this affects the local habitat over time. The variability and unpredictability of the rainfall contributes to this problem and makes livestock farming marginal in this area.

3.4. GEOLOGY

The The regional geology of southern Namibia is dominated by the sedimentary rocks of the Nama Group that form the plateau of the Great Escarpment in the region. The plateau is formed by Basal Beds overlain by the Schwarskalk Series of the Nama system. The Basal Beds are described by de Kock (1935) as coarse grits, agglomerate and consolidated eluvium with unstratified arkosic grits. These are overlain by compact finer grained layered quartzite that make up the lowermost unit of the Nama Group. Erosional windows in the Nama cover rocks, expose schists and gneisses belonging to the Namaqualand granite-gneiss complex. This basement complex consists of medium to coarse grained granitic rocks locally with a gneissic texture. This texture is most common around lenses of muscovite-biotite schist and ferromagnesian rocks. The gneiss complex is intruded by diabase dikes and quartz-feldspar-rich pegmatites most of which strike parallel to the strike of the host rock.

Graphite mineralization at Aukam is of the vein or lump type and occurs as massive lenses and veins and more rarely as minor disseminated patches hosted by variably altered granite of the Namaqualand Metamorphic Complex. Kaolinite is the most widespread alteration mineral, while strong epidotization occurs in the immediate vicinity of the graphite veins and lenses. Iron oxides in the form of hematite and limonite are commonly associated with the graphite mineralization. An east-west trending shear zone cuts through the property and is traceable on surface for about 400 metres before disappearing under cover, but which an historical report indicates may extend for four kilometres.

3.5. SURFACE AND GROUND WATER ASSESSMENT

A reconnaissance level field assessment was conducted to confirm the current conditions in the area and to identify potential hydrologic risks associated with establishment of the proposed project. The general drainage network is dominated by small, ephemeral rivers that flow only when it rains, otherwise they are dry most of the year. The average elevation is 1,300 mamsl, ranging from 1,250 mamsl, at the lowest point on the EPL area. The study area is mainly comprised of marble ridges; and Ephemeral River channels which provides for the majority of the drainage pattern in the area as.

Vulnerability assessment of surface water covered possible runoff, the presence of source factors and major flow routes such as ephemeral river channels, valleys and gullies as

pathways and the presence of surface water body as a target. The groundwater assessments covered hydraulic properties and thickness of the unsaturated and saturated zones derived from geological and hydrogeological data. However, groundwater or surface water will only be vulnerable to contamination if there are contaminant sources, if there are pathways for contaminant migration and there are targets (surface water or groundwater) present within the project area. Overall, the limited local groundwater resources found in the area form part of the unconfined aquifer system that is highly vulnerable to any sources of pollution, however mineral exploration activities. During mineral exploration groundwater levels, ground water quality, surface water quality and source pollution monitoring will be conducted on monthly basis to flag any threat to the water resources system.

Figure 3: Pre-existing surface water channels

The EPL 6710 area, is surrounded by several stormwater channels, streams and rivers which are all however seasonal, but are important habitats. It is however crucial to ensure that surface water pollution prevention members will form part of the drilling programme.

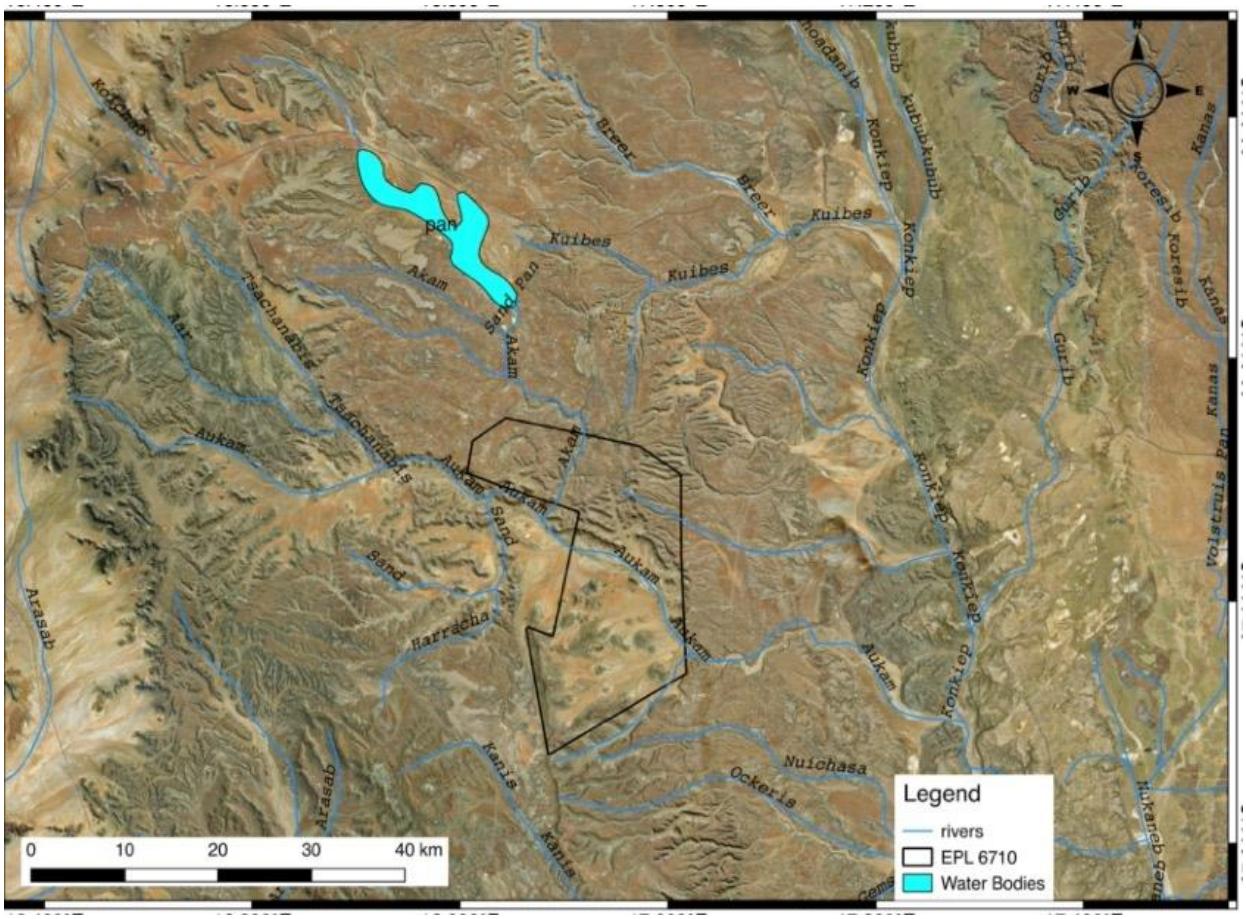

Figure 4: Surface water on EPL 6710

3.6. SOCIO-ECONOMIC ENVIRONMENT

Namibia's southernmost and largest region covers 161,235 km² and comprises about 20 percent of the total surface area of Namibia (//Karas Regional Council (KRC), n.d.). The Hardap Region in the North, Botswana and South Africa in the East, South Africa in the South and the Atlantic Ocean in the West border it. The // Karas Region has 7 constituencies: Berseba, Keetmanshoop Rural, Keetmanshoop Urban, Karasburg East, Karasburg West, Oranjemund and !Nami=nüs, formerly Lüderitz Constituency (Government of Namibia (GRN), 2014a; National Statistics Agency (NSA), 2014a). There are 53 proclaimed towns and villages in Namibia of which 10 are in the// Karas Region: Berseba, Tses, Koës, Bethanie, Keetmanshoop, Aroab, Karasburg, Rosh Pinah, Oranjemund and Lüderitz (NSA, 2014b).

Keetmanshoop is the regional capital and is also the seat of the government in //Karas, referred to as the //Karas Regional Council. Keetmanshoop and Karasburg are governed by municipalities, Lüderitz and Oranjemund by town councils, Berseba, Bethanie, Koës and Tses by village councils (KRC, n.d.). Oranjemund was proclaimed a public town in 2012, having been managed as a 'closed' company town since its establishment in 1936 (De Beers

Group of Companies (DeBeers), 2012). The demographic information provided indicates the following:

- There has been a proportional decline in the //Karas Regions population as only 3.66% of the country's population live in the region and the region's population is growing at a slower rate (1.1%) than the national growth rate (1.4%);
- There is high migration rate from especially the north central regions to the //Karas region;
- There is only slightly more males than female indicating that either migratory male job seekers had moved away from the region (an possible explanation for the negative growth rate in the Lüderitz/!Nami=nüs constituency) or that more females are being employed by companies which historically employed men;
- A high proportion (63%) of the population is of working age (between 15 and 59 years);
- There is a large urban population (54% compared to 43% nationally) and 92.4% of the residents in the Lüderitz/!Nami=nüs constituency live in the town;
- The main source of income in the region is wages and salaries (72%) and the fishing and mining industries are the largest employers, and;
- There is a high labor force participation rate of 75.4% for the region
- The proposed mineral exploration activities, will most probably pave way for more mining activities in the region, if commercially viable deposits are established in the area.

4. CHAPER FOUR: PUBLIC CONSULTATION

4.1. OVERVIEW

The public consultation process forms an important component of the Environmental Assessment process. It is defined in the EIA Regulations (2012), as a "*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters*" (S1). Section 21 of the Regulations details steps to be taken during a given public consultation process and these have been used in guiding our process.

Formal public participation has taken place via public consultations and focal meetings, newspaper announcements to inform the public that such a large-scale project is under consideration. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 6 February 2012 and the World Bank EIA standards and project ToR.

Its overriding goals have been to ensure transparency in decision making and to.

- ✓ Ensure stakeholder concerns are incorporated in project design and planning;
- ✓ Increase public awareness and understanding of the project and
- ✓ Enhance positive development initiatives through the direct involvement of affected people.

The objectives of the public participation is to build credibility through instilling integrity and of conducting the EIA, Educate the stakeholders on the process to be undertaken and opportunities for their involvement and build stakeholders by establishing an agreed framework accordingly. This requires accessible, fair, transparent and constructive participation at every stage of process. Inform stakeholders on the proposed project and associate issues, impacts and mitigation and using the most effective manner to disseminate information.

In this section of the report, the results of consultations with various classes of stakeholders are summarized. The results of consultations with other stakeholders and community members who took part in this EIA are attached as Appendices.

The consultation was facilitated through the following means:

- A Background Information Document (BID) containing brief project description, the EIA process and notice of invitation to participate. BID was shared with stakeholders and community members.
- Invitation to participate as published in the local newspapers (The Confidante and the New Era) as shown in Table 3 below and Appendix A of this document.
- Announcement of EIA process verbally in the common public meeting points.
- Placement of a public notice at the project site and Traditional Authority offices.

Table 3: Details of public notification of the EIA study

Method	Area of Distribution	Language	Date Placed
The Confidante	Country Wide	English	15/11/18, 22/11/18
New Era Newspaper	Country Wide	English	16/11/18, 23/11/18
Site Notice		English	23/11/18
Public Meeting	Karibib Town Council Usab Office	English, Afrikaans	30/11/18

Figure 5: EIA Notices

- ✓ *Key Stakeholder Engagement Meeting*

A consultative meeting was held with key stakeholders and local residents on the 5th of March 2021 at Aukam farm. The meeting was well attended, with all the affected farmers present. A description of the project was presented and opportunity given for those present to give their comments and concerns. Those present actively engaged once the floor was open for discussion. Minutes of the meeting are given in Appendix A of this document as well the attendance register explaining the project and the EIA study. Given below are the details of the meeting which was held:

Other I&APs were allowed to register on a willing basis to the EIA team. A database was compiled containing their names and correspondence details. The registration was accomplished over a period of 21 working days. The public meeting was held on 5th March 2021and detailed information on points of concern please refer to **Appendix A: 5** of this report.

- ✓ *Consultation with Stakeholders*

Experts in relevant fields, leaders of thought in environmental matters, Organs of the State local communities were consulted for their opinions on issues relating to the potential ecological and socio-economic impacts of the proposed project. This provided the opportunity for stakeholders and the public at large to engage in the process and to make comments or express their concerns regarding the proposed development.

Figure 6: Photographs of the meeting held during stakeholder consultation process.

- ✓ *Draft Scoping Report*

The Draft Scoping Report of the EIA was prepared and made available to the public on the 30th of June 2021. All stakeholder's comments received were incorporated and gave rise to the final Environmental Scoping Report incorporated herein.

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. OVERVIEW

Luxury Investments Two Hundred and Sixty-Four Pty Ltd has committed itself to sustainable land development through drafting a corrective action plan for all anticipated environmental impacts associated with the project. This is also in line with the Namibian Environmental Management legislation and International best practices mineral exploration and related activities.

The proponent will implement an Environmental Management Plan (EMP) to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed by Junior Baiano Industrial Consultants (JBIC) cc to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

5.2. IMPACT ASSESSMENT METHODOLOGY

An impact assessment matrix was used to assess all possible impacts of the project on the environment. In line with Namibia Environmental Management Act No. 7 of 2007 and the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012) with the direction on impacts analysis the following impact assessment criteria was identified by the team and deemed suitable.

Table 4: Impact Screening Criteria

Aspect	Description
Nature	Focuses on the type of effect that the project will have on environmental components. Addresses questions related to “what will be affected and how?”
Extent	Spatial extend of the project and anticipated spatial extend of impacts indicating whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15km of the area); regional (limited to ~100km radius); national (extending beyond Namibia’s boarders).
Duration	This looks at the temporal issues pertaining to time frames e.g. whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.

Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).
Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a “no-go” implication regardless of any possible mitigation (an alternative route should be used).

The application of the above criteria will be used to determine the significance of potential impacts using a combination of duration, extent, and intensity/magnitude, augmented by probability, cumulative effects, and confidence. Significance is described as follows:

Table 5: Impact Rating Criteria

Significance Rating	Criteria
Low	Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given development description. This would be allocated to impacts of any severity/ magnitude, if at a local scale/ extent and of temporary duration/time.
Moderate	Where the impact could have an influence on the environment, which will require modification of the development design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term.
High	Where the impact could have a significant influence on the environment and, in the event of a negative impact the activity(ies) causing it, should not be permitted (i.e. there could be a ‘no-go’ implication for the development, regardless of any possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond.

5.3. IMPACT ASSESSMENT

By subjecting each of the potential impacts to the matrix above, the EIA team established the significance of each impact prior to implementing mitigation measures and then after mitigation measures have been implemented. Some of the mitigation measures are mentioned but detailed descriptions of management actions are contained in the accompanying EMP.

Table 6: Environmental impact assessment matrix for the proposed Resources Exploration activities on EPL 6710

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	Topography and Landscape	Alternation of existing topography	Operation	Short term	Low	Local	Direct	Probable	Low
	Topography and Landscape	Topographic changes and Visual Impact from overburden material.	Operation	Medium term	Moderate	Local	Direct	probable	Moderate
SOILS	Soil	Loss of usable topsoil material	Operation	Long term	Low	Local	Direct	Highly probable	Moderate
	Soil	Contamination to soil from waste disposal	Operation	Long term	Moderate	Local	Direct	Improbable	Low
LAND CAPABILITY	Socio Economic Activities	Land utilisation for the benefit of the people	Operation	Long term	High	National	Indirect	Probable	Moderate
	Terrestrial ecology and biodiversity	Decreased in vegetated land (biodiversity zones) within the Exploration zones	Operation	Long term	Low	Local	Direct	probable	Low

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Groundwater quality	Groundwater source and soil may be polluted vehicular movements, mineral exploration drilling, etc.	Operation	Short term	High	Local	Direct	probable	Moderate
	Surface water quality	Increased sediment load from exposed surfaces	Operation	Short term	Low	Local	Direct	Probable	Moderate
	Surface water quality	Stormwater generation from, the large open surface area may create stormwater which may result in pollution.	Operation	Long term	High	Local	Direct	Highly Probable	Moderate
	Surface water quality	Increase in surface water run- off from a large open surface area on site because of vegetation removal	Operation	Short term	Moderate	Local	Direct	Improbable	Low
AIR QUALITY	Air Quality	Generation of dust during drilling and camp site construction.	Construction, operation	Short term	Low	Local	Direct	Probable	Moderate
	Noise Pollution	Generation of dust during drilling and camp site construction.	Construction and operation	Long term (operation)	Low	local	Direct	Probable	Low
	Topography and Landscape	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Low	Local	Direct	Probable	Moderate

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Terrestrial ecology and biodiversity	Loss of habitat, and clear or damage to vegetation	Construction and Operations	Long term	Moderate	Local	Direct	Probable	Low
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and clearing or damage to vegetation	Construction, Operation	Short Time	Moderate	Local	Direct	Highly Probable	High
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	Terrestrial ecology and biodiversity	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	Terrestrial ecology and biodiversity	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species due to clearing of land for parking space.	Construction	Short Term	Moderate	Local	Direct	Highly Probable	Moderate
	Terrestrial ecology and biodiversity	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	Moderate
Socio-economic	Socio Economic Activities	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	Moderate Positive

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Socio Economic Activities	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	Moderate Positive
	Socio Economic Activities	Job creation construction workforce	Construction and operations	Long term	High	Local	Direct	Highly Probable	Moderate Positive
	Socio Economic Activities	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	Moderate Positive
	Contributing to the National economy	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	High Positive
	Contribution to Local Economy	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	Moderate Positive

5.4. Risk Analysis

Based on the impacts identified by this study during site visit, process analysis, desk study and stakeholder consultations conducted, an integrated environmental risk analysis was carried out using the DEFRA Guidelines for Environmental Risk Assessment and Management 'Green Leaves III' (latest edition) as well as the international Procedures for best practices. The risk analysis shows that the project will have some negative impacts on the environment (Biophysical, economic, social and political), it has been also noted that the project will deliver some positive impacts on the receiving environment, as well as on social and economic aspects. In order to prevent or mitigate negative impacts and to increase positive impacts a coordinated project management strategy will be put in place taking into cognisance environmental issues associated with the project implementation.

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Appendix A: Public Consultation Documents

1. Background Information Document
2. Newspaper Adverts
3. Site Notice
4. Meeting Attendance Register
5. Meeting Minutes
6. Questionnaires

Appendix B: Site Information

1. Locality Map
2. Specialist studies

Appendix C: Consultancy Team resumes