APPENDIX J
EMPr

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

PROPOSED EXPANSION OF KGASWANE COUNTRY LODGE ON PORTIONS 21 AND 85 OF THE FARM BOSCHFONTEIN 330JQ, RUSTENBURG, NORTH WEST PROVINCE

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Prepared by:

Hydro Science

Address: P.O. Box 1322, Ruimsig, 1732
Tel: 082 667 5056
Fax: 086 692 8820
info@hydroscience.co.za

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LIST OF DEFINITIONS, ABBREVIATIONS AND ACRONYMS

BA	Basic Assessment
BAR	Basic Assessment Report
BPDM	Bojanala Platinum District Municipality
CARA	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
CBA	Critical Biodiversity Area
CBD	Central Business District
CFC	Chloro-Fluoro Carbons
DEA	Department of Environmental Affairs
NW	North West
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
EO	Environmental Officer
GNR	Government Notice Regulation
GPS	Global Positioning Satellite
HDPE	High Density Poly-ethylene (plastic)
I&AP	Interested and Affected Party
KWEF	Kroondal & Wards Environmental Forum
MBR	Magaliesberg Biosphere Reserve
MLF	Magaliesberg Landowners Forum
MPE	Magaliesberg Protected Environment
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998), as amended
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999
OHSA	Occupational Health and Safety Act, 1993 (Act 85 of 1993)
PHRA	Provincial Heritage Resources Agency
PPP	Public Participation Process
READ	Rural, Environment and Agricultural Development
RLM	Rustenburg Local Municipality
ROCLA	Rustenburg-Olifantsnek Corridor Landowners Association
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SHEQ	Safety, Health, Environment & Quality
SUDS	Sustainable Urban Drainage Systems
VOC	Volatile Organic Compounds

1 INTRODUCTION

HydroScience cc, an independent Environmental Assessment Practitioner (EAP), has been appointed by Altman Investments (Pty) Ltd, to undertake a Basic Assessment (BA) process and submit a Basic Assessment Report (BAR) to apply for environmental authorisation for the Proposed expansion of Kgaswane Country Lodge on Portions 21 and 85 of the farm Boschfontein 330JQ, Rustenburg, North West Province. The application will be submitted to Department of Environmental Affairs (DEA).

The BA process for this project has been designed to comply with the requirements of the Environmental Impact Assessment (EIA) Regulations of 4 December 2014 as amended on 7 April 2017 in terms of Section 24 of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended, which is South Africa's national framework environmental legislation. Key principles embodied in the NEMA include:

- Sustainability – development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs;
- Mitigation hierarchy – avoidance of environmental impact, or where this is not possible, minimising the impact and remediating the impact; and
- The duty of care towards the environment.

The assessment of impacts has been conducted in accordance with these principles.

Based on the findings of the BA process, an Environmental Management Programme (EMP) has been developed that will be implemented to control and minimise possible adverse impacts during all phases of the proposed project. The EMP will therefore:

- Define the various measures to be taken into account during the life of the project in order to enhance positive and minimise/reduce adverse environmental impacts and meet the performance specifications of low to negligible impact;
- Define the actions required to implement these measures;
- Describe how this will be achieved; and
- Allocate responsibilities for implementation.

EMPs are important tools for ensuring that the management actions/measures arising from the EIA process are clearly defined and implemented through all phases of the project.

The purpose of the EMP (this document) is to ensure the following:

- That unnecessary or reasonably avoidable adverse impacts of the project are prevented;
- That impacts which cannot be prevented are managed to reduce their significance; and
- That the positive benefits of the project are enhanced where possible.

2 PROJECT

2.1 Locality

The proposed expansion will be on Portions 21 and 85 of the farm Boschfontein 330JQ, Rustenburg, North West Province (Figure 1). Kgaswane Country Lodge is located approximately 17 km south of the Rustenburg Central Business District (CBD) with access from the R24 in the area of Olifantsnek Dam between Rustenburg and Magaliesburg. The Global Positioning System (GPS) coordinates are 25° 46' 43.37" South; 27° 15' 20.83" East.

Environmental sensitivities in the area:

- Aquatic:
  - No wetlands on site (ecologist study).
  - Drainage line in north-east of site.
  - Olifantsnek Dam is 600m south of site.
- Terrestrial:
  - Critical Biodiversity Area (CBA) 2.
  - Located within the Magaliesberg Protected Environment (MPE)
  - Located within the core of the Magaliesberg Biosphere Reserve (MBR).

2.2 Facilities

2.2.1 Existing

The existing facility includes the following facilities / structures / infrastructure:

- Reception block including driveway, parking, building with reception area and offices.
- Workers accommodation and store at the end of the reception area driveway.
- Conference block including driveway, parking, building with conference hall, kitchen, toilets and offices.
- Restaurant block including driveway, parking, spa, smaller dining areas or breakaway rooms, kitchen and dining area.
- Family accommodation block – to accommodate two (2) families.
- Three (3) accommodation blocks with a total of 44 en-suite rooms (12 + 12 + 20).

2.2.2 Planned

For the expansion, another 2 – 3 accommodation blocks will be established to accommodate a further 150 en-suite rooms (100 + 50 or 50 + 50 + 50). These two / three blocks will be within the footprint of the existing disturbances and will therefore not go into areas currently still natural, such as the rocky ridge which should remain untouched. It is planned that the two/three accommodation blocks will be located within areas where some vegetation clearance has already taken place since these currently serve as overflow parking areas.

3 SPECIALIST STUDIES

No cultural heritage study was conducted as part of the initial development application (2008) and no cultural heritage study was conducted for this expansion project since the character of the site will not change (National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999).

The following specialist studies were undertaken as part of the initial development project in 2008 and findings and recommendation have been included in this EMP to reitterate its importance due to the sensitive nature of the area:

- Ecological fauna and flora habitat survey by Renier Terblanche (September 2008). The study was conducted 10 years ago and therefore terrestrial sensitivity maps were included in terms of the latest information and the site was found to be located within a CBA2 area. The site is further part of the Magaliesberg Biosphere Reserve (MBR) and located within the core / buffer 1 area of the MBR. The study found the following:
  - Savanna biome – dense sananna with a high concentration of tree species; high diversity of plant species but these are all common and widespread.
  - Gold Reef Mountain Bushveld.
  - Rocky ridge in a fair condition of conservation.
  - No wetlands.

- Drainage line in north east.
- Disturbed in north-eastern part and adjacent to R24 with a number of exotic tree species and weeds as well as buildings.
- No red data, threatened, near-threatened or data deficient plant species found.
- No red data or high conservation priority mammals were found or are likely to be found (not in their range) on the site.
- The site does fall within the range of distribution of a number of red data bird species though none were found and it does not form part of their breeding habitat.
- "No red listed or any fauna or flora of confirmed particular conservation importance appears to be present on the site."

- Visual assessment by Newtown Landscape Architects (September 2008).

The BA process and the public participation process, were conducted as part of the **planning phase of the project**.

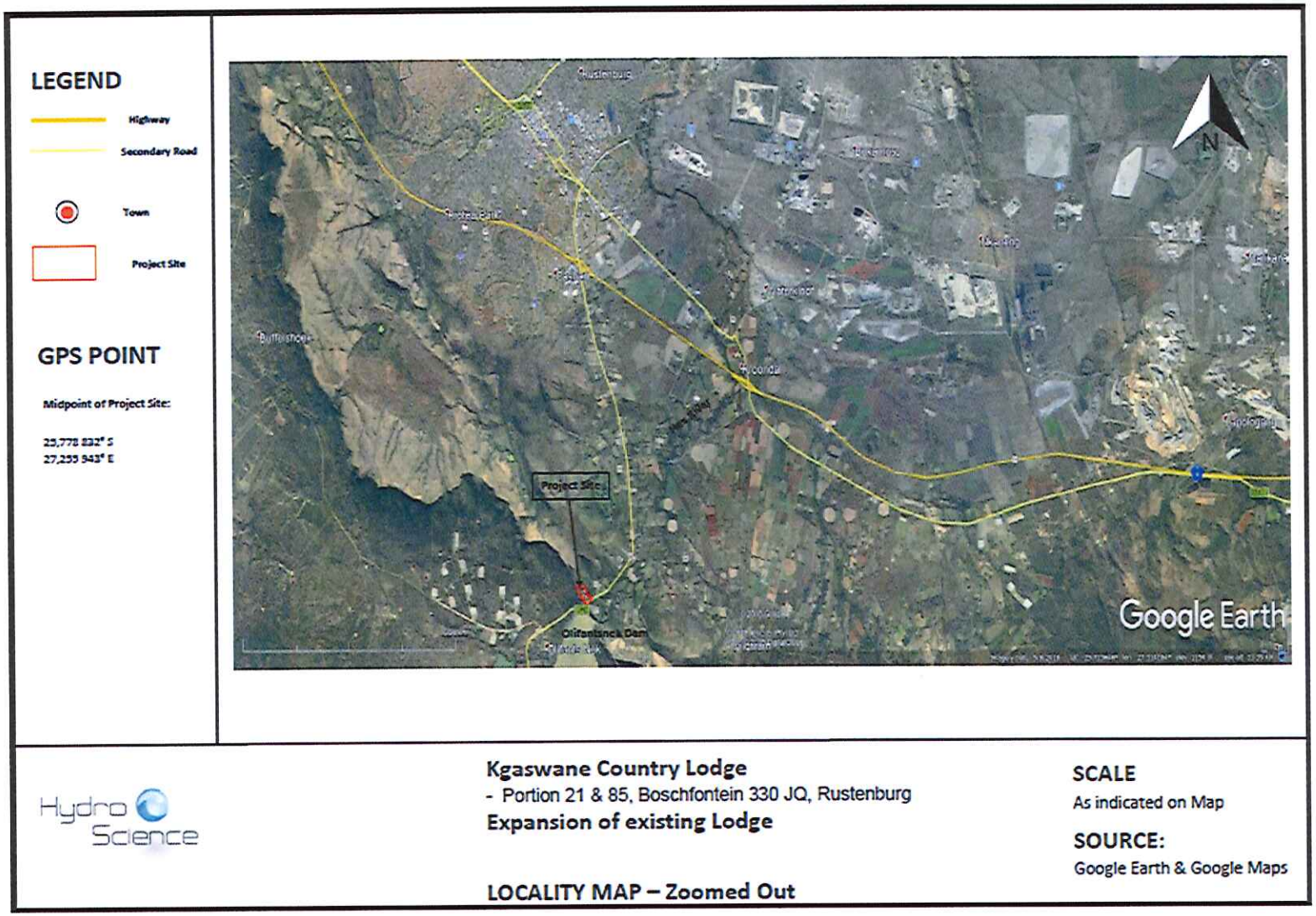

Figure 1: Regional locality map

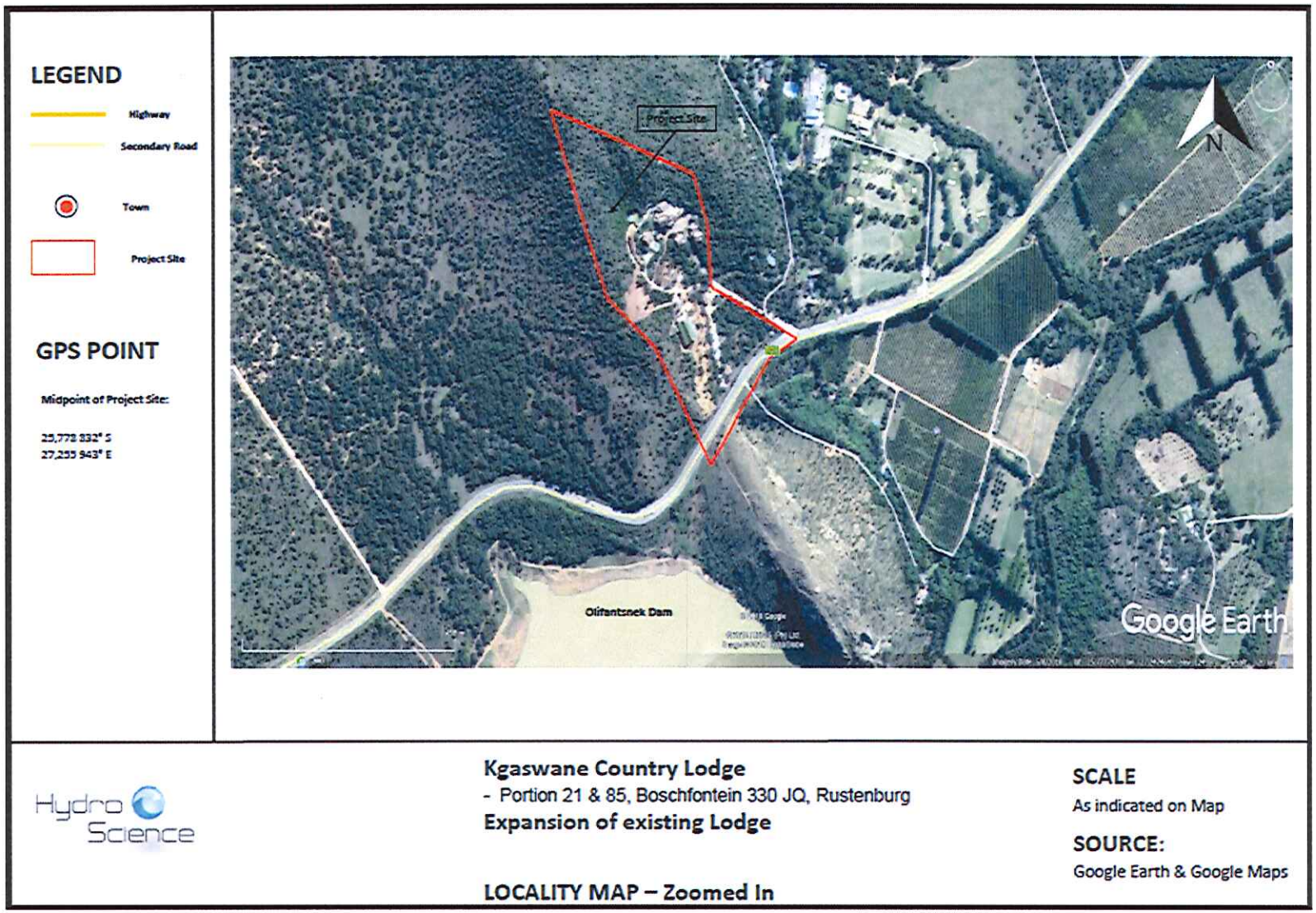

Figure 2: Site map showing existing area of disturbance

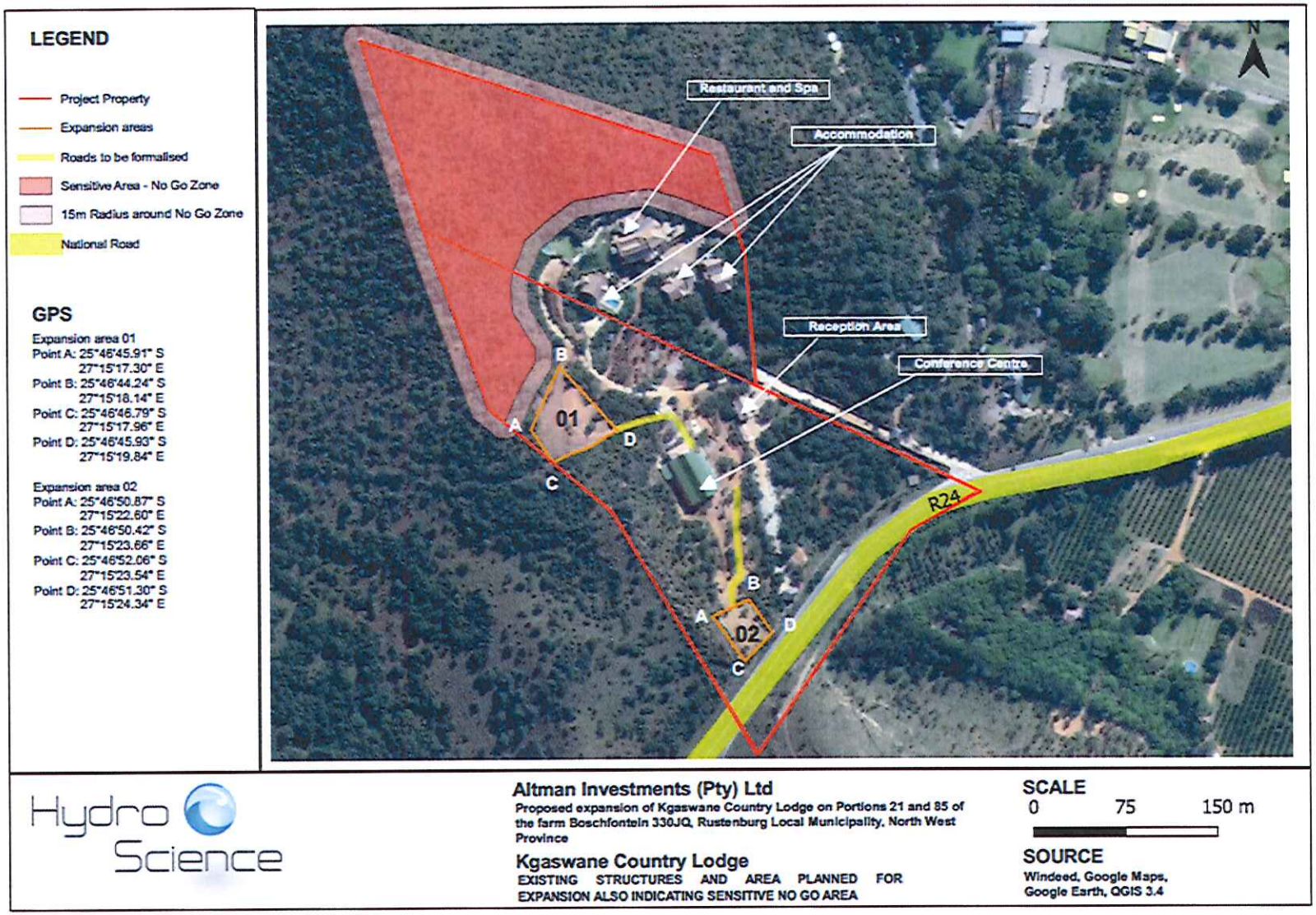

Figure 3: Site Layout Plan

4 ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Methodology

The significance of the environmental impacts identified was assessed in terms of their:

- Duration;
- Extent;
- Probability; and
- Severity.

The above were used to determine the significance of an impact without any mitigation, as well as with mitigation.

Nature of an impact: An impact's nature can be positive (+) or negative (-).

Consequence: Considers duration, extent and severity

Consequence = duration + extent + severity

Table 1: Environmental risk and impact assessment criteria.

DURATION (D)		
Immediate	Less than 1 month	1
Short-term	6 months	2
Construction	36 months	3
Life of project	Operational phase	4
Post-closure	Time of rehabilitation and for re-establishment of natural systems	5
Residual	A permanent impact (100 years or more)	6
EXTENT (E)		
Site specific	Site of the proposed development (Portions 21 and 85 of the farm Boschfontein 330JQ)	1
Local	Farm/site and surrounding farms/site	2
Regional	Rustenburg Local Municipality	3
Provincial	North West Province	4
National	Republic of South Africa	5
PROBABILITY (P)		
Rare	<5% probability of occurrence – may occur in exceptional circumstances	1
Unlikely	15% - 6% probability of occurrence – could occur at some time	2
Possible	45% - 16% chance of occurrence – might occur at some time	3
Likely	65% - 46% probability of occurrence – will probably occur in most circumstances	4
Almost Certain	90% - 66% probability of occurrence – is expected to occur	5
Definite	100% - will occur	6
SEVERITY (S)		
Catastrophic (critical)	Total change in area of direct impact, relocation not an option, death, toxic release off-site with detrimental effects, irreversible loss, huge financial loss	6

Significant (High)	> 70% change in area of direct impact due to loss of significant aspect, extensive injuries, long term loss in capabilities, off-site release to high extent, major financial implications	5
Serious	50 – 70% long-term loss, extensive rehabilitation / restoration / treatment required, high financial impact, still restricted in extent	4
Moderate (medium)	20 – 49% change, medium term loss in capabilities, rehabilitation / restoration / treatment required, on-site release with outside assistance, medium financial impact	3
Minor	10 – 19% change, short term impact that can be absorbed, on-site release, immediate containment, low financial implications	2
Insignificant (low)	< 10 % change in the area of impact, no financial implications, localised impact, a small percentage of population	1

[Duration (D) + Extent (E) + Severity (S)] x Probability (P) = Impact Significance (IS)

IMPACT SIGNIFICANCE (IS)		
Impact Significance	**IS score range**	**Description**
Low (L)	<15	The impact is minor or insubstantial; it is of little importance to any stakeholder and can easily be rectified.
Moderate Low (ML)	16 - 45	The impact is limited in extent, even if the intensity is major; the probability will only be likely, the impact will not have a significant impact considered in relation to the bigger picture; no major material effect on decisions and will require only small scale management intervention bearing moderate costs.
Moderate high (MH)	46 - 70	The impact is significant to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
High (H)	71 <	The impact could render development options controversial or the entire project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in project decision-making.

4.2 Impact Assessment Ratings

The impacts and associated significance ratings for each phase of the project were assessed (Tables 2, 3 and 4). The no-go option would not meet the demand for accommodation.

Table 2: Impact significance for the construction phase

Aspect and description		Impact rating (before mitigation)							Impact Rating (after mitigation)						
Aspect	Description	Nature of Impact (positive / Negative)	Spatial Scale/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (positive / Negative)	Spatial Scale/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
Fauna & Flora	Loss of habitat, habitat connectivity & open space	N	2	6	4	12	6	72	N	2	6	3	11	4	44
	Loss of sensitive species	N	1	6	4	11	2	22	N	1	6	2	9	1	9
Land Use	Remain as is – expansion of existing lodge	NONE							NONE						
Soils	Soil erosion due to vegetation clearance and earth works and steep slopes	N	1	3	4	8	5	40	N	1	2	3	6	2	12
Waste Management	Construction Waste / Material	N	2	3	3	8	6	48	N	2	3	2	7	2	14
Air Quality	Dust due to earthworks	N	2	3	3	8	3	24	N	2	3	1	6	2	12
	Emissions from vehicles & equipment	N	2	3	1	6	3	18	N	2	3	1	6	1	6
Water	Pollution / contamination	N	2	3	3	8	3	24	N	1	2	2	5	2	10
	Volume and flow velocity	N	2	6	3	11	5	55	N	2	6	2	10	3	30
Socio-economic	Safety during construction activities	N	1	2	3	6	4	24	N	1	2	2	5	2	10
	Job creation	POSITIVE							POSITIVE						

Table 3: Impact significance for the operational phase

Aspect and description		Impact rating (before mitigation)							Impact Rating (after mitigation)						
Aspect	Description	Nature of Impact (positive / Negative	Spatial Scale/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (positive / Negative	Spatial Scale/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
Waste Management	Waste generated	N	1	4	3	8	4	32	N	1	4	1	6	2	12
Noise	Noise levels due to crowds during functions etc.	N	3	1	5	9	4	36	N	2	1	3	6	3	18
Fauna & Flora	Alien infestation due to disturbance	N	2	4	3	9	4	36	N	1	4	1	6	1	6
Storm Water Management	Erosion due to increased volumes and flow velocities	N	2	4	3	9	4	36	N	1	4	1	6	2	12
Aesthetics	Visual impact on natural environment	N	3	4	4	11	4	44	N	3	4	2	9	3	27
Groundwater quality	Wastewater (sewage) management	N	3	4	4	11	3	33	N	2	4	1	7	2	14
Socio-economic	Traffic and location of access	N	3	4	3	10	5	50	N	3	4	2	9	3	27
	Job creation and tourism development	POSITIVE							POSITIVE						

Decommissioning is not applicable to this facility.

Table 4: Impact and associated significance for the No-go Option

Aspect and description		Impact rating (before mitigation)						
Aspect	Description	Nature of Impact (positive / Negative	Spatial Scale/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
Socio-economic	Tourism	N	2	6	3	11	4	44

5 POTENTIAL IMPACTS

Based on the identified impacts and associated significance ratings provided above, the following potential (negative and positive) impacts have been identified as being key to the two (2) phases (construction and operation) for the proposed expansion project:

5.1 Negative Impacts

Construction phase (Short term)

- Fauna & flora: Loss of vegetation due to vegetation clearance for earthworks will lead to loss of floral and faunal habitat and habitat connectivity as well as open spaces. Loss of sensitive species is not a serious concern due to a lack of species of conservation value on the property.
- Soils: Soils will be prone to erosion with vegetation clearance and during earth works due to sloped property.
- Waste management: Waste should be managed according to the waste management hierarchy – prevention, minimisation, recycling / reuse, treatment, disposal.
- Air quality: Dust due to vegetation clearance and the movement of construction vehicles and equipment on bare soil.
- Water: Vegetation clearance, earthworks and compaction of soil by heavy vehicles used during construction could lead to increased surface runoff quantity and flow velocity and erosion. The use of building materials can cause pollution to water.
- Socio-economic: Construction worker safety should be a priority.

Operational phase (indefinitely)

- Waste management: Waste should be managed according to the waste management hierarchy – prevention, minimisation, recycling / reuse, treatment, disposal.
- Noise: Noise levels will increase during times of conferences and other large functions.
- Fauna and Flora: Alien vegetation infestation is a concern in disturbed areas.
- Storm water management: Manage storm water to prevent impacts on R24 and surrounding properties.
- Aesthetics: The concern relates to the location in the MPE and MBR core, a highly visible resource with a landmark quality as well as a rocky ridge area on the site.
- Groundwater quality: The increase in accommodation facilities (expansion) will result in an increase in people and therefore the current septic tank and French drain system is no longer adequate for the management of sewage.
- Road safety: An increase in traffic as well as the hidden location of the entrance increase the accident risk.

5.2 Positive impacts

Positive impacts will occur and include the following benefits:

- Job creation during the construction (200 jobs) and operational (70 jobs) phases.
- Expansion of tourism facility and opportunities.

5.3 No-go Option impacts

The aspects below are impacted upon if the no–go option is selected. Mitigation for these impacts includes the continuation of the proposed project.

- Socio-economic: loss of expansion of tourism opportunity in this tourist corridor.

6 MANAGEMENT MEASURES

Dedicated management measures have been identified to manage the above identified impacts (Table 5). The purpose of the EMP is to ensure that undue or reasonably avoidable adverse impacts of the project are prevented; that impacts which cannot be prevented are managed to reduce their significance; and that the positive benefits of the project are enhanced.

Table 5: Identified potential impacts and proposed management measures

Construction phase (6 months)	
Fauna & Flora	
Potential impact:	**Loss of habitat and habitat connectivity (corridors) and open space** The site is located within the MPE and CBA2. The site is located within the MBR core. The site is located within the Savanna biome and Gold Reef Mountain Bushveld. Vegetation was found to be of high density and high diversity but common and widespread species. • Degradation of the area and corridor through a loss of plant cover. • Vegetation removal will cause fauna to move away and reduce extent of faunal habitat. • Establishment and spread of declared weeds and alien invader plants. Alien vegetation species are more prominent near disturbances relative to less disturbed areas.
Impact Significance: (prior to mitigation)	**High**
Management measures:	• The rocky ridge and 30m from it should be a no-go area. Signs should be established to keep people out. • No planting of exotic invasive plant species during landscaping. Indigenous vegetation will better conserve the corridor. • Remain within demarcated areas during construction to limit disturbances to surrounding areas. • Remove all exotic/invasive species as Conservation of Agricultural Resources Act (CARA), 1983 (Act 43 of 1983) and National Environmental Management Biodiversity Act (NEMBA), 2004 (Act 10 of 2004) Alien and Invasive Species Lists requires. • Prepare and implement an alien plant management and monitoring programme as it takes at least three (3) years to break the cycle of regeneration. This plan needs to make provision for the on-going management of alien vegetation in the long-term to prevent encroachment and spreading of invasive and exotic species. • Limit construction activities to the daytime and working hours for the purpose of not disturbing activities and ecological processes of nocturnal birds and small mammals. • No removal of material (animals, plant, trees for firewood, rocks) from nearby undisturbed areas such as the rocky ridge in the northeast.

	• No fauna species encountered may be harmed, trapped or captured, *i.e.* poaching by the workforce is forbidden. Notify manager for safe removal. • Place signage indicating conduct on property, such as no littering, no removal of trees or animals, no pets, no harm to trees and animals, no access to rocky ridge etc. • Retain as many of the indigenous trees and bushes as possible and practical. This could be through the incorporation of natural bushveld trees as part of the landscape features of the development. Sensitise the work force to this requirement and demarcate the remaining indigenous trees in the area of disturbance. • Limit dust on site and the spreading thereof to vegetation in surrounding areas, as this will impact negatively on both the vegetation and faunal habitat of the adjacent properties. • Appoint an Environmental Control Officer (ECO) to ensure mitigation is applied and incidents are reported and reflect non-compliance to the EMP. • Re-vegetate all disturbed areas using only indigenous trees and shrubs.
Impact significance: (post mitigation)	**Moderate high**
Potential impact:	**Loss of sensitive species (red listed or of high conservation value).**
Impact Significance: (prior to mitigation)	**Moderate Low**
Management Measures:	• The rocky ridge and 30m from it should be a no-go area. Signs should be established to keep people out. • In the unlikely event that any rare / endangered / protected species are found in the project site footprint, such species should be relocated to a similar location/habitat not more than 300 metres from its original location, before site clearing and planting activities occur. A suitably qualified professional (botanist) or institution, *e.g.* NW READ, should be contacted to advise and assist to ensure that the endangered species relocation process is undertaken appropriately.
Impact Significance: (post mitigation)	**Low**

Soil erosion	
Potential impact:	Soil erosion due to vegetation clearance and earth works and steep slopes.
Impact Significance: (prior to mitigation)	Moderate Low
Management Measures:	Refer to storm water management.
Impact Significance: (post mitigation)	**Low**
Waste Management	
Potential impact:	**Improper Handling and Disposal of Waste** – impact on soil, groundwater and runoff (contamination), aesthetics, health General waste (including construction rubble) will accumulate during the construction phase due to vegetation clearance, building activities and construction workers. Waste generated on site must be sorted into different waste streams. Poor solid waste management practises can lead to contamination and unsightly areas, as well as pests/vermin and odours with associated health issues. Waste streams include: • Vegetation due to removal of vegetation. • Solid construction waste generated through construction activities (building rubble). • Hazardous waste in the event of a hydrocarbon spillage/leak (construction equipment or vehicles). • General waste produced by builders (biodegradable and non-biodegradable).
Impact Significance: (Prior to mitigation)	Moderate High
Management Measures:	• **Prevention of waste:** Material storage – material storage areas should be safe, secure and weatherproof to prevent damage to material (resulting in waste generation) and theft. • **Reduction / minimisation of waste:** o Reduce waste quantities and disposal costs through a reduction in the materials ordered. o "Take-back" schemes – setting up schemes with suppliers to take back surplus materials. o Collect waste in suitable containers (drums/skips/bins on site). o Engage with the supply chain to supply products and materials that use minimal packaging. • **Reuse / recycling of waste:** Separate / sort waste for collection and recycling - make arrangement with recycling contractors to provide clearly marked bins for material separation / sorting. Make sure that sub-

	contractors are aware of the placement of the bins and their responsibility to separate / sort materials. Segregate packaging for reuse. Vegetation can be recycled at a composting facility. • **Waste handling on site:** o Separate / sort waste. o Waste containers must have covers to prevent rainwater infiltration. o Ensure sufficient containers are available for storage of waste prior to removal off site to prevent overflow and littering on the site and surroundings. o Ensure no litter, refuse, waste and rubble generated on the premises will be placed, dumped or deposited on this site, adjacent or surrounding properties during the construction and clean-up phase. • **Waste removal & disposal:** There is no municipal waste removal services in the area but Kgaswane Country Lodge trucks remove waste for disposal to the Boitekong landfill site. Remove waste from site for disposal to the Boitekong landfill / waste management facility on a regular basis (at least weekly or when skip is full). No burning or burying of waste on site. • **Documentation:** o Report on the quantities of different waste streams managed (landfill, reuse, recycling, energy recovery). o Ensure copies of all waste manifests (safe disposal certificates) are kept, showing responsible handling, transport and disposal. o Include measure in contract that will ensure sub-contractors are required to clean their work area after construction.
Impact Significance: (Post mitigation)	**Low**

Air quality	
Potential impact:	**Dust and Emissions** Emissions may be released into the atmosphere resulting from: • vehicles and machinery (carbon monoxide emissions, smoke), • solvents, and • malodours as a result of waste not being removed from the construction site. Dust may result from earthworks.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• All vehicles and machinery/equipment used on, or entering the site, must be maintained and serviced regularly to ensure that they do not emit smoke or fumes. The contractor's representative must ensure that all on-site vehicles comply with the old SABS 0181 standards (now SANS 10181:2003 in conjunction with SANS 10282:2003) • Limit idling time of vehicles / equipment. • Avoid overloading of construction vehicles. • Any solvent based finishes such as paints, varnishes, sealants, and polishes will contain minimal levels of Volatile Organic Compounds (VOC) and no Chloro-Fluoro Carbons (CFC), which may harm the atmosphere. Water-based paints are to be used where possible and plant based stains and sealants must be considered as these are more environmentally friendly. • Waste must be disposed, as soon as possible to a municipal transfer station, skip or on a licensed landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours and attracting vermin. Waste may not be burnt on site. • Hazardous waste must be stored separately from general waste on an impermeable surface and disposed of at a hazardous waste landfill site. • Water sprays and dust suppression surfactants, must be used to limit dust generated if required. • A complaints register must be kept throughout the construction and operational phase.
Impact Significance: (Post mitigation)	**Low**

Water quality	
Potential impact:	**Incorrect handling and spillage of building materials and hydrocarbons** Spillages can cause soil, runoff and groundwater contamination. Due to vegetation clearance, runoff can wash sediment away causing erosion on the property and runoff with a high sediment load.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• If feasible, construction should preferably occur in the dry season, when surface water runoff is minimal. • No uncontrolled discharge from the site should be permitted. • Surface run-off from construction sites should be discharged into storm water drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins to reduce siltation in storm water drains. Channels or earth bunds or sand bag barriers should be provided on site to properly direct storm water to such silt removal facilities. • Silt removal facilities should be maintained and the deposited silt and grit should be removed regularly, to ensure that these facilities are functioning properly at all times. • Wastewater generated from the washing down of mixer trucks and drum mixers and similar equipment should wherever practicable be recycled. • Contractor must ensure that all building materials / chemicals are effectively stored (sealed containers) and managed (mixing etc.) to prevent contamination. In the unlikely event of a spillage, sufficient clean-up procedures must be carried out immediately. • All reagents, reagents storage tanks and mixing units must be supplied with a bunded area (bund wall) built to contain 110% of the capacity of the facility, to contain any spilled material and return back into the system if possible. The system must be maintained in a state of good repair and standby pumps must be provided. • Cement mixing on site should be on an impermeable surface (concrete bases or HDPE liner).
Impact Significance: (Post mitigation)	Low

Water quantity	
Potential impact:	**Storm water management** Impermeable surfaces (such as roofed buildings, concrete surfaces and roads) minimise the surface area available for water infiltration and prevents the effective infiltration of precipitation into the soils and therefore leads to an increase in surface water flow volumes to be managed as well as the velocity at which it flows. This may also lead to erosion.
Impact Significance: (Prior to mitigation)	Moderate High
Management Measures:	• Alteration of existing drainage patterns must be avoided. • Construction vehicles must be limited to one path to reduce compaction of soil, which increases surface runoff. Use existing roads. • Designing the site with as small area of impervious surfaces as possible. Use permeable paving for additional roads and parking. • The use of low impact development techniques are preferred to intercept and infiltrate runoff from developed areas distributed throughout the site. • The cost of storm water implementation, management and maintenance, as well as flood risk, can be greatly reduced by identifying, retaining and enhancing the natural areas along which runoff flows. • Permeable paving should be use for low traffic areas (internal roads, off-loading areas, parking etc). • Rainwater harvesting should be considered to capture runoff from roofs and use of this water in landscaped / garden areas.
Impact Significance: (Post mitigation)	Moderate Low

Socio-economic	
Potential impact:	**Safety:** Failure to comply with the safety requirements can result in health impacts (injury) and environmental damage.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	Compliance with OHSA.
Impact Significance: (Post mitigation)	Low
Cultural and heritage	
Preventative:	It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Care should therefore be taken when construction commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

Operational phase (indefinite)	
Waste Management	
Potential impact:	General waste will be produced by visitors / guests and employees.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	Waste collection, storage and removal as per construction phase. Waste quantities requiring disposal will reduce with reduction, recycling & reuse practices recommended.
Impact Significance : (Post mitigation)	**Low**
Noise	
Potential impact:	Noise levels will increase due to the presence of people, especially in large numbers.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• Noise levels will have to be managed by the Kgaswane Country Lodge manager. • Signage for silence in the areas of the conference block and spa facilities. • Complaints register to monitor. • Comply with municipal by-laws in terms of times of noise and noise levels. • To comply with municipal bylaws in terms of times etc.
Impact Significance: (Post mitigation)	Moderate Low

Fauna & Flora	
Potential impact:	• The disturbance associated with the construction phase of the project will render the disturbed areas vulnerable to alien plant invasion. • Increase in the spread of alien and invasive plants on site due to disturbance of existing vegetation.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• Remove all exotic/invasive species as CARA and NEMBA requires. • No visitors, guests or employees in the rocky ridge area. Put up signage.
Impact Significance: (Post mitigation)	**Low**
Storm Water Management	
Potential impact:	**Increased volumes and flows velocities** Impermeable surfaces minimises the surface area available for water infiltration and prevents the effective infiltration of precipitation into the soils and therefore leads to an increase in surface water flow volumes to be managed as well as the velocity at which it flows.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• Refer to construction phase measures. • Storm water runoff must be controlled and kept to low velocity flows. • Passing water from gutters onto grassed surfaces, rather than directly into areas prone to erosion (bare surfaces). • Rainwater harvesting to irrigate gardens. • A storm water management plan is required considering Sustainable Urban Drainage Systems (SUDS). • Consider implementation of rainwater harvesting for the irrigation of gardens – saving on water intake. Also consider using grey water (showers and baths) for garden irrigation to further reduce water intake.
Impact Significance : (Post mitigation)	**Low**

Aesthetics	
Potential impact:	Located in the MPE and MBR core (landmark quality). Hills are dominant natural features in the area visible from far away due to surrounding flat plains. The obvious scenic beauty contributes to sense of place. Visibility in a natural environment (high visual resource). Spoiling the experience for nature lovers and tourists (tourism appeal and conservation value). From visual assessment (NLA, 2008): • Ridgeline to the west blocks views of the site from the south. • Ridgeline to the east blocks views of the site from the north and west. • Distant views from the east (small holdings north of Magaliesberg) will be affected – views of upper levels and roofs. • Open views from MPE seldom walked by people. • People walking in Kgaswane Nature Reserve will not be able to see the lodge.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	• Natural screen as indicated above. New structures (expansion) will be between existing structures. • No development in rocky ridge area or levels above the current level of development. • Nestle buildings in landscape and retain vegetation between structures to act as visual screens / absorbers. • Existing vegetation along periphery of developed area to be retained to act as visual screens / absorbers. • Lay out parking areas to retain large clusters of indigenous vegetation to break monotony brought about by vast expanses of paved surfaces. • Remove the minimum vegetation possible from areas to be built on (expansion). • Retain natural vegetation where possible and incorporate into the design. • Implement topographic shaping to ensure final profile of rehabilitated areas emulates the natural contours of the area. • Paint buildings with colours that complement the natural browns and dark greens of the area. No light, bright or dark colours but earthy tones. • Articulate / texture buildings to interplay light and shade and minimise potential glare. • Follow an ecological approach to landscaping. Only use indigenous trees and vegetation similar to naturally occurring in the area in landscaping. • Use earthy tone paving to complement natural red / brown colours and textures of the soils for roads and

	parking. • In terms of light and lighting: o Install light fixtures providing direct illumination to reduce light "spillage" beyond the immediate surrounds. o Avoid high pole top security lighting along periphery. o Use lights activity on entry (light sensors). o Install low level 'bollard" type lights in public movement areas (roads & pathways) and not post top lighting.
Impact Significance : (Post mitigation)	Moderate Low
Groundwater quality	
Potential impact:	Septic tanks and French drains incapable of handling increased volume of sewage due to large number of people. Retention time inadequate for effective biological sewage treatment resulting in pollution of groundwater.
Impact Significance: (Prior to mitigation)	Moderate Low
Management Measures:	o Install conservancy tanks with adequate capacity. o Appoint contractor to empty conservancy tanks regularly.
Impact Significance : (Post mitigation)	Low
Socio-economic	
Potential impact:	Accidents on R24 due to increased traffic load and location of access to lodge.
Impact Significance: (Prior to mitigation)	Moderate High
Management Measures:	o Apply for additional road signage from roads authority (SANRAL).
Impact Significance : (Post mitigation)	Moderate Low

Energy conservation	
Management Measures:	To reduce energy requirements, consider alternatives. PV solar may have visual / aesthetic impacts so heat-pumps may be more appropriate.
Lighting	
Management Measures:	Install lights with movement sensors to save on electricity, reduce visual impact but still maintain security.

7 MONITORING PROGRAMME

Monitoring and auditing of compliance with this EMP, the environmental authorisation conditions and with the OHSA Regulations are to be conducted. An Audit Protocol for the construction phase has to be drawn up by a suitably qualified person to include but not be limited to aspects listed below.

7.1 Construction Phase

The following aspects need to be monitored / audited:

a) EMP and environmental authorisation compliance
- Appoint an Environmental Control Officer (ECO)

b) Noise Monitoring
- A record of complaints must be kept on the premises, as well as the measures taken to address these complaints.

7.2 Operational Phase

The following aspects need to be monitored / audited:

a) EMP and environmental authorisation compliance

b) Noise Monitoring
- A record of complaints must be kept on the premises, as well as the measures taken to address these complaints.

c) Waste, waste and wastewater management
- Ensure water flow meter on water supply line is functioning, read and accounts are paid up.
- Register and maintain borehole as emergency water supply.
- Appoint a contractor and ensure regular emptying of conservancy tanks.
- Keep safe disposal certificates on record for all solid waste as well as sewage removed from site.

8 RESPONSIBILITY

The applicant, Altman Investments (Pty) Ltd, will be responsible for the implementation of all management measures, as well as for compliance with this EMP and any additional conditions imposed by the environmental authorisation. Each contractor or employee involved in the project will comply with the EMP and environmental authorisation conditions and Contractors will therefore appoint a Contractor's Representative (such as an environmental officer (EO) but the title may vary), who is responsible for the on-site implementation of the EMP (or relevant sections of the EMP) and environmental authorisation conditions.

The representative will be suitably qualified to perform the necessary tasks and will be appointed at a level such that he/she can interact effectively with other site contractors, employees, labourers, the ECO, and the public. The representative must ensure that all sub-contractors abide by the requirements of the EMP and environmental authorisation conditions.

The representative for Altman Investments (Pty) Ltd is Mr Jan Ntemane (082 901 6799 / 082 460 2036).

Kgaswane Country Lodge: 014 537 8900 / 014 537 8901.

The construction contractor and ECO still have to be appointed.

The conditions of the EMP and environmental authorisation must be brought to the attention of all persons (employees, personnel, staff, workers, consultants, contractors, visitors, guests etc.) associated with the undertaking of these activities. Altman Investments (Pty) Ltd must take such measures that are necessary to bind such persons to the conditions thereof (contracts with penalties for non-compliances).

Altman Investments (Pty) Ltd can further enforce this by running workshops or seminars with all employees/contractors in order to raise environmental awareness (refer to environmental awareness plan). These workshops should cover aspects such as the handling of used hydrocarbons (grease & oil), pollution prevention, safe operating of mechanical equipment, water conservation, waste management and general duty of care.

9 RECORD KEEPING AND REPORTING

Accurate and up-to-date records will be kept by the EO or other appointed representative of all system malfunctions resulting in non-compliance with the EMP or environmental authorisations. Altman Investments (Pty) Ltd will also, within 24 hours, ensure that the relevant authorities are notified of the occurrence or detection of any incident which has the potential to cause, or has caused pollution of the environment, injury or health risks or which is a contravention of any EMP or environmental authorisation condition. Altman Investments (Pty) Ltd is then to submit an action plan indicating measures which will be taken to:

- Correct the impacts resulting from the incident;
- Prevent the incident from causing any further impact; and
- Prevent a recurrence of a similar incident.

A complaints register will be kept at the reception area and all complaints from the public and neighbours will be noted therein as well as measures taken to rectify the situation as described above.

10 ALTERATIONS TO THE EMP

As EMPs should remain dynamic and flexible, certain conditions may require the EMP to be revised. These conditions may include the following:

- Changes in legislation;
- Published/gazetted norms and standards;
- Occurrence of unanticipated impacts or impacts of greater significance, intensity and extent than anticipated;
- Conditions in environmental authorisation which do not form part of the EMP;
- Inadequate mitigation measures, i.e. where the level of an environmental parameter is not conforming to the required level despite the implementation of the mitigation measure; and
- Secondary impacts which occur as a result of the mitigation measures.

11 ENVIRONMENTAL AWARENESS PLAN

11.1 Objectives

The objectives of an environmental awareness plan are to:

- Inform employees, contractors and visitors / guests of any environmental risk which may result from their work, and
- Inform employees, contractors and visitors / guests of the manner in which the identified possible risks must be dealt with in order to avoid pollution or degradation of the environment.

In general, the purpose of implementing an environmental awareness plan is to optimise the awareness of those partaking in the activities, which have the potential to impact negatively on the environment, and in doing so, promote the goal of sustainable development.

11.2 Communication

Both objectives of the environmental awareness plan indicate that employees, contractors visitors / guests and must be informed of environmental matters. Information sharing is only possible through effective communication channels.

The goal for proficient communication is to provide structures for effective communication, participation and consultation that relate to the occupational health and safety hazards, environmental hazards and the Safety, Health, Environment and Quality (SHEQ) management system, especially during construction.

The objective of the communication procedure is to ensure effective communication flow, involvement of all levels of employees in the communication chain and to comply with the requirements in terms of ISO 9001:2008 clause 5.5.3 and ISO 14001:2004 clause 4.4.3.

11.3 Communication responsibility

During the construction phase, the main construction contractor (to be appointed) will be responsible for communication with sub-contractors and workers.

During the operational phase, the Kgaswane Country Lodge Manager (Mr Jan Ntemane) will be responsible for communication with employees and visitors / guests.

The **management representative** for Altman Investments (Pty) Ltd (Mr Jan Ntemane) has the responsibility, designated authority and accountability to ensure:

- Communication channels/processes are established, implemented and maintained.
- External communication: Communication with the media (press releases), other governmental departments (Department of Labour, Department of Tourism etc.), provincial (NW READ) and local authorities (Rustenburg Local Municipality (RLM)), as well as Interested and Affected Parties (I&APs) including neighbours on environmental issues.
- Internal communication:
  - Informing employees as to who is their representative and designated management appointee.
  - Obtaining information relating to responses required and/or requested by external parties from on-site representatives.

- Amendments to or new legislation, amendments to or new company policies, amendments to or new procedures and protocols.
- Development and review of environmental policies and management of hazards/risks/impacts.

Employees (on-site representatives) have the responsibility to conduct themselves in a circumspect manner ensuring the environment is not negatively impacted by their activities and their actions do not negatively impact the company image.

11.4 Environmental risk

Employees will be informed of any environmental risk, which may result from their work through the communication channels established and described above. Employees will be informed of environmental risks through communication from management and documentation provided. Environmental principles will be communicated effectively to newly appointed employees, current employees, employees returning from leave as well as contractors and visitors / guests upon entering the area.

Work procedures and protocols, which include potential risks, will be compiled for all tasks to be undertaken. Within each work procedure, an environmental risk section will be included. The environmental risk section will indicate whether the risk is to air, groundwater, surface water, soil, fauna or flora. The work procedure will then also include actions to be taken by the employee to prevent or minimise the risk.

11.5 General considerations

It is important to consider the level of education and literacy of the receiving audience and all information communicated should therefore be kept simple and be easy to understand, making use of pictures as much as is practically possible to also overcome possible language barriers in English documentation.

Personnel, staff, workers, employees and contractors on the project need to be equipped with the knowledge, skills and training to enable them to manage their task competently and safely without significant impact on their surrounding environment. Altman Investments (Pty) Ltd will ensure that it appoints people qualified for the task, which is expected of them and/or provide in-house training to acceptable skill levels.

While management will ultimately be responsible and accountable, employees will also be given responsibility and accountability to follow procedures and report to management on certain aspects.

Basic environmental knowledge, training and awareness will be included in inductions.

11.6 Aspects covered

The first objective of the environmental awareness plan is to inform employees, contractors and visitors / guests of any environmental risk, which may result from their work. The following aspects will be addressed during environmental awareness training for personnel, staff, workers, employees and contractors. The objective is to raise environmental awareness and educate people on environmentally responsible conduct.

The items have been structured to enable even uneducated workers to comprehend it. Pictures will be added to convey the message to illiterate people. Pamphlets will be distributed and notices will be placed around the site to continually remind workers and visitors / guests to be environmentally responsible and cautious when entering the premises.

11.6.1 General

Importance of the environment and why we need to protect it.

- Non-living elements: air, water, soil.
- Living elements: plants, animals, humans.
- Living elements depend on non-living elements for survival.
- Relationship between living and non-living elements.
- The life cycle to keep everything in balance.
- People are reliant on the natural life cycle for their existence.

Terminology

- Any change to the environment due to human activities is called an impact. Impacts can be positive or negative. Positive impacts are job creation and tourism development. Negative impacts are pollution such as littering and improper waste handling as well as damage to environmentally sensitive and natural areas through irresponsible conduct.
- Contamination or pollution is when a natural element such as air or water is impacted negatively due to human activities. Spillages of oil/diesel (hydrocarbons) from construction equipment can pollute storm water runoff and soil whereas inappropriate handling of sewage can lead to groundwater contamination.
- Environmental management is the control of human activities to minimise the impact on the natural environment as much as possible. It ensures that pollution is minimised and that people living in the environment are healthy (physically and mentally). The use of drip trays during emergency maintenance to catch hydrocarbon (diesel/oil) spillages is an environmental management measure.

The role of the employee.

- What can you and I do to protect the environment? Discuss environmentally acceptable behaviour such as closing of taps, correct use of ablution facilities, waste management etc.
- What can you and I do to ensure that Kgaswane Country Lodge does not cause unnecessary damage to the environment? Report and clean spillages, stay within demarcated areas etc.
- There is always a reason for an environmental impact or accident and generally people are the reason.
- Always work carefully so that you don't damage the environment and protect your own safety and health.
- Obey the rules.
- Report any impacts/incidents or accidents to your supervisor/manager.
- Your role is important, be environmentally responsible and always aware of the environment.
- Negative environmental impacts can cause death, injury, pain, suffering, diseases, damage to property and equipment, legal liability, cost, etc.
- We must look after our environment for the sake of our children and their children.

South African laws protecting the environment:

- Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)

- National Water Act, 1998 (Act 36 of 1998)
- National Environmental Management Act, 1998 (Act 107 of 1998)
- National Environmental Management Waste Act, 2008 (Act 59 of 2008)
- National Environmental Management Air Quality Act, 2004 (Act 39 of 2004)
- Hazardous Substances Act, 1973 (Act 85 of 1973)
- National Heritage Resources Act, 1999 (Act 25 of 1999)
- National Environmental Management Biodiversity Act (NEMBA), 2004 (Act 10 of 2004)
- National Environmental Management Protected Areas Act (NEMPAA), 2003 (Act 57 of 2003)

11.6.2 Animals

- No hunting, poaching, snaring or killing of any animals will be allowed.
- Report animals seen within the area to your supervisor to have them safely removed as this poses a danger to them.

11.6.3 Plants

- Vegetation will only be removed within the demarcated footprints for the accommodation buildings, except for weeds and exotic vegetation, which should be cleared and controlled.
- Employees, contractors and visitors / guests to stay out of the rocky ridge area.

11.6.4 Sewage and ablution

- No ablution or washing outside designated areas.
- No foreign objects to be disposed to toilets.
- Regular pumping of conservancy tanks for off-site disposal.

11.6.5 Waste management

- No littering is allowed on the property or neighbouring properties. A litter patrol will be conducted once a week to remove litter from the environment and properly dispose of this.
- No waste is to be buried on this site or neighbouring properties.
- No burning of waste.
- Use skips/bins for general waste storage until it is collected for disposal.
- Oils / greases / diesel / petrol (hydrocarbon) contaminated waste is considered hazardous and should be collected separately for recycling or special disposal.
- Waste manifests or safe disposal certificates need to be obtained for all waste streams leaving the site to ensure proper recycling or safe disposal.
- Clean up any spillages and dispose appropriately of the waste, which was generated as a result.

11.6.6 Water

- Use water sparingly. No wastage of water will be allowed. Close taps after use. Consider taps with sensors for self stop.
- Repair leaking pipes.
- Ensure all valves or taps on water lines are closed if not in use.
- Maintain infrastructure (pipes) that convey water to prevent blockages and/or spillages.

11.6.7 Sensitive environments

- Streams, rivers, wetlands and dams or any area associated with naturally occurring water is considered environmentally sensitive features and should be avoided.
- Remain within demarcated areas.
- Stay clear of the rocky ridge area.

11.6.8 Safety

- Keep on designated pathways.
- Report fires, incidents, accidents, injuries etc.

11.6.9 Reporting & Recording

- All complaints by members of the public and neighbours should be registered and captured in a complaints register (date, time, name, contact details, complaint & action taken);
- All incidents should be recorded in an incident log sheet to allow investigation and remedial action;
- Report impacts/incident/accidents immediately to a supervisor/manager;
- Investigate any impact/incident/accident to find out why it happened, what can be done to fix it and what should be done to prevent it from happening again; and
- Report any damage to infrastructure to supervisor/manager.

11.6.10 Recording and Reporting of Incidents / Accidents / Impacts

The second objective of the environmental awareness plan is to inform employees, contractors and visitors / guests of the manner in which the identified possible risks must be dealt with in order to prevent degradation of the environment. Dealing with identified possible risks will include recording and reporting of incidents / accidents / impacts.

Investigation Reports

All incidents / accidents / impacts (injuries, spillages etc.) will be recorded as per defined SHEQ standards. A standard format (investigation report) will be completed for each incident / accident / impact to allow further investigations into the matter.

The investigation report will contain the following information:
- Particulars and description of incident / accident / impact;
- The investigation panel;
- Root cause;
- Corrective and preventative measures to prevent recurrence;
- Witness and Insured's statements;
- Photos and Work Instructions; and
- Risk assessments carried out for the tasks performed.

Emergency and Contingency Measures

Emergency and contingency plans will be put in place in conjunction with the necessary equipment (fire extinguishers etc.) and personnel on stand-by to manage such situations as and when necessary. Codes of Practice, operating procedures and planned maintenance

systems will be established for inspection, maintenance, and to ensure effective and continuous operation and early detection of any malfunction or emergency incident.

Table 5: Example of Emergency Contact Details

NETCARE	082 911
POLICE	10111
POLICE STATION (Rustenburg)	014 590 4115
FIRE/AMBULANCE	10177
FIRE STATION (Rustenburg)	014 590 3444
HOSPITAL (Rustenburg Provincial Hospital in Rustenburg CBD)	014 590 5400

Table 6: Example of Incident and Environmental Reporting Sheet

INCIDENT AND ENVIRONMENTAL LOG SHEET																				
Date:	2	0			/	m	m	/	d	d	Time:			:			Location:			
Nature of incident or risk type:		Procedure/ Process					Environmental					Safety		Health		Equipment/ Machinery		Other		
Description / nature		Quantity of Spill/ Release:												Pollutant/ Substance:						
Clean up or containment method:														Product Used:						
Hours lost:					Cost:									Root Cause:						
Corrective actions taken:																				
Incident reported by:												Signature:								
Capacity of person above:												Repeat Incident					YES		NO	
Further investigation required:		YES		NO								Person handling further investigation:								