

**SERVICES PROVISION TO THE LEOPARD VALLEY
SMALLHOLDINGS ON THE REMAINDER OF
GOCHEGANAS NO. 26 AND REMAINDER OF LEOPARD
NO. 218, WINDHOEK**

UPDATED ENVIRONMENTAL MANAGEMENT PLAN



Assessed by:



Assessed for:

**Japonica Investments
Nineteen (Pty) Ltd**

June 2023

Project:	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE SERVICES PROVISION TO THE LEOPARD VALLEY SMALLHOLDINGS ON THE REMAINDER OF GOCHEGANAS NO. 26 AND REMAINDER OF LEOPARD NO. 218, WINDHOEK	
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1 INTRODUCTION

Japonica Investments Nineteen (Pty) Ltd requested Geo Pollution Technologies (Pty) Ltd to update their environmental management plan (EMP) for services provision for smallholdings on the farms Remainder of GocheGanas No. 26 (4967.8964 ha) and Remainder of Leopard No. 218 (321.3094 ha) (Figure 1-1). The farms are owned by Japonica Investments Nineteen (Pty) Ltd and the Proponent has an existing environmental clearance certificate (ECC) which now requires renewal. In order to renew the ECC an updated EMP is required which must be submitted to the Ministry of Environment, Forestry and Tourism. Japonica Investments Nineteen obtained approval for subdivision of the two farms into 63 portions. Five portions are earmarked for road development and 58 portions will be sold and mainly developed as smallholdings. As part of the proposed project, services in the form of water supply, roads and waste removal will be provided to the various portions, as required.

This updated EMP provides management options to ensure impacts of the services provision are prevented or minimized. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the various phases (development, operational and decommissioning) of the services provision project. All employees, contractors and sub-contractors taking part in the project should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of the services provision project;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the services provision project;
- ◆ to monitor and audit the performance of construction and operational personnel in applying such controls; and
- ◆ to ensure that environmental training is provided to all construction and operational personnel.

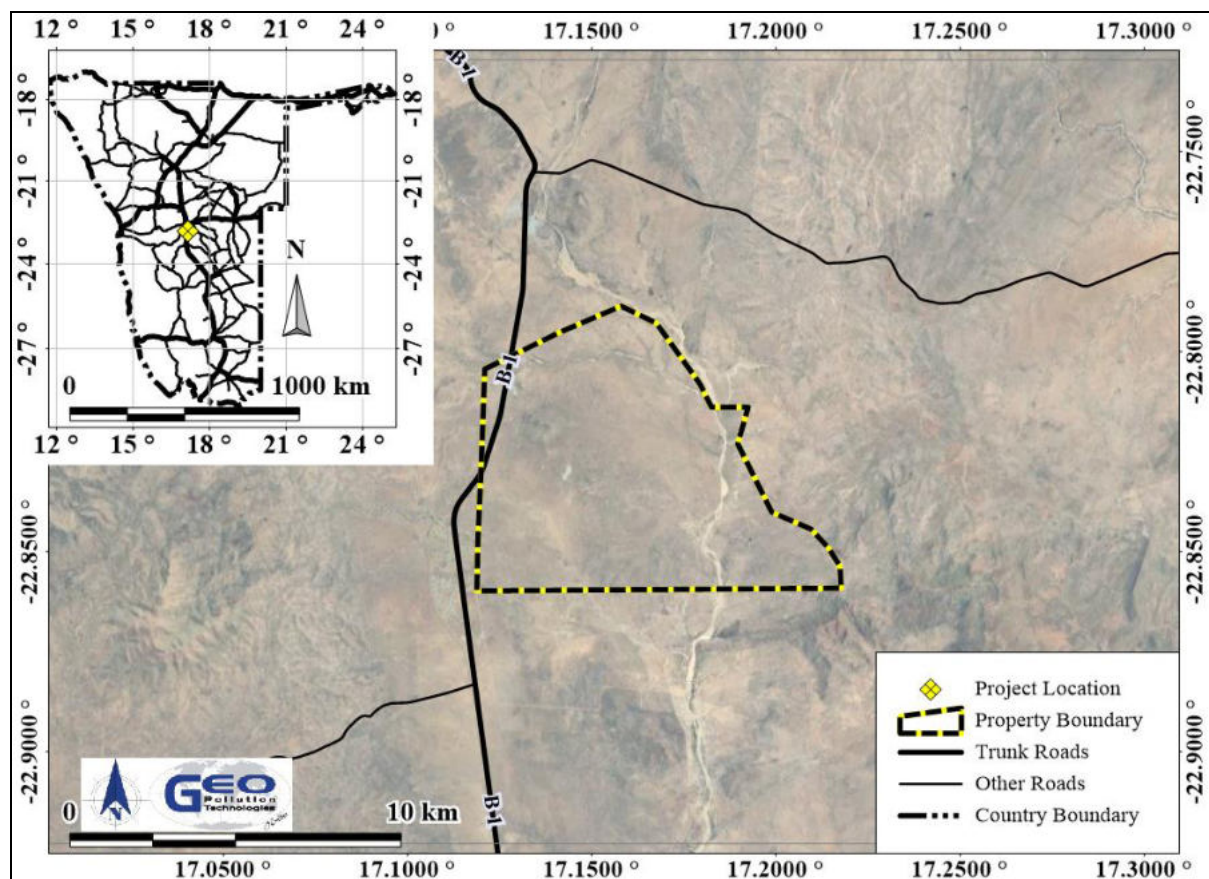


Figure 1-1 Location map

2 ADMINISTRATIVE AND LEGAL REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an EIA, as per the Namibian legislation. The legislation and standards provided in Table 2-1 to Table 2-3 govern the EIA process in Namibia and/or are relevant to the water supply project.

Table 2-1 Namibian law applicable to the bush harvesting

Law (as may be amended)	Key Aspects
The Namibian Constitution	<ul style="list-style-type: none"> ◆ Promotes the welfare of people. ◆ Incorporates a high level of environmental protection. ◆ Incorporates international agreements as part of Namibian law.
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	<ul style="list-style-type: none"> ◆ Defines the environment. ◆ Promotes sustainable management of the environment and the use of natural resources. ◆ Provides a process of assessment and control of activities with possible significant effects on the environment.
Environmental Management Act Regulations Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> ◆ Commencement of the Environmental Management Act. ◆ Lists activities that requires an environmental clearance certificate. ◆ Provides Environmental Impact Assessment Regulations.
Soil Conservation Act Act No. 76 of 1969)	<ul style="list-style-type: none"> ◆ Law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources Namibia.
The Water Act Act No. 54 of 1956	<ul style="list-style-type: none"> ◆ Remains in force until the new Water Resources Management Act comes into force. ◆ Defines the interests of the state in protecting water resources. ◆ Controls and permits the disposal of effluent. ◆ Numerous amendments.
Water Resources Management Act Act No. 11 of 2013	<ul style="list-style-type: none"> ◆ Provides for management, protection, development, use and conservation of water resources. ◆ Prevention of water pollution and assignment of liability. ◆ Not in force yet.
Forest Act (Act 12 of 2001, Government Notice No. 248 of 2001)	<ul style="list-style-type: none"> ◆ Makes provision for the protection of the environment and the control and management of forest fires. ◆ Provides the licencing and permit conditions for the removal of woody and other vegetation as well as the disturbance and removal of soil from forested areas.
Forest Regulations: Forest Act, 2001 Government Notice No. 170 of 2015	<ul style="list-style-type: none"> ◆ Declares protected trees or plants. ◆ Issuing of permits to remove protected tree and plant species.

Law (as may be amended)	Key Aspects
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	<ul style="list-style-type: none"> ◆ Define the powers, duties and functions of local authority councils. ◆ Regulates discharges into sewers.
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	<ul style="list-style-type: none"> ◆ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters. ◆ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation.
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	<ul style="list-style-type: none"> ◆ Provides for Labour Law and the protection and safety of employees. ◆ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997).
National Heritage Act Act No. 27 of 2004, Government Notice No. 287 of 2004	<ul style="list-style-type: none"> ◆ Provides for protection and conservation of places and objects of heritage significance and the registration of such places and objects
Roads Ordinance Ordinance No. 17 of 1972	<ul style="list-style-type: none"> ◆ Consolidates and amends the laws relating to roads and incidental matters ◆ Deals with the construction and maintenance of proclaimed roads and related matters.
Townships and Division of Land Ordinance Ordinance 11 of 1963	<ul style="list-style-type: none"> ◆ Consolidates and amends the laws relating to the establishment of townships and to provide for the regulation and control of the development and subdivision of land and for matters incidental thereto.
Hazardous Substances Ordinance Ordinance No. 14 of 1974	<ul style="list-style-type: none"> ◆ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export. ◆ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings.
Pollution Control and Waste Management Bill	<ul style="list-style-type: none"> ◆ The bill aims to prevent and regulate the discharge of pollutants to air, water, and land. It further aims to promote the establishment of a system of waste management, and enable Namibia to meet its international obligations. Only unrecyclable and unusable materials will be disposed of at a designated disposal site.

Table 2-2 Relevant multilateral environmental agreements

Agreement	Key Aspects
Stockholm Declaration on the Human Environment, Stockholm 1972.	<ul style="list-style-type: none"> ◆ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.
1985 Vienna Convention for the Protection of the Ozone Layer	<ul style="list-style-type: none"> ◆ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered ◆ Adopted to regulate levels of greenhouse gas concentration in the atmosphere.
United Nations Framework Convention on Climate Change (UNFCCC)	<ul style="list-style-type: none"> ◆ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.

Convention on Biological Diversity, Rio de Janeiro, 1992	<ul style="list-style-type: none"> ◆ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity.
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Table 2-3 Municipal by-laws, guidelines and regulations

Municipal By-laws, Guidelines or Regulations (City of Windhoek)	Key Aspects
Aris Town Planning Scheme	<ul style="list-style-type: none"> ◆ Provides for permissions related to the drilling for water. ◆ Provides for the protection of groundwater and the environment. ◆ Provides for the regulation of waste water / effluent discharge quality and the disposal of solid waste.

Listed activities which require an ECC application (Government Regulation No 29 of 2012) related to this project include the following:

Table 2-4 Environmental Management Act - Listed Activities

Listed Activity	Triggering Activity
<p>2 Waste management, treatment, handling, and disposal activities</p> <p>2.3 The import, processing, use and recycling, temporary storage, transit or export of waste</p>	<ul style="list-style-type: none"> ◆ Waste produced during the development and operational phase (mainly domestic waste) of the proposed smallholdings will be sorted and temporarily stored prior to being transported to waste disposal and recycling facilities of the City of Windhoek or other approved facilities. No waste will be disposed of at the smallholdings.
<p>8 Water Resource Developments</p> <p>8.1 The abstraction of ground or surface water for industrial or commercial purposes.</p>	<ul style="list-style-type: none"> ◆ Water will be abstracted from one or more boreholes for provision to the smallholdings and possibly other commercial or industrial purposes.
<p>10 Infrastructure</p> <p>10.1 The construction of- (a) water bulk supply pipelines</p> <p>10.1 The construction of- (b) public roads</p> <p>10.2 The route determination of roads and design of associated physical infrastructure where - (a) it is a public road;</p> <p>(b) the road reserve is wider than 30 meters; or</p> <p>(c) the road caters for more than one lane of traffic in both directions.</p>	<ul style="list-style-type: none"> ◆ The throughput capacity of a bulk supply pipeline is not defined by the EMA or its regulations. An existing pipeline feeding into an existing reservoir is in place for the supply of water from the borehole to be used. However, future upgrades of this pipeline or the installation of new pipelines to other boreholes might be required. For this purpose the construction of water supply pipelines is included in this EIA. ◆ This listed activity related to the construction of roads is not triggered by the road infrastructure development for the smallholdings since it is not a public road, the road reserve will be 30 meters and will not be dual lanes. However, it is included in this EIA as a proactive approach by the proponent to minimize any potential impacts on the environment. The main focus being on the road junctions with the B1 Main Road.

3 THE EMP

The following general guidance for the EMP is based on the findings of the initial EIA and risk assessment carried out by Geo Pollution Technologies (Faul et al. 2016).

3.1 Land Use, Planning and Operations – Identified Impacts

The following is the summary of the identified impacts:

- ◆ The risk of a decline in groundwater levels exist which can impact on other users of water.
- ◆ The risk of fire, health and safety impacts, dust, noise, damage to infrastructure and traffic impacts exist during infrastructure construction and maintenance.

3.2 Land Use, Planning and Operation – Mitigating Measures

The following is a summary of the proposed updated EMP, which will aim at preventing and mitigating possible impacts taking into consideration all the risk perceptions raised by all stakeholders:

- ◆ A decline in groundwater levels must be prevented by adhering to abstraction limits.
- ◆ Adhering to health and safety standards and legislation including noise limits and dust suppression.
- ◆ Road junctions to be designed to Roads Authority standards and utility clearance prior to construction.
- ◆ Fire prevention protocols and firefighting measures.

4 THE IMPLEMENTATION OF THE EMP

Table 4-1 and Table 4-2 outline the management of the environmental elements during the planning and execution phases. Table 4-3 provides the management of the decommissioning phase. This should be updated at the time of decommissioning.

The EMP is a living document that must be prepared in detail, and regularly updated, by the Proponent as the project progress and evolve. The tables below act as a guideline for the EMP to be established by the Proponent. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of mitigation and reporting activities should be determined by the proponent and included in the EMP. All monitoring results must be reported on as indicated and submitted to the Ministry of Environment, Forestry and Tourism as per their regulations and requirements. These are required for any future renewals of the environmental clearance certificate.

Table 4-1 Planning for the various phases of the project

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
Compliance	To comply with all legal requirements related to the proposed project.	Apply for the necessary permits from the various ministries, local authorities and any other bodies that governs the project Finalise negotiations and resolve any outstanding issues, if any, over the allocation of user rights and zoning of the property and its related components.	Prior to project commencement	All contracts, permits, certificates and other legal documents on file.	Proponent
Appointments	To appoint reputable contractors and operational personnel and establish the EMP, a legal requirement that forms part of the contract with the contractor and employees.	Appoint a contractor and employees and enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractor, sub-contractors, employees and all personnel who will be present on site.	Prior to project commencement	Contracts on file	Proponent; Contractor
Management	Establish a management system to implement and monitor Health, Safety and Environment.	Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site. Have the following emergency plans, equipment and personnel in place to deal with all emergencies: Risk Management / Mitigation / EMP/ Emergency Response Plan and HSE Manuals Adequate protection and indemnity insurance cover for incidents; Comply with the provisions of all relevant safety standards; Procedures, equipment and materials	Prior to project commencement and during future project execution	Documentation on file Personal Protection Equipment (PPE) on site Signage related to restricted areas, dangerous areas, and PPE requirements on site Emergency response material on site	Proponent; Contractor

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
		required for emergencies.			
Restoration Rehabilitation	To be prepared for future environmental restoration or pollution remediation, if ever required.	Prepare for environmental restoration or pollution remediation if it ever is required.	Prior to project commencement and during future project execution	Restoration / rehabilitation policy or plan	Proponent
Reporting	To establish a reporting system to report on monitoring aspects of operations and decommissioning as outlined in the EMP.	Establish a reporting system to report on aspects operations and decommissioning as outlined in the EMP. Submit bi-annual reports to the Ministry of Environment, Forestry and Tourism. Reporting is required for Environmental Clearance Certificate renewal applications.	During future project execution well as possible future decommissioning of the development or its components	Bi-annual Monitoring Reports	Proponent; Contractor
Environmental Clearance Renewal	To renew the Environmental Clearance Certificate every three years.	Appoint a specialist environmental consultant to update the EMP and apply for renewal of the Environmental Clearance Certificate.	Prior to expiry of Environmental Clearance Certificate	Renewed Environmental Clearance Certificate	Proponent; Independent Specialist Consultant

Table 4-2 Project execution phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Employment	The construction industry plays an important role in providing employment to locals.	If skills exist locally Namibians must be employed. Alternatively training must be provided to Namibians to ultimately employ a predominantly Namibian workforce.	A 6 Monthly summary report based on employee records.	Proponent
Declining Water Levels	Over abstraction of groundwater leading to a decline in water levels.	<p>Once the smallholdings come into operations, spread the water abstraction points over a larger area to diffuse the impact. This can be achieved by making use of alternative boreholes present at the project site or by drilling additional boreholes, if required at that stage.</p> <p>Conduct proper hydrogeological testing to prescribe the best abstraction scenario to protect the groundwater system.</p> <p>Set baseline values prior to abstraction and install water level monitoring devices to record water levels. It is important that a level be determined beyond which the level would not be allowed to drop.</p> <p>To prevent unnecessary water loss, all pipeline and water storage infrastructure must be inspected and maintained regularly. The pipeline must be secured where it crosses any streams or rivers to prevent damage. Pressure and flow sensors can be installed that will shutoff water pumps if a leak is detected.</p>	<p>A monthly water level monitoring program must be determined in consultation with a groundwater specialist and as per the abstraction permit.</p> <p>A report should be compiled every 6 months of all water monitoring results and actions taken to prevent groundwater decline.</p>	Proponent; Independent Specialist Consultant
Traffic Impacts	Traffic impacts which can occur during construction of the road junctions	<p>Proper planning prior to construction of the road junctions.</p> <p>Regulation of traffic during junction construction.</p> <p>Diversion or management of traffic if needed.</p> <p>Appropriate signage and warnings.</p>	<p>Visual observation of impacts on traffic should be made.</p> <p>Any traffic complaints received must be taken up with the relevant authorities and discussed with the Proponent.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Impact on Utilities and Infrastructure	Damage to existing infrastructure like power lines, telecommunication lines and roads, where present	<p>Appointing qualified and reputable contractors is essential.</p> <p>The contractor must determine exactly where amenities and pipelines are situated before construction commences (utility clearance e.g. ground penetrating radar surveys).</p> <p>Liaison with the local authority and suppliers of services is essential.</p> <p>All authorisations and approvals regarding the new road junction and placement of the facility must be obtained from Roads Authority prior to construction.</p>	<p>A register of all infrastructure present at the construction site must be compiled prior to construction.</p> <p>A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat themselves.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor, Proponent
Dust	Excessive dust may be generated during earthworks for road construction. This might be aggravated during periods of strong winds. This occurs regularly in Namibia during the dry winter months.	<p>Regular dust suppression when required.</p> <p>Construction personnel to be issued with dust masks if required.</p> <p>A complaints register should be kept for any dust related issues and mitigation steps taken to address complaints where necessary.</p>	<p>Any complaints received regarding excessive dust should be recorded with notes on action taken.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor
Noise	Noise due to presence of heavy machinery on site	<p>The site is situated outside of the current Windhoek built-up environment.</p> <p>The Health and Safety Regulations of the Labour Act, the City of Windhoek guidelines for limits to noise pollution (Council Resolution 215/09/2006), and the World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and nuisances should be consulted and adhered to.</p> <p>Hearing protectors must be issued as part of PPE if required.</p>	<p>Any complaints received regarding excessive noise should be recorded with notes on action taken. Any negative effects caused from excessive vibrations should be recorded as well.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor
Waste Production	Any waste produced as a result of the construction process, including waste	For construction:	A register of hazardous waste disposal should be	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	water	<ul style="list-style-type: none"> ◆ Appoint reputable contractors. ◆ Adequate temporary disposal facilities available. ◆ Products that can be re-used or re-cycled should be kept separate. ◆ Waste should be disposed of regularly and at appropriate disposal facilities. ◆ Hazardous materials should be disposed of in an appropriate way at an appropriately classified waste disposal facility (follow MSDS). ◆ Adequate temporary ablution facilities must be erected at the construction site if no alternative facilities exists. <p>For smallholding waste transfer station:</p> <ul style="list-style-type: none"> ◆ All recyclable waste must be kept separate. ◆ Waste must be disposed of regularly to prevent odours and pests like flies and rats. ◆ All waste must be inside a fenced yard or otherwise closed area to prevent waste such as paper and plastic bags from being carried away by strong winds. ◆ No hazardous wastes like oil or other hydrocarbon based chemicals to be handled at the waste transfer station. 	<p>kept. This should include type of waste, volume as well as disposal method/facility.</p> <p>Any complaints received regarding waste should be recorded with notes on action taken.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	
Groundwater, Surface Water and Soil Contamination	Leakages from construction vehicles, accidental spills of fuel, paints and other chemicals might occur during road construction or for any other applicable maintenance and construction activities.	<p>Regular inspections and maintenance of all construction vehicles to ensure no leaks are present.</p> <p>Vehicles may not be serviced or refuelled on site.</p> <p>All waste must be removed from the site and disposed of timeously.</p> <p>Any spill must be cleaned up immediately</p> <p>Select alternative chemicals/materials that would not pose a threat to the groundwater, e.g. water based paints vs. solvent based paints.</p>	<p>A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat themselves.</p> <p>All spills or leaks must be reported on and cleaned up immediately.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Ecosystem & Biodiversity Impact	<p>Impacts on the surrounding vegetation and ecosystem as a whole.</p> <p>Over abstraction of groundwater can impact on existing habitats and communities that depend on groundwater.</p> <p>Vegetation will be impacted on when land clearing takes place for road construction or during pipeline maintenance and installation.</p>	<p>Once smallholdings are established, spread the water abstraction points over a larger area to diffuse the impact. Conduct proper hydrogeological testing to prescribe the best abstraction scenario to protect the groundwater system.</p> <p>Set baseline values prior to abstraction and install water level monitoring devices to record water levels. It is important that a level be determined beyond which the level would not be allowed to drop.</p> <p>Where possible removal of protected species and large trees must be avoided. Large trees and protected species within the road servitude should not be removed.</p> <p>The necessary permits from the Directorate of Forestry, Ministry of Environment, Forestry and Tourism, must be obtained for removal of all protected species.</p>	<p>Regular inspection must be performed to monitor for any irregular activities.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor, Proponent
Fire	<p>Outbreak of an uncontrolled fire as a result of working with tools causing sparks or from uncontrolled manmade fires.</p>	<p>Open fires should not be allowed except at designated sites.</p> <p>Firefighting and Fire Prevention: Fire precautions and fire control must be present at the site.</p> <p>In addition to this, all personnel have to be sensitised about responsible fire protection measures.</p> <p>A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan and firefighting plan.</p> <p>Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>	<p>A report should be compiled every 6 months of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested.</p>	Contractor; Proponent
Illegal Hunting and Poaching of Wild Animals	<p>Illegal hunting and poaching of wild animals and collection of plant material</p>	<p>All employees should be educated about the value of biodiversity.</p> <p>Strict conditions prohibiting harvesting and poaching of</p>	<p>Regular inspection must be performed to monitor for any irregular activities.</p>	Contractor, Proponent

Criteria and Material	Nature	Mitigation	Monitoring	Responsible Body
		<p>fauna and flora should be part of employment contracts. This includes prohibitions on the collection of firewood.</p> <p>Regular inspection of river courses at and around the project location for snares or any other illegal activities.</p> <p>Disciplinary actions to be taken against all employees failing to comply with contractual conditions.</p>	<p>Any complaints received regarding poaching or illegal harvesting of plants must be investigated and recorded with notes on action taken to prevent similar future incidences.</p> <p>All information and reporting to be included in 6 monthly reports.</p>	
Heritage	The discovery of archaeologically or culturally important sites.	<p>If such a site or any other archaeologically important artefact is found during the development phase any work in that area must be halted and the relevant authorities must be informed. Firstly, the Namibian Police must be informed. Secondly, the National Monuments Council dealing with heritage should be informed.</p> <p>Construction may only continue at that location once permission has been granted.</p>	<p>Record of any discoveries and proof of notifications to authorities on file.</p> <p>All information and reporting to be included in a 6 monthly report.</p>	Contractor; Proponent
Health and Safety	Injury to workers performing construction and maintenance activities	<p>All Health and Safety standards specified in the Labour Act and other applicable legislation should be complied with.</p> <p>All staff members must be briefed about potential health risks and injuries on site.</p> <p>All staff must at all times wear personal protective equipment (PPE) as appropriate.</p> <p>Selected personnel should be trained in first aid.</p> <p>Contact details of emergency services must be available.</p>	<p>A report should be compiled every 6 months of all incidents reported. The report should contain dates of incidents and actions taken.</p>	Contractor; Proponent

Table 4-3 Decommissioning phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	<p>The ability of product to act as a waste which must be cleaned up.</p> <p>Upon decommissioning waste will be produced in the form of building rubble, obsolete equipment and structures, obsolete or residual products and equipment or structures that can be used elsewhere or sold as scrap.</p>	<p>To reduce the amount of waste all re-usable pipelines, pumps, valves and other equipment must be removed to another site or sold.</p> <p>Those items that cannot be used again must be scrapped in the appropriate manner.</p> <p>Upon demolition of the storage reservoir the rubble must be removed from the property and taken to an approved dumpsite designated by the local municipality.</p>	<p>Regular visual inspection.</p> <p>A register of waste produced and disposal methods should be maintained.</p>	Proponent; Contractor
Ecological Impact	<p>Operations spanning many years may create new habitat for fauna and flora. Upon decommissioning these habitats will be destroyed.</p>	<p>The proponent would have to ensure that no new habitat is created for flora and fauna. Before decommissioning, inspect every structural facility to ensure that the dismantling and removal of any structure would not affect any organism that has become dependent on those structures for survival, shelter or breeding.</p> <p>Where new habitats were created, that is now occupied by fauna or flora, the proponent must contact the Ministry of Environment, Forestry and Tourism (MEFT) or other appropriate organizations to establish the conservation status of it.</p> <p>The possibility of relocating the fauna or flora must be investigated and executed. Should the species be listed as vulnerable to extinction, or worse, a meeting should be held with MEFT in order to determine the appropriate handling of the situation.</p>	<p>A report should be compiled of any fauna and flora that established itself on the premises. The report should include all actions taken to relocate or deal with the situation.</p>	Proponent; Contractor
Dust	<p>Dust may be generated during the decommissioning phase and might be aggravated during periods of strong winds.</p>	<p>It is recommended that regular dust suppression be included in the decommissioning phase, where applicable.</p> <p>Personnel should be issued with dust masks for health and safety reasons.</p>	<p>Regular visual inspection.</p> <p>A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p>	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Noise	Noise pollution may exist due to heavy vehicles accessing the site to collect rubble from demolished building materials. Hammers, diggers and drills may be used.	Noise levels during this phase should consider the Health and Safety Regulations of the Labour Act, the City of Windhoek guidelines for limits to noise pollution (Council Resolution 215/09/2006), and the World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and nuisances. All personnel in noisy environments must be issued with hearing protectors.	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat itself.	Proponent; Contractor.
Visual Impact	This is an impact that affects the aesthetic appearance	Visual impact could pose one of the most significant impacts. Visual impacts could be limited through keeping all decommissioned areas clean and orderly at all times. Good housekeeping also reduces the risk of injuries. Notice of the start of the decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the visual impact.	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat itself.	Proponent; Contractor
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	All precautions are to be taken to prevent contamination of the soil as this could enter the ecosystem. Leakages from vehicles might occur especially if they are serviced on site. Care must be taken to avoid contamination of soil and groundwater. Groundwater might spread pollutants to neighbouring receptors and may create an impact on underground utilities (i.e. fresh water supply to buildings, sewerage system). Pollutants in the soil and building rubble must be transported away from the site to an approved, appropriately classified waste disposal site.	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat itself.	Proponent; Contractor
Health, Safety and Security	During the decommissioning phase similar risks to human beings as with previous phases will be present. All other risks associated with demolitions must be considered.	Adequate measures must be brought in place to ensure safety of staff on site, and include: <ul style="list-style-type: none"> ◆ Proper training of operators; ◆ First aid; ◆ Medical assistance; ◆ Emergency response; ◆ Protective clothing, footwear, gloves and belts; safety goggles and shields; ◆ 24-hour security surveillance in case of opportunistic 	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat itself.	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		activities.		
Fire	Outbreak of an uncontrolled fire as a result of working with tools causing sparks or from uncontrolled manmade fires.	<p>Open fires should not be allowed except at designated sites.</p> <p>Firefighting and Fire Prevention: Fire precautions and fire control must be present at the site.</p> <p>In addition to this, all personnel have to be sensitised about responsible fire protection measures.</p> <p>A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan and firefighting plan.</p> <p>Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>	A daily report should be compiled every of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested.	Proponent; Contractor

5 CONCLUSIONS

The updated EMP, if properly implemented will help minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document it must be reviewed on a regular basis.

The EMP should be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site, and parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Monitoring reports and rehabilitation plans and results must be submitted to the Ministry of Environment, Forestry and Tourism, Department of Environmental Affairs, every 6 months to allow for the future renewal of the ECC. It is advised that an environmental consultant be involved in the monitoring and compilation of the monitoring reports and rehabilitation plans.

6 REFERENCES

Faul A; Botha P; Brews L. 2016; Environmental Impact Assessment Scoping Report for Services Provision to the Leopard Valley Smallholdings on the Remainder of GocheGanas No. 26 and Remainder of Leopard No. 218, Windhoek