

MODITLO NATURE RESERVE

**PORTION 4 OF THE FARM HOEDSPRUIT 82-KU;
PORTION 2 OF THE FARM RIVERSDALE 246-KT;
REMAINDER OF PORTION 3 OF THE FARM MORIA 83-KU**

ENVIRONMENTAL MANAGEMENT PLAN

Report No 3

Limpopo Reference No.: 16/1/10/3-43

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ENVIRONMENTAL MANAGEMENT PLAN**DETAILS OF PROPONENT**

Name of Proponent	Moditlo Development Services (Pty) Ltd
Company Registration No	2002/014102/07
Directors	PJJ Venter; F Hartzenberg; EL Celliers, F Hugo; A Botha
Address of Proponent	P.O. Box 371, Fauna Park, Polokwane, 0787
Telephone:	015 297 0038
Fax:	015 297 0038
Contact Person	PJJ Venter
Description of Activity	Estate Development: Moditlo

LOCATION OF ACTIVITY

District Council	Maruleng Municipality
Farm details	Portion 4 of the Farm Hoedspruit 82-KU Portion 2 of the Farm Riversdale 246-KT Remainder of Portion 3 of the Farm Moriah 83-KU
Nearest town and distance	Hoedspruit 12 km
Nearest settlement and distance	Acornhoek 25 km

DETAILS OF LANDOWNER

Name of Landowner	Moditlo Development Company (Pty) Ltd
Address	P.O. Box 371, Fauna Park, Polokwane 0787
Telephone	015 297 00038
Fax and email	015 2970038, inaven@mweb.co.za

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1. PURPOSE AND PHILOSOPHY OF THE ENVIRONMENTAL MANAGEMENT PLAN

1.1 Purpose

The purpose of the Moditlo Nature Reserve's Environmental Management Plan (EMP) is to:

- Outline the environmental management commitments made by the Moditlo Development Company (Pty) Ltd for the Moditlo Estate development in the Moditlo Nature Reserve;
- Describe criteria or targets to meet Moditlo Estate's environmental management commitments;
- Act as a performance standard for the Moditlo Estate's development to be audited against;
- Ensure compliance with permit and licence requirements. In particular:
 - Limpopo Province Department of Finance and Economic Development's permission in terms of their Environmental Authorisation (Record of Decision dated, Ref:.....) conditions (Compliance with regulations in terms of Section 22 of the Environment Conservation Act 73 of 1989);
 - Department of Water Affairs and Forestry (DWAF), Nelspruit's permissions and licences in terms of the National Water Act, 1998 (No.36 of 1998) (or the old Water Act, where applicable - for water usage and storage) and the Environmental Conservation Act, 1989 (Act 73 of 1989) (for waste management);
 - Northern Province Roads Agency conditions; and
- ensure compliance with other regulatory requirements, such as:
 - The National Environmental Management Act, 1998 (No.107 of 1998);

2. ROLES AND RESPONSIBILITIES

2.1 Roles and Responsibilities		PARTY
Land Owner ¹	<ul style="list-style-type: none"> Overall, ultimate liability and accountability for the site - during all phases of site development - construction, operation, and rehabilitation. 	Directors of Moditlo Development Company
Permit/Licence Holder	<ul style="list-style-type: none"> Legal responsibility for the site and facility, during the operational phase. Responsible for the adherence to legal compliance, as specified by the specific conditions in the permits and licences held and by the relevant legislation. Appointment of appropriately qualified staff and/or consultants to co-ordinate, supervise and implement different tasks. Liaison person with the Relevant Authority² and Interested and Affected Parties (IAPs). 	Moditlo Services Company (Pty) Ltd
Responsible Person ³	<ul style="list-style-type: none"> Ensuring all facets of the work undertaken are properly and competently directed, guided and executed at all phases of the development. Appointment of qualified and experienced people to perform tasks. The correct interpretation and application of the legal requirements applicable to the site. On-site interaction with IAPs (including the Relevant Authority), when required. 	PJJ Venter as director of Moditlo Services Company
Site Construction	<ul style="list-style-type: none"> Construction of dwellings to contractual specifications⁴. Adherence to laws and standards pertinent to the construction of the site as set out in the Homeowners' Rules. 	Appointed Agent (Contractor)
Site Maintenance	<ul style="list-style-type: none"> Maintenance of structures and other facilities according to contractual specifications. Adherence to laws and standards pertinent to the maintenance of structures and facilities. 	Moditlo Services Company (Pty) Ltd
Site Auditor (External and Internal)	<ul style="list-style-type: none"> Determination of the conformance of the site with the EMP criteria and compliance with the permits/licences. Identification of possible areas of improvement. 	Independent Auditor

¹ "Land owner" is a person with registered freehold title to the property on which the development is situated.

² "Relevant Authority" means a municipality with jurisdiction over the area on which the development is sited; a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which the development is located; and/or the Director-General of a national department.

³ "Responsible person" includes any person who is responsible for the Facility; owns any contaminating substance on the plant site; or is in control of the plant or substance on the site.

⁴ "Contractual specifications" will be written to include the criteria, standards, and guidelines from the EMP.

2.1 Roles and Responsibilities	PARTY
<ul style="list-style-type: none"> Assessment of the suitability or effectiveness of the EMP. 	

3. SITE ACTIVITIES

The activities that will be undertaken at the site during the different phases of the Moditlo Estates development are listed below. As the development is still to be constructed, pre-construction and construction activities are considered.

3.1 PROJECT ACTIVITIES

The project will entail the establishment of a maximum of 500, 1 ha housing units, a guesthouse and management infrastructure (see layout plan, Appendix A). Moditlo Development Company (Pty) Ltd will manage Moditlo Estates in terms of the physical development, marketing, services, and security.

The following activities are proposed:

Number of stands

Portion 2 of the farm Riversdale 246-KT

107 stands are to be developed of which 30 stands are located above the 1:100 floodline on the banks of the Moditlo River. The remainder (77) will be developed on the high-lying areas in close proximity to the boundary with Portion 4 of the farm Hoedspruit 82-KU.

Portion of the farm Hoedspruit 82-KU

130 stands are to be developed on the banks of the Mbezi River above the 1:100 floodline. The Guest House will be developed on a separate portion on the banks of the Mbezi River.

Remainder of Portion 3 of the farm Moria 83-KU

213 stands are to be developed of which approximately 103 are on the banks of the Mbezi River, 13 stands on the banks of the Moditlo River and the remainder (97 stands) are situated on the higher-lying areas.

Currently 450 stands are pegged on site and these are within the requirements of the Department of Water Affairs and Forestry (DWAF) and the Department of Agriculture in terms of flood lines. The 1:100 year floodline indicated on the layout map, shows the areas where flooding can occur and no development should take place below these lines.

The houses will be restricted to 300 - 350 m² per unit. In order to regulate the density, a maximum of 10 beds are allowed per dwelling. This includes the accommodation of servants and gardeners. The guesthouse is restricted to 24 beds.

The offices, maintenance buildings, and security quarters will in total not exceed 1000 m² and will be concentrated at the main entrance gate.

The proposed development will have an estimated 3 % footprint on the total area. This is calculated as follows:

Residents:	500 x 1 ha stands x 350 m ² house	17,5 ha
Offices, Security, Maintenance buildings		1 ha
Infrastructure (roads, bridges) 100 kilometres of road		<u>100 ha</u>
Total		117,5 ha
Total area		3600 ha
Footprint		3 %

Construction Phase

Only three contractors will be allowed to conduct construction work to ensure control over contractors and workers. Contractors will be expected to sign a code of conduct with specific rules and conditions that will make them responsible for the actions of their workers.

Operational Phase

Moditlo Development Company will be responsible for the provision of the following services:

Access

Access to the property will be obtained from the provincial main road (R40). The two existing access routes from the provincial road will be upgraded and utilised as access points. Both these access routes cross the railway line that connects Hoedspruit with Acornhoek. The southern access road will be constructed as the main entrance. The secondary (northern) access route will only be used by owners and residents of the farm towards the west of Portion 4 of the farm Hoedspruit as well as portion 3 of the farm Moria. Maintenance staff and construction workers (during the construction phase) will also utilise the secondary access point.

The Northern Province Road Agency (NPRA) (Appendix C) approved the two access points with the conditions as set out under the following headings are to be met by the applicant and the owners:

- Liability and Responsibility is that of the applicant.
- Determination of road reserve boundaries, plans and declarations
- Authority.

Railway Crossing

An application to upgrade the existing railway line crossing to a public crossing was submitted to Spoornet and the conditions set will be adhered to.

Electricity

Escom will provide electricity in bulk and has indicated that there is sufficient capacity available (22 kVA). All cables will be laid underground and where possible next to access roads to minimise the impact on the soil and vegetation.

The existing substation will be utilised and a 22/11 kV step-down substation will be established on the property to enable the installation of an 11kV underground distribution system. The low-voltage distributions will be carried out from 11000/400/231V minisubstation to the individual properties. The system will be designed for an after diversity maximum demand of 5 kVA per unit allowing a 60 Ampere single phase connection to each property. No streetlights will be provided.

Portion 4 of the farm Hoedspruit 82-KU and Portion 2 of the farm Riversdale 246-KT are subject to a servitude granting Escom the right to convey electricity over the properties with ancillary rights and subject to conditions. The properties are thus subject to a powerline servitude 31m wide. The location of the servitude as well as the fact that it makes provision for ancillary rights make the condition applicable to the development and it must be transferred to the new stands.

Water supply

The quantity of water required for the development is estimated at 54 750.0m³/year (see Table 2 for calculation). Water will initially be obtained from existing boreholes on the property. Two existing boreholes were tested and four additional boreholes were drilled for domestic water use purposes. This will be an interim measure until the development can link up with the town council's water supply scheme. Six boreholes will be registered at the Department of Water Affairs and Forestry.

Water will be pumped from the boreholes to two reservoirs and elevated storage containers, from where it will be distributed via an underground pipe network to the individual dwellings. The water from the boreholes were tested and proved to be well within the SABS standards for domestic use and human consumption (see Scoping Report for results). The developer will also install a chlorinator to ensure hygienic water quality standards.

Table 1. Groundwater quality as per SABS standards (taken from Scoping Report).

Physical and Chemical Data	Recommended	Maximum allowable	MODITLO
PH	6-9	5.5-9.5	7.4
Turbidity (FTU)	1	5	0.5
Conductivity (mSm)	70	300	79
Colour (Hazen)	20	n.s.	<5
Total Hardness (CaCO ₃)	20-30	650	148
Calcium Hardness (CaCO ₃)	n.s.	n.s.	68
Calcium as Ca	n.s.	n.s.	27
Magnesium as Mg	70	100	19
Sodium as Na	100	400	79
Alkalinity as CaCO ₃	n.s.	n.s.	280
Chloride as Cl	250	600	26

Sulphate as SO ₄	200	600	3
Nitrate as N	6	10	1.2
Fluoride as F	1	1.5	0.3
Total dissolved solids	n.s.	n.s.	49

Table 2. Calculation of total volume water required for domestic purposes.

Maximum number of dwellings	→	500
Daily water demand per lodge of 6 people @ 200 l per day (no gardening)	→	1.2 m ³ /day
Maximum occupancy over peak periods	→	50%
Average occupancy per year	→	25%
Maximum daily demand (500 dwellings x 1.2 m ³ /day x 50%)	→	300 m ³ /day
Total annual demand (500 dwellings x 365 days x 25%)	→	54750 m ³ /year

Waste

The Maruleng Municipality indicated that they do not have the capacity to provide a service in terms of waste removal and that an agreement with a waste contractor should be made. The Municipality do however have sufficient capacity at the permitted Hoedspruit Waste Site (see Appendix C).

Sewage

The stands in the proposed development are mainly located either side of the two rivers, the Mbezi and the Moditlo Rivers. The stands are spread out over a large area, which made the installation of a water borne sewer network and treatment work prohibitively expensive. It was decided to make each plot owner responsible for installing his or her own sewage treatment system, pending approval of the aesthetics committee and the adhering to the conditions set by DWAF. Owners will be able to select one of the following three alternatives are prescribed in the Home Owner's Rules:

- ❑ A pre-manufactured sealed septic tank combined with a soakaway. The soakaway, in this case may not be closer than 100 m to the river. Where houses are placed closer than 100 m to the river, it may not be possible to place the soakaway, operating under gravity, 100 m away from the river. In these cases, the effluent from the septic tank will have to be pumped to the soakaway.
- ❑ A small, package sewage treatment plant, such as the Lilliput or similar system. Effluent from the plant can either be used for irrigation or the effluent can be taken to a soakaway.
- ❑ A non-flush dry sanitation system combined with grease traps, retention tanks and French drains. The toilets will be non-flush dry sanitation systems using urine diversion technology such as Enviro Loo. This system separates the solids from the liquids, where the solids are bacteriologically broken down and the liquids evaporate. Household water first passes through a grease trap, before entering the soakaway. Bath water flows directly into the soakaway. In cases where dishwashers and washing machines are installed, the effluent first flows into a 1,0m³ sealed retention tank where the solid are separated from the liquids, which then flow to the soakaway.

Roads

The road system will consist of main roads, from the access points towards the west of the reserve, the secondary roads that will lead to each stand or cluster of stands, and the game viewing roads. Motorised vehicles may only drive on the main vehicular roads and link roads to and from residences. No motorised vehicles will be allowed on the game viewing roads or over open spaces. A speed limit of 30 km per hour will be enforced within the reserve. Pedestrians, electric driven golf carts and bicycles only may take access over game viewing roads.

Existing roads, which is mainly normal game viewing roads, will be upgraded and covered with suitable gravel material. The gravel for these roads will be obtained from the commercial gravel pit in Hoedspruit. The existing river crossing will remain intact and two will be upgraded to ensure access during flooding.

Security

An electric fence will surround the entire development. No other fences will be allowed within the development. A security company will be appointed to ensure the safety of the residents on a 24-hour basis. A security checkpoint will be erected at each access to the property and owners, adjacent landowners, visitors and contractors will be expected to adhere to the security protocol at all times.

Wildlife Management

The Moditlo Developing Company will appoint Moditlo Wildsboerdery (Pty) Ltd to manage the wildlife on the reserve. The homeowners' rules set out certain rules that every homeowner has to abide to in this regard (Appendix D).

Storm water control

Culverts will be put in place to avoid erosion of roads and the area surrounding crossings or low water bridges.

4. MANAGEMENT PROGRAMME

The management criteria, objectives, and actions are organised in this document according to generic groups of activities that are similar in nature.

4.1 ACTIVITIES DURING PRE-CONSTRUCTION

4.1.1 Layout of sites

Environmental Impact	Management Criteria/Objectives/Actions
4.1.1.1 <i>Disturbance to neighbouring communities</i>	<ul style="list-style-type: none"> • The placement of the construction camp will be adjacent to the railway line, next to the power substation to minimise any disturbance to neighbouring communities. • The agreed 300-meter zone between the boundaries of the properties and the nearest dwelling will be honoured. • No main roads, except for patrol paths, will be established adjacent to the boundaries of neighbouring farms to avoid disturbances such as noise and dust.
4.1.1.2 <i>Disturbance of natural habitat</i>	<ul style="list-style-type: none"> • Building sites will not be placed on the primary riverbanks. • Building sites will be pegged in such a way that disturbance of the natural habitat will be kept to a minimum. • On riverfront stands, all buildings will be inland to the peg and away from the river on an area not greater than 15m-diameter circle (approximately 700 square meter). • Non-river front stands, buildings must be within a 15m-radius circle with the peg as centre.
4.1.1.3 <i>Floodline</i>	<ul style="list-style-type: none"> • All building sites will be above the 100-meter flood line as indicated on the layout map (Appendix A).
4.1.1.4 <i>Cultural heritage</i>	<ul style="list-style-type: none"> • The existence of cultural heritage sites should be considered according to the heritage resources management plan, to be provided separately from this document, in the <ul style="list-style-type: none"> ◦ The placing of buildings ◦ Location of service infrastructure • Cultural and heritage sites should be clearly marked and these areas must be avoided as far as possible.
4.1.1.5 <i>Aesthetics</i>	<ul style="list-style-type: none"> • Only single story dwellings will be allowed. • No movement sensitive security lights will be allowed. • All external lighting to be a maximum of 1 meter above the natural ground level and must shine down.

4.2 ACTIVITIES DURING CONSTRUCTION

4.2.1 Employment

Environmental Impact	Management Criteria/Objectives/Actions
<p>4.2.1.1 Quality Management</p>	<ul style="list-style-type: none"> • Competent and dedicated environmental staff must be appointed. • Contractors must be instructed about environmental sensitivities as described in the EMP. • Contractors must ensure that employees do not trespass on private property. Stands where building activities are conducted will be demarcated by hessian or such other material. • Contractors must ensure that employees do not harass or poach animals. • Contractors must ensure that employees do not remove any medicinal plants or firewood from the property.
<p>4.2.1.2 Local communities</p>	<ul style="list-style-type: none"> • All conditions of the Basic Employment Conditions Act (Act no 75 of 1997) must be adhered to by contractors. • Local contractors will be used for construction work. • The contractor must be made aware of all the agreements and conditions that were set by the neighbouring communities in terms of disturbance, noise, security etc. • The contractor will be responsible for the safety of his employees. • Proper safety measures must be taken at all times to protect workers from accidents and injuries. Protective clothing must be worn when working in a risk environment.

4.2.2 Installation of services and construction of infrastructure

Environmental Impact	Management Criteria/Objectives/Actions
<p>4.2.2.1 Access</p>	<ul style="list-style-type: none"> ▪ All conditions as set out by the Northern Province Roads Agency (NPRA) must be adhered to. Those are; <ul style="list-style-type: none"> ▪ Liability and Responsibility are applicable to the registered landowner. ▪ Determination of road reserve boundaries, plans and declarations <ul style="list-style-type: none"> ○ The existing road P17-4 is affected and the road reserves must be withheld from the application. ▪ Building Restrictions <ul style="list-style-type: none"> ○ No buildings or structures as described in Section 9 of the Roads and Ribbon Development Act (Act 21 of 1940) may be erected nearer than 95 metres from the centre line of roads(s) P17-4 without the written approval of the Controlling Authority (NPRA Pty Ltd). ○ The building line as laid down in the conditions of establishment or subdivision of the property, or as required by the relevant Local Authority must be respected for all other roads not under the jurisdiction of the NPRA. ▪ Access and physical barrier. <ul style="list-style-type: none"> ○ Access shall be provided at 34.71 and 40.24 km markers on road P17-4. ○ Provisions must be made for 15 x 15 metre road reserve splays and the applicant at his cost must fence these. ○ All other accesses must be properly closed by means of a fence or a barrier that extends along the full road frontage. The other accesses must be closed within 21 calendar days after the completion of the approved accesses. ○ The applicant shall plan, design, build and maintain the accesses at his cost to the satisfaction of the Chief Executive Officer of the NPRA ○ Any access to the property concerned, be it temporary or permanent, must be constructed to the satisfaction of the Chief Executive Officer of the Northern Province Roads agency Limited before it is put in use. The permission for this access will be summarily withdrawn should the access not be built and completed before the development is opened to the public. ○ No work may be done within the confines of the road reserve until the applicable plans and specifications as mentioned above have been submitted and approved by the Chief Executive Officer. ▪ Remote adjacent service roads must be outside the road reserves and to the satisfaction of the Chief Executive Officer NPRA. ▪ According to Section 47 of the NPRA and Provincial Roads Act, Act 7 of 1998, the applicant shall arrange the drainage of the development in such a way that it will fit in with the drainage of the road, taking into account the capacity of the system. When it is in the opinion of the Chief Executive Officer of the NPRA that the system for the above road is too small to cope with any increased volume of stormwater as a result of the development, the applicant shall be responsible for the cost for the installing of a larger drainage system for the road. ▪ The applicant must write an acceptance of the conditions set by the NPRA together with three revised layout plans, portraying the conditions of the NPRA within 6 (six) months (April 2003) from date of the provisional approval, letter dated 25 October 2002.

Environmental Impact	Management Criteria/Objectives/Actions
4.2.2.2 <i>Quality Management</i>	<ul style="list-style-type: none"> ▪ Construction work and building must comply with the relevant engineering standards. ▪ All electrical installations will be in accordance with the standard installation regulations (SABS0142 usercode)
4.2.2.3 <i>Conservation of soil</i>	<ul style="list-style-type: none"> ▪ All soil excavated from construction sites will be stored for use in rehabilitation work on the specific site or other areas where needed. ▪ No concrete or other building material may be mixed directly on the ground. Mixing platforms will be provided for this purpose. ▪ Storm water will be directed from infrastructure in such a way that erosion is minimised. Where possible, game roads and entrance roads to individual properties must follow the natural contour of the landscape to reduce erosion. ▪ No building material will be obtained from either an existing gravel pit or river beds for construction purposes. ▪ Building materials will be obtained from a commercial gravel pit, licensed with the Department of Minerals and Energy.
4.2.2.4 <i>Water conservation</i>	<ul style="list-style-type: none"> • Water for domestic use by construction workers will be obtained from the existing boreholes and will be stored in a tank at the construction site. • Water for construction will be obtained from the boreholes and stored in tanks. • Construction workers must be made aware that water is a scarce commodity and that taps should be closed when not in use. • All leaking pipes and malfunctioning water supply systems will be repaired immediately.
4.2.2.5 <i>Natural habitat disturbance</i>	<ul style="list-style-type: none"> • Trenches for underground cables should be constructed as close as possible to roads to minimise disturbance. • Trenches should be patrolled daily for trapped animals. • Construction vehicles will only be allowed on main routes. No off-road vehicular movement will be allowed other than for bush clearing activities. Where bush-clearing activities are necessary, this will only take place under strict supervision of the residential engineer. • Removal of vegetation is restricted to the building area only. Where possible, vegetation such as bulbous plants that had to be removed should be re-established in the same area. • No trees with a trunk diameter of more than 30 cm should be removed. • No foundations should be within five metres of large trees. • Wooden decks and poles should be used on the riverbanks to prevent disturbance of the sensitive undergrowth in the riparian zone. • The area of construction and storage of equipment and material will be limited to a demarcated area and controlled by the site operator. • Employees and vehicles will be instructed to keep within the disturbed area.

Environmental Impact	Management Criteria/Objectives/Actions
4.2.2.6 Noise disturbance	<ul style="list-style-type: none"> Noise levels emitted by vehicles and equipment will be kept as low as reasonable. The operation of construction activities will be limited to the hours of 06h00 and 18h00. Where blasting is required, all landowners within a 200-metre radius of each blasting point must be notified. Blasting must be restricted to between 07h00 and 17h00. All employees will be transported to and from the site and limited private transport will be allowed on site. No loitering by the employees outside the designated working hours will be allowed at the site.
4.2.2.7 Air pollution	<ul style="list-style-type: none"> Vehicles entering the site will maintain low speeds to minimise the creation of dust. Fumes generated by the vehicles and other equipment will be kept to an acceptable level.
4.2.2.8 Archaeological impact	<ul style="list-style-type: none"> Once the infrastructure plans are finalised, and trench routes are determined, a qualified archaeologist should confirm that no cultural heritage sites are threatened before construction commences. When shallow grave as exposed during construction all activities must be put on hold and the residential engineer must notify the appointed archaeologist. All aspects of the heritage resource management plan (provided separately from this report) must be adhered to.
4.2.2.9 Security	<ul style="list-style-type: none"> Only permitted vehicles from the appointed contractor will be allowed to enter the property at the designated entrance gate and security check point. Vehicles leaving the property will be searched if deemed necessary. The security register should be checked daily to monitor the movement of vehicles and the amount of people in and out of the property.

4.2.3 Waste

Environmental Impact	Management Criteria/Objectives/Actions
4.2.3.1 Soil, surface water and ground water contamination	<ul style="list-style-type: none"> All aspects of waste management must comply with the requirements of the National Water Act, specifically the regulation regarding waste disposal. Building rubble waste will be contained and removed from each construction site on completion. Domestic waste will be properly contained and removed daily to prevent scavenging by animals. No waste may be buried or burned on the property. Potential hazardous waste material such as paint tins, oil and diesel containers must be contained and removed to prevent possible ground and surface water pollution due to run-off in the rainy season.
4.2.3.2 Odour	<ul style="list-style-type: none"> Waste should be removed daily to prevent odours.

4.2.4 Sewage

Environmental Impact	Management Criteria/Objectives/Actions
4.2.4.1 <i>Soil, surface water and ground water contamination</i>	<ul style="list-style-type: none"> Comply with the requirements of the National Water Act, specifically the General Effluent Standard, and any other relevant laws concerning sanitation, and wastewater discharge. Chemical latrines will be erected at the construction camp. No effluent from latrines will be discharged of in any manner other than removing it from site and disposing it in an acceptable way.
4.2.4.2 <i>Odour</i>	<ul style="list-style-type: none"> Latrines should be cleaned daily to ensure hygienic conditions.

4.2.5 Fire Prevention

Environmental Impact	Management Criteria/Objectives/Actions
4.2.5.1 <i>Awareness and Prevention</i>	<ul style="list-style-type: none"> Contractors will ensure that employees are made aware of the danger of fires. The developer will provide adequate fire fighting equipment. Fire fighting equipment will always be in a working condition and checked regularly, especially during the dry winter months.
4.2.5.2 <i>Emergency Preparedness</i>	<ul style="list-style-type: none"> An emergency preparedness plan must be compiled and each contractor and employee should understand the contents of the plan.

4.3 ACTIVITIES DURING OPERATION

4.3.1 Employment

Environmental Impact	Management Criteria/Objectives/Actions
4.3.1.1 <i>Noise</i>	<ul style="list-style-type: none"> Residents will be held responsible for the behaviour of their employees.
4.3.1.2 <i>Security</i>	<ul style="list-style-type: none"> Employees of residents will be required to wear an identification card to gain access to the nature reserve. Residents are required to regularly update the details of their employees at the security offices.
4.3.1.3 <i>Disturbance of neighbouring communities</i>	<ul style="list-style-type: none"> All employees will be transported to and from the site and limited private transport will be allowed on site. No loitering by the employees outside the designated working hours will be allowed.

4.3.2 Water usage

Environmental Impact	Management Criteria/Objectives/Actions
4.3.2.1 <i>Water conservation</i>	<ul style="list-style-type: none"> Water will initially be obtained from the six boreholes on the property. The water from the boreholes will be treated with chlorine to ensure an acceptable standard for domestic purposes. Boreholes will be licensed to comply with the requirements of the National Water Act. The objective to link up with the Maruleng Municipality water reticulation system will be pursued <u>urgently to be functional by December 2003.</u> All residents will be made aware of the importance of water use conservation.
4.3.2.2 <i>Aesthetics</i>	<ul style="list-style-type: none"> The water reservoirs will be screened with indigenous trees to eliminate the visual impact. The elevated storage tanks will be constructed to simultaneously serve as a lookout point for residents.

NB

4.3.3 Waste management

Environmental Impact	Management Criteria/Objectives/Actions
4.3.3.1 <i>Services</i>	<ul style="list-style-type: none"> A waste removal contractor will be contracted to remove solid waste regularly.
4.3.3.2 <i>Soil and ground water contamination</i>	<ul style="list-style-type: none"> All waste generated from households on the site will be stored and disposed of in a manner that does not result in contamination of water resources.
4.3.3.3 <i>Air pollution</i>	<ul style="list-style-type: none"> Waste will be kept in suitable containers at each site to eliminate odours, scavenging and pollution.

NB

4.3.4 Sewage

Environmental Impact	Management Criteria/Objectives/Actions
Surface water contamination	<ul style="list-style-type: none"> Sewage sites will be located more than 100 meters away from any water source. Inspection for leakages and seepage will be conducted regularly. If found, immediate action will be taken to rectify the problem.
Ground water contamination	<ul style="list-style-type: none"> <u>The residential engineer will evaluate the geohydrological characteristics of the soil and recommend which sanitation systems will be suitable.</u> Only the recommended sanitation systems will be approved (Appendix D). Septic tanks will be constructed according to engineering standards.

NB

4.3.5 Security

Environmental Impact	Management Criteria/Objectives/Actions
Access control	<ul style="list-style-type: none"> • A proper game fence will be constructed and maintained along the boundaries of the site to prevent entry of unauthorised persons. • The appointed security personnel will man the access gates 24 hours. • Weatherproof, durable and legible notices in three official languages applicable in the area, will be displayed at the entrance to the site. These notices will prohibit unauthorised entry; state the risks of entering the site; name, address and telephone number of the person responsible for the management of estate. • Only authorised vehicles will be allowed on site. • Adjacent landowners using the access gates to gain entry to their properties will be required to submit to carrying an entrance permit and the security regulations.

4.3.6 Rehabilitation and Erosion control

Environmental Impact	Management Criteria/Objectives/Actions
Soil erosion	<ul style="list-style-type: none"> • Where areas were denuded, appropriate measures will be implemented to ensure revegetation with indigenous species. • Adequate measures will be put in place to control erosion from road surfaces and access areas.

4.3.7 Wildlife Management

Environmental Impact	Management Criteria/Objectives/Actions
Management	<ul style="list-style-type: none"> • Moditlo Wildsboerdery (Pty) Ltd will be appointed to manage all veld and wild game resources within the Nature Reserve. • <u>No hunting will be allowed within the Nature Reserve.</u> • An external third party, such as a consultant or the regulatory authority, will verify culling quotas. • Moditlo Wildsboerdery will control, manage, and administrate all roads except those roads linking the formal roads to each dwelling. • Conservation practices will be according to accepted nature conservation standards. • No fences or barricades will be constructed internally

5. EMERGENCY/REACTION PLANS

Reaction plans will be prepared for anticipated emergencies and will be made available separately from the EMP to contractors, employees, and residents.

➤ Fire hazards: Emergency procedures will be made available and explained thoroughly to contractors, employees, and residents. A copy of the fire emergency procedure will be supplied to the residents for referral. Fire extinguishers will be placed where it can be accessed and checked regularly to ensure that it is in a good working order.

- Flood hazard: Flooding can occur due to heavy rain. Emergency procedures and exit routes will be identified and made available to contractors, employees, and residents.

6. MONITORING

6.1 Complaints

- Objective:**
- Identify the impact of the development;
 - Address concerns as soon as possible.
 - Ensure communication with community.

- Methodology:**
- Note any complaints received in a complaints register giving time, nature of complaint, contact details of complainant and reaction to the complaint.
 - Determine whether the complaint is valid. If so, take corrective action.
 - Follow up complaints within 24 hours of receiving them and take appropriate action

- Frequency:**
- As soon as they are received.

7. REPORTING AND SCHEDULING

7.1 Monitoring Committee:

A Monitoring Committee will be formed to:

- Monitor the environmental performance of the development
- Inform and communicate to interested and affected parties;
- Provide a representative, independent view of environmental management and control.

The Monitoring Committee should be representative of the relevant parties affected by the development with one person attending the meetings who has a mandate. To ensure continuity the same person should attend the monitoring committee meetings. A neutral organisation or an independent facilitator should be appointed by agreement of all the parties. A list of organisations that should typically be represented on the Monitoring Committee is:

- Owner of the site;
- Operator of the site (if different);
- DWAF;
- LP-DFED
- Kruger to Canyon Biosphere Reserve;
- Neighbouring Landowners and Land users;

The Monitoring Committee will have the following terms of reference:

- To review the audit of the facility operations and to review the site monitoring;
- To meet at least once every quarter to undertake the committee's required activities;
- To train and become knowledgeable about the facility and its environmental management so that meaningful input can be made;
- To inform their representatives and other member of the public of the developments pertaining to the site.

Incidents: The Responsible Person will report to the Relevant Authority on the occurrence or detection of any incident at the site, or incidental to the operation of the site which has the potential to cause, or has caused water pollution of the environment, health risks or nuisance conditions or which is a contravention of the permit or licence conditions. Emergency procedures to this effect are available separate to the EMP.

7.2 AUDITING

An audit is a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by:

- a) Facilitating management control of environmental practices;
- b) Assessing compliance with company policies, which would include meeting regulatory requirements.

The criteria against which the audit should be conducted are:

- Legislation
- Best practice
- Public concerns.

These criteria are contained in this EMP document.

The objectives of the audit programmes are:


- To ensure that the operation is not impacting on the environment to an unacceptable level;
- To identify and document environmental compliance status;
- To provide assurance to management and the Monitoring Committee;
- To assist facility management to improve environmental performance;
- To increase the overall level of environmental awareness;
- To improve the environmental risk management system;
- To protect the owner from potential liabilities.




The following audits will be undertaken:

Audit	Frequency	Type
External Audit	Annually	Safety, Health and Environment

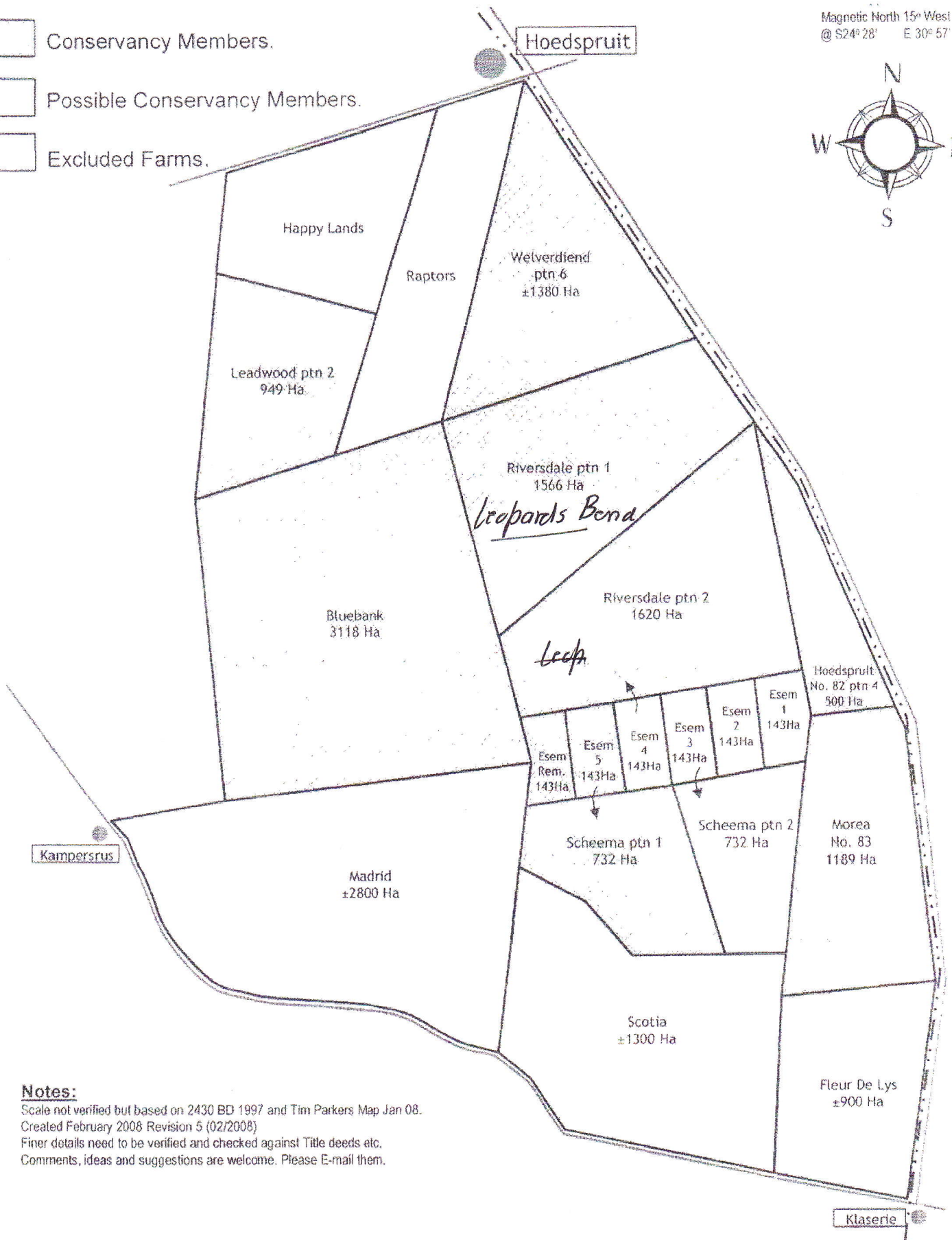
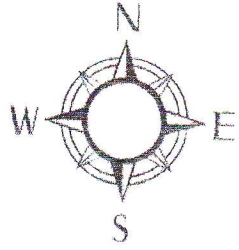
SUMMARY OF ACTIONS, ROLES, AND RESPONSIBILITIES

MAIN ITEM	ITEM DESCRIPTION	RESPONSIBILITY	DUE DATE	SIGNATURE
Quality management	Comply with the relevant Building requirements as stated Appendix D.	Contractor		
	Soil suitability for sewage treatment system at each site.	Residential Engineer		
	Notify the LP-DFED of any changes in layout in excess of 50 m from the current layout plan.	Applicant		
Employment	Appointment of construction teams; Appointment of competent dedicated environmental staff.	Applicant		
Training	Instruct employees about environmental sensitivities in accordance with the guidelines in the EMP	Applicant		
Management of construction camp site	Comply with requirements of all the relevant legislation, ie S.A. National Water Act, concerning water provision, sanitation, solid waste disposal and waste water discharge	Contractor		
	Select camp site away from neighbouring landowners, wetlands, wilderness areas or areas that could pose a health and/or safety risk	Applicant		
	Provide secure temporary storage for waste; Remove domestic waste daily to a licensed domestic landfill.	Contractor		
	Take measure to prevent accidental veld fires including firebreaks, proper fire fighting equipment, instruction personnel and an emergency response plan.	Contractor		
Managing the construction workers right of way	Prevent employees from trespassing on private property	Contractor		
	Monitor and prevent poaching or harassment of animals and harvesting of medicinal plants.	Contractor		
	Determine safe travelling speeds along the routes and enforce these speed limits	Contractor		
Adjacent Landowners relations	Comply with all special agreements with landowners.	Applicant		
	Actively manage all issues relating to landowner relations	Applicant		
Emergency Preparedness	Develop an Emergency Preparedness Plan as described in EMP to enable rapid and effective emergency response.	Applicant		
Fire Prevention	Prepare a fire prevention and emergency plan for the prevention and management of fires caused by the works.	Contractor		
Management of dust and nuisance	Notify all landowners within 200m of each blast. Restrict blasts to hours between 07h00 and 18h00.	Contractor		
	Prohibit the use of all-terrain vehicles and motorcycles on site	Applicant		
	No construction work is allowed over weekends	Contractor		
Access	Comply with all the relevant conditions that	Applicant		

MAIN ITEM	ITEM DESCRIPTION	RESPONSIBILITY	DUE DATE	SIGNATURE
	were set by the NPRA Submit layout plans and acceptance of conditions to NPRA.		April 2003	
Vehicular movement	Comply with the conditions set in the EMP to avoid sensitive areas and restrict vehicular movement to main roads	Contractor		
Vegetation clearing	Clear vegetation only in the construction right of way, ie 15 diameter circle around the peg and do not remove trees with a larger diameter than 30 cm.	Applicant and Contractor		
Gravel Pits	No gravel or construction material to be obtained from any source within the Nature Reserve.	Contractor		
Topsoil and subsoil	Strip and store topsoil for rehabilitation and revegetation purposes	Contractor		
Blasting	Demonstrate compliance with the conditions of the Explosive Act	Contractor		
	Prevent spread of blast rock and danger or damage to property, people, or animals by using blast nets or other safeguards where necessary	Contractor		
Archaeological sites	Once the sites and services routes are pegged, appoint an archaeologist to assess whether archaeological or cultural heritage sites are affected.	Applicant		
Water Provision	Ensure that boreholes are licensed according to the S.A. National Water Act	Applicant	December 2003	
	Immediately start to link up with the Maruleng Municipality for water supply via the Hoedspruit town reticulation system.	Applicant	December 2003	
Waste	Ensure a proper waste removal system is functional and waste is disposed of at a permitted waste site.	Applicant	March 2003	

-  Conservancy Members.
-  Possible Conservancy Members.
-  Excluded Farms.

Magnetic North 15° West
@ S24° 28' E 30° 57'



Notes:

Scale not verified but based on 2430 BD 1997 and Tim Parkers Map Jan 08.
Created February 2008 Revision 5 (02/2008)
Finer details need to be verified and checked against Title deeds etc.
Comments, ideas and suggestions are welcome. Please E-mail them.