

Harties Cableway Project

ENVIRONMENTAL MANAGEMENT PLAN

OBJECTIVES OF THE EMP

The compilation of this Environmental Management Plan (EMP) forms part of the requirements of the EIA Regulations 2014 (as amended) and compliance with the contents of this report is required during the construction and operational phases of the project. The EMP serves as an environmental management tool by providing a generic structured plan of mitigatory measures, which serves as a guide to assist in minimising the potential environmental impact of the activity that may arise during the construction and operational phases.

The EMP provides a set of guidelines for the environmental management of all works to be executed, so as to have a minimum impact on the environment in accordance with all relevant legislation, policies and standards.

In this context it should be viewed as a dynamic or 'living' document, which may require updating, or revision during the life-cycle of the project to address new circumstances as the need arises. It is essentially a written plan of how the environment is to be managed in practical and achievable terms.

The effectiveness of the EMP is limited by the level of adherence to the conditions set forth in this report by the Developer and the Contractor. It is further assumed that compliance with the EMP will be monitored on a regular basis as set out in the EMP and contractual clauses.

The EMP forms part of the Contract Documentation and is thus a legally binding document. An individual responsible for environmental damage must pay costs both to environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring (the Polluter Pays Principle).

Further to the above, the following objectives apply:

- To state the standards and guidelines which have to be adhere to in terms of environmental legislation;
- To set out the mitigation measures and environmental specifications which have to be implemented for the construction phase of the project in order to minimise the extent of environmental impacts, and where possible to improve the condition of the environment;
- To define corrective actions which must be taken in the event of non-compliance with the specifications of this EMP;

- To mitigate potential negative impact associated with the project and ensuring optimising of positive impact;
- To prevent long-term or permanent environmental degradation;
- To ensure that the applicant, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
- To ensure that communication channels to report on environment related issues are in place.

DETAILS OF THE PERSON WHO PREPARED THE EMP

This Environmental Management Plan was prepared by Landscape Dynamics cc, an environmental consultancy firm established in May 1997. Their core business involves the execution of Environmental Impact Assessments that include the compilation of Environmental Management Plans for all of these projects. The team members responsible for this project and the compilation of the EMP are Annelize Grobler (082 566 4530 / agrobler@landscapedynamics.co.za), a qualified landscape architect specialising in the field of environmental impact assessments, and Susanna Nel (082 888 4060 / susanna@landscapedynamics.co.za).

A Company Profile with the relevant Curriculum Vitae's is attached in Addendum K of the Basic Assessment Report.

DETAILS OF THE PROPOSED ACTIVITIES

The project will entail the following (it will be developed in a phased manner):

- An events venue and boutique guest lodge is planned on Portion 1 of Holding 44 Melodie Agricultural Holdings on 1,356ha.
- Additions to the existing tourism facilities at the top of the existing cableway is planned on Hartebeestpoort Cable Way 971 JQ (4.3379ha) that will include a zipline, an aerial obstacle course, an infinity swimming pool and an aerial glass walkway (skywalk) with ancillary and related facilities.
- A telecom mast near to 3 others which are situated on neighbouring land.

The additions to the existing tourism facilities will take place at the top cableway site and will thus fall within the protected Magaliesberg Biosphere Reserve. The biosphere was established by UNESCO which is an international institution/organisation.

The study site is located on the crest of the Magaliesberg and at the bottom of the mountain to the north and south of the Harties Cableway Service Road in Melodie in Hartbeespoort, in the jurisdiction of the Madibeng Local Municipality. The site is operated by the Hartebeespoort Aerial Cableway. The Cableway was originally constructed in 1973 and extends to the top of the Magaliesberg from where the Hartebeespoort dam and surrounding areas can be viewed.

LEGAL REQUIREMENT

The applicable legislation in terms of the environment refers to procedures prescribed by the provisions of the Environmental Impact Assessment Regulations, 2014, as amended, made under Section 24 (5) of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA). Of particular importance is Section 28 (1) of NEMA which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact.

The relevant applicable activities for which environmental authorisation had been applied for are:

Government Notice 983: Listing Notice 1	
<p>GN 983 Item Nr 27 The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <p>(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>More than 1 hectare of indigenous vegetation will be cleared at the site where the events venue and boutique guest lodge are being planned.</p>
Government Notice 985: Listing Notice 3	
<p>GN 985 Item Nr 3 The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower—</p> <p>(a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height— but excluding attachments to existing buildings and masts on rooftops.</p> <p>h. North West i. Outside urban areas:</p> <p>(aa) A protected area identified in terms of NEMPAA; (bb) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (cc) Ramsar sites; or areas identified in terms of an international convention; (dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; (ee) Core areas in biosphere reserves; or (ff) Areas within 5 kilometres from protected areas identified in terms of NEMPAA or a biosphere reserve.</p>	<p>A telecom mast which will be higher than 15m will be placed on a site not previously used for this purpose within and area demarcated as the core of the Magaliesberg Biosphere.</p>
<p>GN 985 Item Nr 6 The development of resorts, lodges, hotels, tourism or hospitality facilities</p>	<p>An events venue and boutique guest lodge is</p>

<p>that sleeps 15 people or more.</p> <p>h. North West</p> <ul style="list-style-type: none"> i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention; ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999); iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; v. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland. 	<p>planned on Portion 1 of Holding 44 Melodie Agricultural Holdings. It will sleep more than 15 people.</p> <p>The site is located within an area identified as CBA2.</p>
<p>GN 985 Item Nr 9</p> <p>The development and related operation of ziplines or foefieslides exceeding 100 metres in length.</p> <p>h. North West</p> <ul style="list-style-type: none"> (i) World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention; (ii) Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from the core areas of a Biosphere reserve; (iii) A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; (iv) All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999); (v) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; (vi) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or (vii) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland. 	<p>A zipline of longer than 100m will be constructed within the core of the Magaliesberg Biosphere.</p> <p>The site is located within an area identified as CBA2.</p>
<p>GN 985 Item Nr 12</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>h. North West</p> <ul style="list-style-type: none"> (i) World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention; (ii) A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; 	<p>More than 300m² of indigenous vegetation will be removed during the construction phase of the project for laydown areas.</p> <p>The site is located within an area identified as CBA2 as well as within the demarcated core of the Magaliesberg Biosphere.</p>

<p>(iii) All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);</p> <p>(iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;</p> <p>(v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or</p> <p>(vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p>	
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DETAILS OF PERSON RESPONSIBLE FOR IMPLEMENTATION OF THIS EMP

The following undertaking must be filled out and signed by the applicant and forwarded to the North West Department of Rural, Environment and Agricultural Development (NW READ) prior to commencement of construction:

Agreement & Undertaking of the Developer

I hereby confirm and state that I am aware of the contents of the Environmental Management Plan and the conditions of the Environmental Authorisation and shall comply with all legislation pertaining to the nature of the work to be done and all things accidental thereto.

Signed on behalf of _____

Date: _____

Place: _____

Signature: _____

Full Name: _____

Postal Address: _____

Physical Address: _____

Office Telephone Number: _____

PROPOSED MECHANISM FOR MONITORING COMPLIANCE

- An Environmental Control Officer (ECO) must be appointed by the applicant as soon as possible prior to commencement of construction.
- The key responsibility of the ECO is to ensure that all the conditions stipulated in the EMP and the Environmental Authorisation (EA) are being adhered to.

- The ECO must attend site meetings and inspect the construction site at least once a month to ensure that the mitigation and rehabilitation measures are applied.
- An environmental register should be kept on site in which incidents related to actual impacts are recorded. This may include information related to such aspects as spillages, dust generation and complaints from adjacent neighbours. It should also contain information relating to action taken. Any party on site may complete the register, however, it is envisaged that the engineer, the contractor and the ECO will be the main contributors, and who will also be the main parties involved in mitigatory action.
- The ECO might make reasonable amendments to the EMP in co-operation with the contractor. Penalties for non-compliance must be enforced.
- Any conservation authority/institution as listed in the List of Interested and Affected Parties for the project should be allowed reasonable access to the construction site on request and arrangement with the ECO and Contractor.
- The following details of the ECO must be filled out, signed and forwarded to NW READ prior to construction:

Company Name: _____

Contact Person(s): _____

Physical Address: _____

Street Address: _____

Office Telephone Number: _____

Cell phone Number: _____

Fax Number: _____

SPECIFICATIONS

Specifications and conditions are hereby provided for the following phases of project development:

- Design & Pre-Construction Phase
- Construction Phase
- Post-Construction and Operational Phase

DESIGN AND PRE-CONSTRUCTION PHASE

FACILITY DESIGN

(SKYWALK, AERIAL OBSTACLE COURSE, ZIPLINE AND INFINITY SWIMMING POOL)

- All designs and installations must conform to acceptable good standard within the industry.
- Due provision shall be made for the following:
 - The location's suitability for the type of activity
 - The nature of the ground on which foundations are to be built
 - The foundations for masts, trestles, anchorages and tensioning devices must be able to accommodate all conditions of loading, including the required safety factors and to include wind-loading
 - The forces applied to ropes and cables (i.e. wind and shocks)
 - Forces applied to anchors and structures
 - The mass of each component part
 - Foundations shall comply with the relevant requirements of the National Buildings Regulations and where necessary a soil survey shall be carried out to ensure that the base size to soil -bearing capacity ratio is adequate.
 - Steel structures that form part of the installation may be bolted, riveted or welded construction but in the case of welded structure all welds shall comply with the relevant requirements of SANS 9606 -1 for grade B welds or acceptable equivalents.
 - The erection of all installations shall be carried out under the supervision of a competent person.
- Safety equipment used to secure and transport people along the zip line and/or obstacle course (including harnesses helmets, pulleys, etc.) shall be fit for the purpose it is being used and shall carry a national or internationally recognized safety rating standard acceptable to the adventure and mountain climbing industry.
- Due cognisance must be taken of the relevant regulations of the Occupational Health & Safety Act (Act Nr 181 of 1993) (OHSA), including the Driven Machinery Regulations and the Code of Practice for Installation and Operation of Commercial Zip Lines (published 17 February 2017).
- Requirement of the Department of Labour in terms of the above OHSA must be adhered to. The Chief Inspector of the Department of Labour generally requires that a complete set of design calculations and drawings be submitted to him for approval. A registered professional engineer with experience in the relevant field shall be responsible for the certification of the designs and installation in order to ensure its safe operation.

- Specific environmental requirement:
 - It is advised that the final placement of all new structures should be made in consultation with a qualified ecologist on site.
 - The proposed aerial obstacle course will be established ‘through’ the tree canopy. For that purpose, some smaller woody species would be removed while branches from other trees would be pruned. Thus, most of the vegetation should be retained since the purpose of the obstacle course would be to “walk” through the canopy of the medium-sized woodland.
 - Where woody species are to be removed it should be planned such that the sections where the encroacher species *Senegalia ataxacantha* is densified, be cleared. That would prevent the species from encroaching further.
 - Where trees are used as anchor attachment points or to support platforms, they are to be inspected and approved fit for purpose by a suitably experienced person or specialist in the field, i.e an arborist or engineer. Regular inspections are to be carried out on such trees to ensure they remain healthy and structurally sound. As living trees are organisms that do not conform to any know structural standards and whose long term anchoring and foundation capabilities cannot be guaranteed, people who travel along the zip line or obstacle course are to be made aware of and acknowledge such dangers before they begin they undertake the activity.

ENGINEERING SERVICES

- A Bulk Engineering Services Report must be compiled by a civil engineering company (in consultation with the relevant engineering departments within the municipality) to address all services relating to water supply, stormwater management, sewage treatment, waste treatment, electricity and access).
- All services must be designed according to the design standards published in the “Guidelines for the Provision of Engineering Services and Amenities in Residential Development” (applicable to the events venue and boutique guest lodge planned on Portion 1 of Holding 44 Melodie Agricultural Holdings) and the relevant stipulations of the Madibeng Local Municipality. The relevant authority must approve any specific variation from the standards by the Civil Engineer.
- The engineering drawings must adhere to any site-specific mitigation measures supplied by the geotechnical engineer for the project in order to accommodate the geotechnical and earth-scientific constraints in terms of founding and construction methods, construction materials, excavation, etc.
- The Services Agreement between the developer and the Madibeng Local Municipality must be entered into before construction may commence. Distinction where relevant must be made between the tourism facilities on the mountain and the boutique guest lodge and events

venue at the foot of the mountain on the Melodie AH). The Services Agreement should include the following:

- *Stormwater management* – A stormwater management plan must be provided that indicates at least the stormwater drainage lines and discharge thereof. This plan should also include stormwater management actions during the construction phase of the project. The stormwater design will be done in accordance with the “Guidelines for Human Settlement Planning and Design” compiled under the patronage of the Department of Housing by the CSIR.
 - *Solid waste management* - Details regarding the responsible party for the solid waste removal as well as the frequency of how it will be done and where it would be disposed of must be included. Solid waste should be stored on-site in a waste transfer area before it will be transported to the registered waste disposal site.
 - *Sewage Treatment* - connectivity to municipal services to be described.
 - *Water supply* - connectivity to municipal services to be described.
 - *Electricity* – connectivity to municipal services to be described.
- Proof of evidence that the municipality has the capacity to accommodate and provide water supply, sewer treatment, electricity and waste collection services in the area must be forwarded to the Department of Community Services: Waste and Environmental Management prior to commencement of the development.

Stormwater Management

- General measures to be included in the stormwater management plan are the following:
 - Water must be fed into properly lined channels or directly into the closed stormwater system of the development.
 - To reduce erosion and loss of soil during rain, silt traps should be used during the development and proper rehabilitation should be done before the next rainy season.
 - Stormwater should not be allowed to enter the sewage system.
 - Roads should be maintained so that soil erosion is limited to a minimum.

Electricity

- The design, construction and supply of the bulk electricity and the internal services must be done strictly in accordance with the requirements of the Madibeng Local Municipality and Eskom in cooperation with the electrical engineer for the project.

Roads and Access

- A Traffic Impact Study must be compiled to identify the extent of the additional traffic expected to the area and provide appropriate mitigation measures.
- All approvals in terms of road upgrades and access must be approved by the relevant roads authority prior to commencement of construction.

TOWN LAYOUT DESIGN & APPROVAL

- All town-planning designs (boutique guest lodge and event venue) must comply with the regulations of the town planning and engineering divisions of the Madibeng Local Municipality.
- The Rezoning Application which is pending at Madibeng Local Municipality must be approved prior to commencement of construction. The proposed rezoning is for “Special” - the erf and the buildings erected thereon, or to be erected thereon, shall be used solely for a cableway, restaurant, events venue, art and craft uses, guest lodge and any other ancillary and related tourism uses, and with the consent of the local authority any other uses.

ARCHITECTURAL CONSIDERATIONS AND GREEN APPROACH

In the light of the present and future situation with power and water supply in the Madibeng area and the country in general, all measures of power and water conservation should be implemented in any new development.

Hartbeespoort Environment Heritage Association

The following relevant guidelines applicable to development in the Madibeng area, compiled by the Hartbeespoort Environment Heritage Association (HEHA) in July 2008 should be considered :-

- Solar water heaters of at least 200 liters insulated storage capacity with at least 2,5m² solar panel per household. In economic housing the capacity can be decreased to 100 liters. This is the greatest single factor in energy savings in an average household.
- No electrical room heating or AC allowed. Solar under floor heating or trombé wall heating is recommended.
- All buildings and sites to be orientated to the north and all living area windows to face north with sufficient roof overhangs. If these recommendations are met, no additional heating is generally required in this climate zone.
- Roof insulation equivalent of at least 40 mm glass wool compulsory. Wall insulation (e.g. cavity walls) is recommended on south and west walls.
- Kitchen stoves to be gas fired, not electrical. Gas is a more efficient heat generator than electricity. It also renders the user less vulnerable to electricity supply failures.
- Low energy lights are compulsory. No incandescent bulbs.
- Exterior lighting must be directed downwards and be of low wattage. No light pollution is allowed. The user has no benefit of light that is spilled up in the air and is wasted.
- All roofs to be fitted with gutters and down pipes, leading to rain water storage tanks of sufficient capacity (as near as possible to ½ cubic meter per 1 m² of roof area). Rain water to be used for building purposes, gardening, swimming pools, washing and toilet flushing. No municipal water should be allowed for these functions. This measure results in saving on running cost and less vulnerability to service failures. It also results in savings on storm water infrastructure. Any form of rainwater retention is the best mitigation against the effects of desertification.

Water Management

Additional water saving measurements in the design of the guesthouse are recommended as follows:

- Dual flush toilets to be installed in all rooms
- Low-flow shower heads must be installed
- Tap aerators should be used.
- The use of grey water (the use of water from showers, baths and basins) for irrigation purposes should be encouraged.
- 'Water wise', indigenous plants must be given priority in the landscaping design for the development.

Electricity

The total demand for electricity can be reduced if the following energy saving measures are implemented:

- Compact fluorescent lights lamps (CFL) will be used instead of ordinary bulbs
- Low-energy lamps will be used for exterior lighting
- The following is recommended for the hot water systems at each unit:
 - Geyser blankets should be installed
 - At least the first 1,5m of hot water outlet pipes should be insulated
 - The possibility of using solar geysers and panels should be investigated and supported if feasible.

Paint

- Structures should be painted with natural colours that reflect and compliment the natural colours of the surrounding landscape.
- To reduce the potential of glare, the external surfaces of structures should be articulated or textured to create interplay of light and shade.

Lighting

Light pollution is largely the result of bad lighting design, which allows artificial light to shine outward and upward into the sky, where it's not wanted, instead of focusing the light downward, where it is needed. Ill designed lighting washes out the darkness of the night sky and radically alters the light levels in rural areas where light sources shine as 'beacons' against the dark sky and are generally not wanted.

Of all the pollutions faced, light pollution is the most easily remedied. Simple changes in lighting design and installation yield immediate changes in the amount of light spilled into the atmosphere. The following are measures that must be considered in the lighting design of the Project:

- Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the site.
- Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to the site.

- Minimise the number of light fixtures to the bare minimum, including security lighting.
- Security lighting should only be used where necessary and carefully directed, preferably away from sensitive viewing areas.
- Wherever possible, lights should always be directed downwards to avoid illuminating the sky.

LANDSCAPING

- Landscape architects and the developer have an opportunity and obligation to conserve certain faunal biodiversity present on the site and possibly increase the biodiversity of certain animal species (birds). Vegetation has been reported to be the single most important habitat component for all species of animals. An ecological approach to rehabilitation and vegetative screening measures should be adopted. For example, communities of indigenous plants enhance biodiversity and blend well with existing Magaliesberg vegetation. This approach can significantly reduce long term costs as less maintenance would be required over conventional landscaping methods as well as the introduced landscape being more sustainable.
- All new landscaping should be done with a strong “indigenous only” approach. This implicates the removal of all current exotic plant biota and replacement with indigenous species. This could be physical or chemical treatment of the exotic individuals. No indiscriminate spraying would be allowed as this could kill indigenous species.
- Removal of alien/invaser plants must take place.
- All large indigenous tree species should be conserved wherever possible and incorporated into the design of the project.
- Landscaping should be environmentally sensitive and should meet the following requirements:
 - Limited irrigation through water-wise gardening (use local plants adapted to local conditions).
 - Strict fertiliser, pesticide and herbicide control (limited usage of biological friendly products).
 - Reduction of weeds and erosion control by minimum tillage gardening practices (groundcovers and mulching).
 - No dumping of any materials in undeveloped open areas .
- Re-vegetation and rehabilitation measures should be identified for implementation by contractors, landscape architects and groundsmen to rehabilitate areas that became degraded due to construction activities.

COMMUNITY ISSUES

- Copies of all professional studies must be made available for perusal by Interested and Affected Parties, should it be required.
- The Magaliesberg Biosphere Reserve needs to remain involved during project development at the top of the mountain. Mr Paul Fatti of the section Natural Resource Conservation should be

approached to establish their involvement prior to commencement of construction activities. His contact details are tel 083 266 1532 and (011)327 3306 as well as e-mail : paulfatti@gmail.com

EDUCATIONAL PROGRAMMES

An environmental education programme must be followed to ensure that the construction workers are well aware of relevant environmental issues with specific emphasis on the following :-

- Crime control;
- The purpose of conservation of the natural environment;
- The restriction on cutting of firewood from the surrounding veld;
- Pollution control;
- Waste management, etc.

The workers should be monitored and educated on a regular basis to ensure compliance at all times.

PREPARATION OF THE CONSTRUCTION SITE, CONSTRUCTION PERSONNEL & VELD PROTECTION

- The construction site (site office and storage area for building material and machinery) should be fenced prior to construction.
- Identified areas on the construction site should be large enough to allow for secure parking of construction vehicles and equipment as well as for temporary storage of building materials, so as to minimise any additional negative impacts.
- Drinking water and water for ablutions and cooking activities must be provided to all construction workers on the construction site during the entire construction period. Any cooking on site shall be done on well-maintained gas cookers with fire extinguishers present.
- Solid domestic waste should be collected in containers provided and disposed of at the municipal waste disposal sites on a regular basis. Rubbish bins must be provided on the construction site to prevent littering.
- Only guarding personnel should be allowed to overnight on-site. The Contractor should arrange for transport to and from the site for all other labourers.
- Construction workers on the mountain specifically must at all times be supervised.
- The use of the open veld for ablution requirements is prohibited.
- Sufficient ablution facilities must be provided to all construction workers on the construction site during the entire construction period. Toilet facilities shall be provided at a maximum ratio of 1 toilet per 30 workers (preferred 1:15). All temporary/portable toilets shall be secured to the ground to the satisfaction of the Engineer/ECO to prevent them toppling due to wind or any other cause. These facilities shall be maintained in a hygienic state and serviced regularly. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited.

- The Contractor shall ensure that any lighting installed on the site does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area. Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilised on site shall be turned off when not in use.
- The Contractor should employ local people as far as reasonably practical and the workers should be transported daily to and from the site (if feasible). This would reduce solid and liquid waste production and water demand on the construction site.

APPOINTMENT OF CONTRACTORS

- Environmental clauses as referred to in this EMP should be included in contract documents for all contractors.
- The appointment of contractors with proven track records of sound environmental performance should be given priority.
- The Contractor must ensure that the majority of the unskilled labour force is obtained from the local residents in the macro area. Use should as far as practical be made of labour intensive construction methods.

CONSTRUCTION PHASE

SAFETY RISK

- The Contractor must ensure that all labourers are sufficiently trained in their required fields of expertise.
- Training certificates from accredited organisations should be available on request.
- All labourers must be fitted with suitable protective gear for the type of construction work required.
- Specific measures must be implemented to ensure safety of labourers where work needs to be done against the steep slopes and cliffs. Workers should be harnessed.
- All excavations must be clearly marked with barrier tape to prevent people and animals from falling into excavations and entering potentially dangerous construction areas.
- Notices warning of potentially dangerous construction areas and excavations must be placed on visible areas.

STORMWATER MANAGEMENT & EROSION

Stormwater

- All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties.
- Special care should be taken so that no building materials (i.e. cement, paint, oils, etc.) enter the stormwater system.
- All exposed areas (present and new) and roads susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks.
- Stormwater must be attenuated on site during construction by possible means of small berms in areas where the contractor has started construction, but are not working in the area on a daily basis. Where the contractors are actively busy working the contractor must place sandbags in strategic positions every afternoon before close of business in order to protect the works and system from silting up as well as to attenuate the stormwater in the event of a downpour during the night. This procedure must start at the beginning of the rainy season and continue until such time that either the stormwater system is completed and connected to the municipal stormwater system or until the end of the rainy season if construction is not completed.

Erosion

Timing of activities

- The timing of clearing activities is of vital importance. Clearing activities and earth scraping should preferably be restricted to the dry season in order to prevent erosion and siltation of adjacent drainage lines. The dry months are also the period when the majority of plant and animal species are either dormant or finished with their propagation/breeding activities.

Roads

- Access roads and site surfaces must be monitored for deterioration and possible erosion. Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- All vehicle movement must be along existing roads or tracks as far as possible.
- Should any new temporary access roads be required, the following should apply in areas which are prone to erosion:
 - Where a cutting is made, subsoil drains should be installed wherever a perched water table occurs within 900m of the formation in all cuttings and below fills in the alluvial zones.

- It is further critical to manage surface water. Drains should be provided along the top and bottom of all deep cuttings. This is to minimise the flow of surface water and erosion to the exposed cut faces and erosion along the toe of the cuttings.
- Steep sections of the service road must be supplied of sufficient drainage areas to reduce flow velocity of run-off water.
- Any eroded sections must be rehabilitated and part of the management plan must include regular inspections of the water run-off areas.
- Access roads and site surfaces must be monitored for deterioration and possible erosion at all times and remedial action should take place as soon as possible.

Vegetation

- Vegetation plays a critical role in the hydrological cycle by influencing both the quantity and quality of surface run-off. It influences the quantity of run-off by intercepting rainfall, promoting infiltration and thus decreasing run-off. Vegetation can influence water quality in two ways: by binding soils thus protecting the surface layer, and by intercepting surface run-off thus preventing erosion. When the speed of the run-off is reduced, suspended particles can settle out and dissolve substances, such as nutrients, can be assimilated by plants. The vegetation has a filtering effect. Plants also act as protective shields to the soil, lessening the impact of rainfall and wind. The plants will also help stabilise the soil and prevent it from becoming prone to soil erosion.
- Plants which creep and spread instead of growing upwards also assist greatly in the prevention of erosion and the use thereof is strongly recommend. Only indigenous vegetation is allowed.
- Soil stockpiling areas must follow environmentally sensitive practices and be situated a sufficient distance away from drainage areas. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m. The careful position of soil piles, and runoff control, during all phases of development, and planting of some vegetative cover after completion (indigenous groundcover, grasses etc.) will limit the extent of erosion occurring on the site.
- All cleared and/or compacted areas must be ripped and rehabilitated after construction.
- The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
- Only selective clearing of vegetation on top of the mountain should be allowed.

Matting

Matting is one of the most commonly used products in the erosion prevention process. Matting is available in wood fibres which make it environmentally friendly and biodegradable. The matting will allow vegetation to grow through it and the soil will be healthy and stabilised.

Engineering preventative measures

- Water erosion affects the soil making it expand and travel to different areas. This can be prevented by the building of retaining walls. The retaining wall will act as a shield for the soil and it will also retain or slow the pace of water flow, allowing it to slowly seep back into the soil,
- Any permanent hard structures (i.e. retaining walls, anchored gabion mattresses, etc) should be designed by a registered engineer and specifications must be strictly implemented.
- The engineer should inspect these structures during regular intervals during construction to ensure that all design specifications are strictly adhered to.

General

- The site must be rehabilitated and replanted with suitable, indigenous grass to prevent erosion.
- Exposed areas shall be stabilised as quickly as possible.
- Assurances shall be made that materials used for erosion control are on site at all times during the rainy season.
- Sufficient measures must be implemented to prevent the possible contamination of the surface water and groundwater.
- All cleared areas must be ripped and rehabilitated after construction.
- Cut and fill slopes should be protected against erosion according to engineering specifications.
- Any damage caused during construction must be rehabilitated to ensure that no erosion will take place.

WATER QUALITY

- Under no circumstances may surface or groundwater be polluted.
- Adequate oil containment precautions must be taken.
- All hazardous substance spills must be reported, recorded and investigated.
- Drinking water and water for ablution and cooking facilities must be provided to all construction workers on the construction site.
- Slopes of areas excavated should not contribute to erosion of loose soil into water resources.
- If pollution of any surface or groundwater occurs, the Regional Representative of the Department of Water & Sanitation should immediately be informed. They will give instruction on actions to be taken in this regard. The contact details are :-

Department: Water and Sanitation, Northwest Region, Water Resource Management Crocodile West Marico WMA, The Area Manager (Hartbeespoort) / Acting Director: Northern Operations: Mr JJ (Hannes) Pretorius, 012 253 1093/4 082 806 3681 and pretorih@dws.gov.za

WASTE MANAGEMENT

- Construction waste generally consists of inert materials such as rubble and bulky construction debris. Removal of such material normally requires specialised equipment and must be handled as such.
- The following precautionary methods should be implemented for the storage and handling of oil and substances that could impact on the soils, ground- and surface water:
 - Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction shall be stored in applicable containers. The relevant Material Safety Data Sheets (MSDS) must be available on site and procedures detailed in the MSDS's must be followed in the event of an emergency situation.
 - All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. The storage of any hazardous substances must take place in a secured lock-up building or covered area and well out of flood risk areas. Hazardous and no-hazardous materials must be separated.
 - A container filled with sand to soak up any spillages, as well as an empty container into which the "contaminated" sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided. All employees must be aware of the procedure to be followed for dealing with spills and leaks.
 - No hazardous waste may generally be stored on site without appropriate authorisation for the activity.
 - The Regional Representative of the Department of Water & Sanitation should immediately be informed if pollution of any groundwater or soils occurs. They will give instruction on actions to be taken in this regard. The contact details of the Northwest Province Regional Office are supplied in the previous paragraph.
- Littering or illegal dumping of any waste material is prohibited. Provision must be made for the collection of all waste materials. All waste generated during construction must be disposed of at a permitted waste site.
- The Contractor shall provide scavenger and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins shall not be allowed to become overfull and shall be emptied regularly, at least once a week. Waste from bins may be temporarily stored on site in a central waste area that is weatherproof and scavenger-proof, and which the Engineer/ECO has approved.
- The use of the open veld for ablution requirements is prohibited.
- No fuel or petrol may be stored on site without the necessary authorisations in place.
- Staff must be trained in waste segregation and storage.
- Storage areas for each waste type should be clearly delineated.
- Firm arrangements for the transportation or collection for final disposal of the various wastes must be documented and in place.
- No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur.

WASTE MINIMISATION

- Materials should be ordered shortly prior to use to avoid deterioration / breakage during storage.
- Materials should be ordered in bulk to reduce packaging but without over-ordering resulting in waste generation.
- Construction site staff must be trained to load and unload materials correctly to avoid breakage and wastage.
- Materials must be stored appropriately according to the supplier's specifications to reduce the risk of damage or deterioration.
- Any over-run or off-cut materials should be either re-used on site, re-used in another construction operation or recycled.
- Where possible, all oils and greases must be retained for recycling.

VELD PROTECTION

- Any building material or concrete must be removed from the area during and after construction.
- It is equally important that the footprint of the construction workers and temporary sheds would be as small as possible. The areas where there are already developed infrastructure (e.g. picnic areas, radio masts and buildings, foot paths etc.) should be utilised for storing equipment etc.
- Workers should also stay on the current walkway and not be allowed to walk within the natural vegetation except at the construction area.
- The construction area should be properly fenced off and no one should be allowed access into the natural areas without prior authorisation from the ECO.
- Access to the adjacent systems must be zoned as "no-go" during the construction phase and strictly enforced.
- To minimise the effect on the vegetation it is recommended that the construction be done within the winter period when most plants are dormant and when little rain is expected that could potentially cause erosion.
- Any bulbous plant encountered should be removed and temporarily planted in a suitable container and replanted in the area after construction has been completed. No unnecessary removal of plants must take place.
- Where vegetation needs to be "opened" to gain access it is recommended that the herbaceous species are cut short rather than removing them. That will ensure that they regrow during the growing season.
- If possible "soil saver blankets" could be placed over the vegetation to prevent erosion and unnecessary trampling. These blankets must be removed after construction.
- No rocks should be removed / dug out / displaced except for construction purposes. If a rock has been accidentally displaced it should be placed in the same spot.

- The removal of woody species should be avoided as far as possible. These species have an extensive root system binding the soil and take long to establish.
- All temporary stockpile areas, litter and dumped material and rubble must be removed during and on completion of construction.
- Vegetation clearance should be restricted to the areas under construction allowing remaining animals opportunity to move away from the disturbance.
- No animals should be intentionally killed or destroyed and poaching and hunting are not permitted on the site.
- Various species of indigenous trees and bush on private land are protected by law in terms of the Forest Act No 122 of 1984, which stipulates that it is necessary to obtain a permit in order to cut them.
- Indigenous vegetation which does not interfere with the construction of the various components should be left undisturbed.
- The alien invader plants declared as invaders/weeds, in accordance with the Amendments to the Act 43 of 1983, as published in Government Gazette Vol 429, No 22166, of 30 March 2001, should be removed. This could be physical or chemical treatment of the exotic individuals. No indiscriminate spraying would be allowed as this could kill indigenous species.
- Efforts should be made to gradually eradicate alien species, and replace them by indigenous species.
- The use of herbicides shall be in compliance with the terms and conditions of The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947).
- No fires may be made for the burning of vegetation and waste.
- No open fires are to be made on site – cooking facilities must be provided.
- No firewood may be collected.
 - Weeds and invasive plants must be controlled to prevent them from spreading.
 - Except to the extent necessary for the carrying out of the works, flora shall not be removed, damaged or disturbed.
 - No vegetation may be planted unless it forms part of the landscaping programme.
 - Adequately trained personnel must be present during refill of any temporary fuel storage tanks (if applicable) to prevent overfills and to immediately stop fuel delivery should an accident occur.
 - Any temporary fuel storage tanks (if applicable) are to be designed, installed and managed in accordance with the relevant Oil Industry Standards and SANS codes.
 - Storage areas must be clearly demarcated to prevent cross contamination of mobile materials (sand and gravel, etc.).
 - The cement mixing area should not contain any liquid waste so as to prevent contamination of soil and stormwater.
 - No stockpiles or construction materials may be stored or placed within any drainage lines on site or in close proximity to stormwater drains.
 - Construction Vehicles
 - Should any transfer of vehicle fuel take place on site, it is important to demarcate a specific area for this purpose. This area should be covered with an impermeable layer to prevent

any penetration of fuel and oil spillage into the soil. The area could also be sloped towards an oil trap or sump to ease collection of spilled substances.

- All construction vehicles should be serviced on a regular basis to minimise the risk of oil spillage on site.
- Servicing of vehicles or equipment must take place off-site at appropriate workshop facilities.
- When not in use, construction vehicles must be parked in an area provided with an impermeable layer to prevent leaks and spills from penetrating the substrate. All petrochemical leaks and spills must be appropriately contained and disposed of at a licensed waste disposal site.
- The Contractor has to ensure that there is always a supply of absorbent material (not saw dust) readily available to absorb/ breakdown any spillages and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200l of hydrocarbon liquid spill. This material must be approved by the Engineer/ECO prior to any refuelling or maintenance activities.
- Materials Handling, Use and Storage
 - The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the EMP stipulations. The Contractor shall ensure that these delivery drivers are supervised during off-loading by someone with an adequate understanding of the requirements.
 - Materials shall be appropriately secured to ensure safe passage between destinations. Loads shall have appropriate cover to prevent them spilling from the vehicle during transit.
 - The Contractor shall be responsible for any clean-up resulting from the failure by his employees to properly secure transported materials.
 - All manufactured and/ or imported material shall be stored within the Contractor's camp, and where required, out of the rain.

EARTHWORKS

- Earthworks should be executed in such a way that only the footprint with a small construction buffer zone around the proposed activities is exposed. In all other areas, the natural occurring vegetation should be retained.
- Dust suppression techniques should be in place at all times during all phases of the project, where required.

FIRE CONTROL

- No fires may be lit on site. Any fires shall be reported immediately to the site supervisor.

- Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame.
- In terms of the National Environmental Management: Air Quality Act and Community Fire Safety Bylaw, burning is not permitted as a disposal method.
- The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed.
- All adjacent landowners should immediately be informed of any veld fire. To this effect, easily accessible landowner contact list should be kept on site at all times.
- The Contractor shall ensure that there is basic fire-fighting equipment available on site at all times. This shall include at least rubber beaters when working in urban open spaces, and at least one fire extinguisher of the appropriate type when welding or other “hot” activities are undertaken. The Contractor has to ensure that the basic fire-fighting equipment is to the standards of the Local Fire Services.
- The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other identified areas with tested and approved firefighting equipment.
- Fire and “hot work” shall be restricted to a site approved by the Engineer/ECO.
- The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.

PROTECTION OF FAUNA

- No animals or birds may be disturbed or trapped.
- No hunting with firearms (shotguns, air rifles or pellet guns) or catapults is permitted on the property as well as neighbouring areas.
- The feeding or leaving of food for any animal is strictly prohibited.
- No domestic pets or livestock are permitted on site.
- During the construction activities; wherever possible, work should be restricted to one area at a time. This will give smaller birds, mammals, reptiles and amphibians an opportunity to move into undisturbed areas close to their natural habitat.
- All animals unearthed or disturbed should ideally be released in appropriate habitat away from the development.
- Construction activities should be limited to the daylight hours preventing disturbances to the nocturnal activities of certain species and nearby human populations. This will also minimise disturbances to sensitive and secretive species.

PROTECTION OF NATURAL FEATURES

- The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the site for survey or other purposes unless agreed beforehand with the Engineer/ECO. Any features affected by the Contractor in contravention of this clause shall be restored and/or rehabilitated to the satisfaction of the Engineer/ECO.
- No person may make use of any natural water sources in the macro area (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

HISTORICAL/CULTURAL HERITAGE

- If new evidence of archaeological site or artefacts, palaeontological fossils, graves or other heritage resources are found during development, the South African Heritage Resources Authority (SAHRA) must be alerted immediately. The contact persons are: Mrs Colette Scheermeyer, cscheermeyer@sahra.org.za / 021 462 4502 or Mr Motlhabane S Mosiane of the NW Provincial Heritage Resources Agency (PHRA) in Mmabatho at 018 388 2826 / 073 207 1996 / mosianem@nwpg.gov.za.
- Specifically if any human remains are exposed through the earthmoving during construction, any physical work affecting the remains should cease until SAHRA is informed and their instructions have been followed.
- At any stage during the development, SAHRA and/or PHRA has the authority to visit or check the site.
- The applicant must adhere to all recommendations by the heritage consultant.
- The approval does not exempt the applicant from obtaining any other approvals as prescribed by relevant legislation.
- SAHRA and PHRA may not be held responsible for any costs or losses incurred in the event of the suspension or retraction of this approval for any reason.

PALAEONTOLOGY

The development sites are on the potentially fossiliferous Magaliesburg Formation and non-fossiliferous silverton Formation. No fossils are preserved in the igneous rocks of the Vlakfontein subsuite but there is a very small chance that trace fossils might be found in the hard sandstones of the Magaliesberg Formation, such as *Manchuriophycus*.

A *Chance Find Protocol* should be followed if fossils are found once excavations and building has commenced. The finds should be rescued and a palaeontologist called to assess and collect a representative sample.

Chance Find Protocol for Palaeontology

The following procedure is only required if fossils are seen on the surface and when excavations commence.

1. When excavations begin the rocks must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (microfossils – but invisible to the naked eye, black organic-rich material) should be put aside in a suitably protected place. This way the construction activities will not be interrupted.
2. Photographs of similar fossil microbes must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones.
3. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
4. If the palaeontologist is of the opinion that the material may be fossiliferous then a sample should be sent to the palaeontologist and analysed.
5. Further fossil material that is considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
6. If no good fossil material is recovered then the site inspections by the palaeontologist will not be required. If fossils are found then a report by the palaeontologist must be sent to SAHRA.
7. If no fossils are found and the excavations have finished then no further monitoring is required.

COMMUNITY ISSUES (SAFETY, SECURITY, NOISE, DUST, ETC.)

- All construction workers will be allowed on site only for specified day light hours.
- Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
- Secure accommodation facilities must be provided for guarding personnel.
- Supervision of labourers must at all times take place.
- No construction may take place on Sundays and public holidays.
- Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place on a regular basis.
- Blasting
 - Blasting (if applicable) may only be undertaken by specialists in the field and should be limited to small localised areas. All relevant legislation must be adhered to. All adjacent landowners have to be informed of the blasting programme prior to any blasting taking place.

- Contractors must liaise personally with landowners and all communication in this regard must be documented.
- Trenching
 - All excavated areas must be clearly marked and barrier tape must be placed around them for safety purposes.
 - All pipelines must be placed and covered portion by portion. Safe trench crossings must be provided when necessary.
 - Trenches and excavation works should be opened and closed as rapidly as possible. Avoid leaving trenches open over weekends or holidays. All trenches and excavation works must be properly backfilled and compacted according to specifications.
 - Once services and cables are installed and backfilling completed, it must be ensured that ground surface is graded to match the slope of the surrounding area.
 - Berms should be constructed on the up-slope side of trenches to prevent the inflow of water during storms.
 - The fall of trenches should be away from buildings.
 - No ponding of surface water is to be permitted over, in or in the vicinity of trenches and excavations.
- Noise
 - The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). Appropriate directional and intensity settings are to be maintained on all hooters and sirens. The provisions of SANS 1200A Sub-clause 4.1 regarding "built-up areas" shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.
 - No amplified music shall be allowed on site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public within range. The Contractor shall not use sound amplification equipment on site unless in emergency situations.
 - Construction activities generating output levels of 85 dB (A) or more, in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to work outside normal working hours, the surrounding communities must be informed prior to the work taking place.

SAFETY

- Telephone numbers of emergency services, including the local firefighting service and emergency medical services, shall be posted conspicuously in the Contractor's office near the telephone.

- An updated list of all key stakeholders and adjacent landowners should at all times be kept on site.
- No unauthorised firearms are permitted on site.
- Notices and barrier tape must clearly identify construction areas as “No Go” areas with potential danger to visitors specifically at the top of the mountain.
- Construction activities on the mountain should take place when fewer visitors to the Harties Cableway are expected, i.e. outside school holidays, during early week, etc.
- Sufficient communication of the construction programme should take place with the Harties Cableway Management to allow for limited access and/or closure of the cableway during intensive, intrusive and potentially dangerous construction activities on the top of the mountain. The contact details of the Harties Cableway Management are as follows :
Mr Iain Gunn; tel 012 253 9912 / 071 298 7708 and e-mail address:
management@hartiescableway.co.za

ENVIRONMENTAL SUPERVISION

- An Environmental Officer must inspect the construction site at least once a month to ensure that the mitigation and rehabilitation measures are applied as specified in the EMP. This officer might make reasonable amendments to the EMP in co-operation with the contractor. Penalties for non-compliance must be enforced.
- Any conservation authority/institution as listed in the List of Interested and Affected Parties for the project should be allowed reasonable access to the construction site on request and arrangement with the Contractor.

POST-CONSTRUCTION AND OPERATIONAL PHASE

SITE CLEARANCE

- All temporary offices, building material, signs of excess concrete, equipment, building rubble, refuse and litter must be removed from the construction site.
- All cleared and compacted areas must be ripped and rehabilitated in compliance with the landscaping plans.

WASTE

- All waste generated during operation must be disposed of at a permitted waste site in terms of the Environmental Conservation Act 1989 (Act 73 of 1989).

- Systems must be put in place to ensure waste recycling (glass, paper, metal and organics) and waste minimisation.
- No garden refuse will be allowed on a waste disposal site and all organic garden waste could be composted and used for soil enhancement.

LANDSCAPING

- The recommendations and specifications of the landscape architect and/or ecologist for the project must be implemented and monitored during the operational phase of the project.
- The strict indigenous vegetation only policy must be adhered to at all times.
- All mitigation measures as proposed in this report should be adhered to.

STORMWATER MANAGEMENT

- Surface run-off must be managed to such an extent that all run-off from hard-surfaced areas is contained within the stormwater pipes or other designated areas.
- Open stormwater channels (if applicable) must be maintained in a well-vegetated state and must be free from any form of waste.
- Silt collected in the silt traps must be regularly cleared and disposed of either as top dressing for landscaped areas, or disposed of to a registered landfill site.
- Any soil erosion must be attended to immediately.
- Any surface run-off that may contain pollutants for any reason (e.g. following a fuel spill in the parking area) must be filtered before being discharged into the stormwater system.
- Should soil erosion become evident, appropriate remediation must be undertaken immediately.
- Regular checks must be conducted to identify areas of soil erosion requiring repair.

FIRE MANAGEMENT

A fire management plan must be identified, implemented and maintained, commencing prior to construction and maintained throughout the operational phase. The following measures must be included:

- The developer shall appoint a dedicated Fire Management Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed.
- The Fire Management Officer shall ensure that all employees are aware of the procedure to be followed in the event of a fire. Any fires shall be reported immediately to the Fire Management Officer.

- The Fire Management Officer shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.
- A contact list (continuously updated) of key stakeholders must be kept on site and placed in visible areas where general access is possible. All these stakeholders must immediately be informed of any veld fire on top of the mountain. This list must include :-
 - The Fire Management Officer
 - The municipal firefighting department
 - Local ambulance services
 - All adjacent landowners
 - The Mountain Club South Africa): Magaliesberg Section
 - The Magaliesberg Biosphere Reserve
 - The Harties Cableway Management
- No open fires are allowed at the top of the mountain.
- No fires may be made for the burning of vegetation and waste. In terms of the National Environmental Management: Air Quality Act and Community Fire Safety Bylaw, burning is not permitted as a disposal method.
- The developer (and Fire Management Officer) shall ensure that there is basic fire-fighting equipment available on site at all times. He has to ensure that the basic fire-fighting equipment is provided and maintained to the standards of the local fire services.

CONTROL OF ALIEN INVADERS

- The control of alien invaders (as described under the under the heading “Construction Phase – Veld Protection”) should be maintained. The alien invader plants declared as invaders/weeds, in accordance with the Amendments to the Act 43 of 1983, as published in Government Gazette Vol 429, No 22166, of 30 March 2001, should be removed.

OPERATION AND MAINTENANCE OF TOURISM FACILITIES (SKYWALK, AERIAL OBSTACLE COURSE, ZIPLINE AND INFINITY SWIMMING POOL)

- The applicant must ensure that all engineering services and other infrastructures are managed, operated and maintained according to industry standards, relevant specifications and legal requirement to prevent malfunctioning with associated negative impact on the environment and risk to human safety.
- All requirements in terms of the relevant regulations of the Occupational Health & Safety Act (Act Nr 181 of 1993) (OHSA), including the Driven Machinery Regulations and the Code of Practice for Installation and Operation of Commercial Zip Lines (published 17 February 2017) must be implemented.
- Specific conditions supplied with the approval of the facilities by the Department of Labour; as well as engineering specifications for safe operation of the structures must also be adhered to.

- All personnel involved with the operation and maintenance of the facilities should receive adequate training and instruction to ensure that they are fully conversant with the equipment concerned.
- An instruction manual for each of the facilities must be kept on site. It must include the following information:-
 - A description of the installation detailing its maximum working load operating speeds, and safety devices;
 - Detailed operating instructions;
 - Information on maintenance measures and schedule
 - Emergency procedures to be followed in the event of an incident or accident
- Maintenance and inspections according to industry standards must be done and proper documentation of these events should take place for reference in the event of failure and/or incidents.
- A register or log book shall be kept on site in which the following information must be recorded for each of the facilities:
 - Name and address of the person in charge of the installation and the name(s) and address(es) of his deputy/deputies;
 - Particulars of ropes and cables and the dates on which they were installed and on which they were changed, and the reasons for changing them;
 - Dates of periodic inspections, a report on each inspection, and the signature of the person carrying out the inspection;
 - Details of stoppages (other than shut-downs) giving dates, times, reason for stoppages, and action taken;
 - Dates and details of periodic tests carried out and adjustments made, and the signature of the person carrying out each test.
 - Dates and details of the daily visual inspection carried out.
