Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
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FOREWORD

This report constitutes the Draft Basic Assessment Report, and has been circulated digitally for Stakeholder Comment on 24 February 2017.

NuLeaf Planning and Environmental would like to thank all Stakeholders for their participation and input into this process to date, and hereby invite Stakeholders to review this draft report and to provide feedback, input, concerns and comments.

All written comments received, including NuLeaf’s response to each, will be captured in a Comments and Responses Register, which will be made available to all I&AP’s and included in the Final Basic Assessment Report for submission to the Limpopo Department of Economic Development, Environment and Tourism.

All comments on the Draft BAR must be in writing and must reach NuLeaf by no later than close of business on 27 March 2017.

Please mark all comments for the attention of:

Tosca Grünewald
Email: tosca@nuleafsa.co.za
Tel: (012) 753 5792
Fax: (086) 571 6292
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ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AADD</td>
<td>Average Annual Daily Demand</td>
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<tr>
<td>BA</td>
<td>Basic Assessment</td>
</tr>
<tr>
<td>BAR</td>
<td>Basic Assessment Report</td>
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<tr>
<td>CBA</td>
<td>Critical Biodiversity Area</td>
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<tr>
<td>CMP</td>
<td>Construction Management Plan</td>
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<tr>
<td>DWS</td>
<td>South African National Department of Water and Sanitation</td>
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<tr>
<td>EA</td>
<td>Environmental Authorisation</td>
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<tr>
<td>ECO</td>
<td>Environmental Control Officer</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EIR</td>
<td>Environmental Impact Report</td>
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<td>EMPr</td>
<td>Environmental Management Programme</td>
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<td>EMS</td>
<td>Environmental Management System</td>
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<td>EO</td>
<td>Environmental Officer</td>
</tr>
<tr>
<td>I&amp;AP</td>
<td>Interested and Affected Party</td>
</tr>
<tr>
<td>IDP</td>
<td>Integrated Development Plan</td>
</tr>
<tr>
<td>IEM</td>
<td>Integrated Environmental Management</td>
</tr>
<tr>
<td>LED</td>
<td>Local Economic Development</td>
</tr>
<tr>
<td>LWS</td>
<td>Lapalala Wilderness School</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environmental Management Act, Act No. 107 of 1998</td>
</tr>
<tr>
<td>NEMPAA</td>
<td>National Environmental Management: Protected Areas Act, Act No. 57 of 2003</td>
</tr>
<tr>
<td>NPAES</td>
<td>National Protected Area Expansion strategy</td>
</tr>
<tr>
<td>OMP</td>
<td>Operational Management Plan</td>
</tr>
<tr>
<td>SAHRA</td>
<td>South African Heritage Resources Agency</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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</tbody>
</table>
GLOSSARY OF TERMS

Alien Vegetation: Alien vegetation defined as undesirable plant growth which shall include, but not be limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations.

Alien Species: A plant or animal species introduced from elsewhere: neither endemic nor indigenous.

Alternatives: In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to:
(a) The property on which or location where it is proposed to undertake the activity;
(b) The type of activity to be undertaken;
(c) The design or layout of activity;
(d) The technology to be used in the activity; and
(e) The operational aspects of the activity.

Applicant: Any person who applies for an authorization to undertake an activity or to cause such activity to be undertaken as contemplated in the National Environmental Management Act (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010.

Buffer zone: Is a collar of land that filters out inappropriate influences from surrounding activities, also known as edge effects, including the effects of invasive plant and animal species, physical damage and soil compaction caused by trampling and harvesting, abiotic habitat alterations and pollution. Buffer zones can also provide more landscape needed for ecological processes, such as fire.

Construction Activity: Any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process.

Ecology: The study of the inter relationships between organisms and their environments.

Environment: All physical, chemical and biological factors and conditions that influence an object and/or organism.

Environmental Impact: An Impact or Environmental Impact is the degree of change to the environment, whether desirable or undesirable, that will result from the effect of a defined activity. An Impact may be the direct or indirect consequence of the activity and may be simple or cumulative in nature.

Environmental Impact Assessment: Assessment of the effects of a development on the environment.

Environmental Management Programme: A legally binding working document, which stipulates environmental and socio-economic mitigation measures that, must be implemented by several responsible parties throughout the duration of the proposed project.

Indigenous: Means a species that occurs, or has historically occurred, naturally in a free state within the borders of South Africa. Species that have been introduced to South Africa as a result...
of human activity are excluded (South Africa (Republic) National Environmental Management: Biodiversity Act, 2004: Chapter 1).

Interested and Affected Party: Any person, group of persons or organization interested in or affected by an activity contemplated in an application, or any organ of state that may have jurisdiction over any aspect of the activity.

Invasive vegetation: Plant species that show the potential to occupy in unnatural numbers, any disturbed area, including pioneer species.

Mitigate: The implementation of practical measures to reduce adverse impacts Public Participation Process: is a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.

Public Participation: The legislated process contemplated in terms GN R543, in which all potential interested and affected parties are informed of the proposed project and afforded the opportunity to input, comment and object. Specific requirements are listed in terms of advertising and making draft reports available for comment.

Road Reserve: The road reserve is a corridor of land, defined by co-ordinates and proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.

Road Width: The area within the Road Reserve including all areas beyond the Road Reserve that are affected by the continuous presence of the road i.e. the verge.

Red data plant species: Are fauna and flora species that require environmental protection based on the World Conservation Union (IUCN) categories and criteria.

RoD: Record of Decision pertaining to the Application for Environmental Authorisation issued by the Competent Authority. The RoD is legally binding on the Applicant and may contain a positive or negative decision on the Application as well as conditions and provisions for each.

Soil Compaction: Mechanically increasing the density of the soil, vehicle passage or any other type of loading. Wet soils compact easier than moist or dry soils.

Species: Means a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind. The term “species” include any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population (South Africa [Republic] National Environmental Management: Biodiversity Act, 2004: Chapter 1).

The Contractor: The contractor, as the developers agent on site, is bound by the ROD and EMP conditions through his/her contract with the developer, and is responsible for ensuring that conditions of the EMP and ROD are strictly adhered to at all times. The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site agent in terms of the EMPr.

The Developer: Remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMP and the conditions of the Environmental Decision throughout all phases of the project.

The Environmental Control Officer (ECO): The ECO is appointed by the developer as an independent monitor of the implementation of the EMP i.e. independent of the developer and contractor.
The Environmental Officer (EO): The Contractor shall submit to the Site Agent a nominated representative of the Contractor as an EO to assist with day to day monitoring of the construction activities for the contract.

Vegetation: Is a collective word for plants occurring in an area.

Vulnerable: A taxon is ‘Vulnerable’ when it is not ‘Critically Endangered’ or ‘Endangered’ but is facing a high risk of extinction in the wild in the medium term future.

Watercourse: A river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may by notice in the Government Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks” (South Africa [Republic] National Water Act, 1998).
EXECUTIVE SUMMARY

SECTION A: ACTIVITY INFORMATION

Section A details all of the activities that will be undertaken during the developments of the proposed Lapalala Wilderness School (LWS), as well as, the identification of reasonable and feasible alternatives, activity motivation and waste management.

The Lapalala Wilderness School (LWS) is currently situated within the 45 000 ha Lapalala Wilderness Reserve (LWR). It has been earmarked for relocation due to current proposed developments within the reserve. The proposal is to move the school, which has been running for more than 30 years, to a site immediately south of the reserve outside the LWR. Two areas are planned for development, a staff housing complex and the school itself. The proposed Lapalala Wilderness School entails the development of an environmental school facility to accommodate approximately 60 children. All associated civil infrastructure (water and waste treatment) will be included. Power to all of the sites will be supplied via solar power.

The total development footprint for the upgrades is 1.8 Ha and as such will not exceed 20 Ha.

Feasible Alternatives:

Only a technology alternative is being considered for the proposed project.

Alternative 1 (Preferred Alternative):

It is the intent of the proposed Lapalala Wilderness School to become completely off-grid and independent from Eskom power. To this end, the existing powerlines will be removed from the property.

In the Preferred Alternative, electricity to both the School and Staff Accommodation Sites will be supplied via roof mounted solar panels with a backup diesel generator in case of emergency.

Similarly, each of the security access point will also be solar powered.

Advantages of this technology for the proposed activity include the following:
- The use of renewable energy (solar power) as a primary source of energy generation at the LWS is an ecologically sustainable solution, which is particularly appropriate in this natural context.
- The use of off-grid power negates the requirement for ecologically and visually invasive electrical infrastructure (cabling) to the development sites.
- The use of off-grid renewable energy will mostly likely bring a long term saving on operational energy costs.

Disadvantages of this technology for the proposed activity includes the following:
- The decision to make use of renewable energy (solar power) will imply a higher capital cost for the LWS, as this infrastructure is expensive when compared to conventional on-grid energy solutions.
- Solar panels represent additional hard surfaces, which in turn imply higher storm water and runoff volumes from within the LWS development footprint.

Alternative 2 (Technology Alternative):

In the Technology Alternative, the existing Eskom powerlines will be extended to each of the LWS development sites.

Advantages of this technology for the proposed activity include the following:
- The decision to make use of Eskom is a conventional on-grid energy solution of which the capital costs are known.

Disadvantages of this technology for the proposed activity includes the following:
- Existing energy supply, which will be extended, is not renewable and sustainable green technology.
The use of Eskom power entails the requirement for ecologically and visually invasive electrical infrastructure (cabling) to each of the sites.

The use of Eskom power entails an increase in the extent of the development footprint (owing to the fact that construction is taking place outside of the proposed LWS development footprint).

The long term cost of energy from Eskom is set to increase significantly in the future, meaning a long term escalation in operational energy costs.

Waste, Effluent, Emission and Noise Management

Items that can be recycled will be separately stored for collection. Other solid waste will be collected and stored in fenced “scavenger proof” areas at the development. The solid waste will be transported to and deposited at the closest registered disposal site by a registered waste disposal contractor.

The Municipality of Lephalale have issued a letter stating that they will provide integrated waste management services to the proposed LWS development. The applicant is, however, advised to make a special arrangement with the waste management office of the municipality regarding the level of service for refuse removal.

No municipal sewer services are available in the direct vicinity of the proposed development. As such, a 13kl/d septic tank with soakaway system or equivalent package plant will be constructed at the School Site. Likewise a 1kl/d septic tank with soakaway system or equivalent package plant will be constructed at the Staff Accommodation Site.

The sewage treatment systems will be designed to the specific requirements of each site based on the local environment in which each site has been placed.

The proposed development is situated within the quaternary catchment outside of the areas as excluded in Paragraph 3.4 of Section 21(1) of the General Authorization. Therefore, no Water Use License will be required.

All effluent discharged from a treatment system shall comply with the resource quality guidelines (National Water Act, No. 36 of 1998) and the relevant sections of South African Water Quality Guidelines (Department of Water Affairs and Forestry, 1996).

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

This section provides a detailed description of the proposed development in terms of the groundwater, soil, biodiversity, visual and cultural/historical features found on site.

Biodiversity:

The study area is situated within the Waterberg Mountain Bushveld vegetation type, which is in the Central Bushveld Bioregion of the Savanna Biome. Waterberg Mountain Bushveld was assessed by Mucina & Rutherford (2006) as Least Threatened and is not situated in any floristic centres of endemism nor is it listed as a threatened ecosystem.

The Limpopo Province Biodiversity Conservation Assessment classifies the study area and general surroundings as a Critical Biodiversity Area 1 (CBA1).

No threatened plant species were confirmed during fieldwork but one Near Threatened and four species protected either under the Limpopo Environmental Management (Act No. 7 of 2003) or the National Forests Act (No. 30 of 1998) were recorded. No threatened plant species potentially occur. In total, 59 plant species were recorded from the two sites. One threatened fauna species was recorded: Hippopotamus, although in the adjacent Lephalale River and not from within the two sites.
In addition, one Near Threatened species was also confirmed: Brown Hyaena. Four confirmed species are protected either under the Limpopo Environmental Management (Act No. 7 of 2003) or the National Environmental Management: Biodiversity Act Threatened or Protected Species (No. 10 of 2004). Two threatened bird species have a moderate or high likelihood of occurring within the study area: Martial Eagle (Endangered) and Lanner Falcon (Vulnerable).

Visual:

Land use within the study area is predominately private game farms and to a lesser degree agriculture. The study area is situated within the Waterberg Mountain Bushveld vegetation type, which is in the Central Bushveld Bioregion of the Savanna Biome. Landover comprises low to mid-high woodland that is dominated by deciduous, broad-leaved tree species, and has a grass-dominated herbaceous layer.

The visual quality of the receiving environment within the study areas is high, by virtue of the vast and undeveloped nature of the environment. This lends a distinct sense of place to the area. This area is known as a tourist destination owing to its location in the Waterberg Biosphere Reserve and the Game reserves within the region. The only identified conservation area within the study area is the Lapalala Wilderness Reserve, which is located to the north of the proposed development.

The primary visual impact, namely the presence of the proposed Lapalala Wilderness School, may be mitigated from a visual perspective, due to the nature and scale of the development (i.e. development footprint and height of the buildings). This mitigation potential is further supported by the nature of the receiving environment. As such, all expected visual impacts are determined to be of moderate significance and can be mitigated to low. In addition, none are considered to be fatal flaws from a visual perspective.

Cultural/Historical Features:

A total of one possible Iron Age settlement (Site 1) was recorded during the survey. Only two surface scatters of hardened clay were recorded that might indicate the remains of Late Iron Age houses. No other deposits (middens) or structures were recorded in association. It is important to note that all archaeological sites are protected by the NHRA (Act No. 25 of 1999, Section 35) and as such the site must be clearly demarcated during the construction phase.

SECTION C: PUBLIC PARTICIPATION

A list of interested and affected parties (I&AP’s), as well as, compliance authorities was compiled inclusive of Local and District Municipalities, and local landowners. Written notification of the proposed development, including a background information document, was sent to all identified I&AP’s and Compliance Authorities on 21 October 2016. A printed advertisement was placed in the Northern News, a local publication, on the 21 October 2016. Additionally, site notices were placed at the main entrances to the affected property on 24 October 2016.

SECTION D: IMPACT ASSESSMENT

Alternative 1(Preferred Alternative):

A tread lightly approach will be encouraged for the development of both the School and Staff Accommodation Sites, in terms of the design and layout. A 32 m buffer will be respected with regard to all watercourses and drainage lines, namely the Lephalala, River. Additionally, the 100 year flood line for the Lephalala River will be respected. This is of particular relevance to the School Site which is located near the Lephalala River.

All of the proposed development sites are acceptable for development and not fatally flawed in any way. The construction impacts, if effectively managed according to the mitigation measures proposed in this report, the specialist reports and the draft EMPR will have a predominantly low residual significance rating. Moderate post mitigation significance ratings are anticipated in terms of disturbance of sensitive habitats such as the riparian zone near the School site. Even though the
School Site development is not located within the riparian zone its close proximity to the development envelope poses a possibly higher risk to this sensitive zone during construction.

Operational impacts can also be mitigated and will result in low post mitigation significance ratings.

Positive impacts include job creation and employment opportunities for both the construction and operational phases, as well as, skills transfer and development.

In light of the above discussion it is recommended that all of the development sites be supported on the condition that all mitigation measures mentioned in this report, the specialist studies and the draft EMPr are implemented and adhere to throughout the project lifecycle.

Alternative 2 (Technology Alternative):

The Technology Alternative includes the same sites and roads as Alternative 1 (Preferred Alternative) and as such, all arguments hold true for this alternative. All service aspects will be also be as per the Alternative 1 (Preferred Alternative), with the exception that power will not be supplied off grid but rather via Eskom. As a result the existing Eskom lines will be extended posing a greater risk to the vegetation and habitats.

The extent of the development footprint is also increased owing to the fact that construction is taking place outside of the proposed School and Staff Accommodation development envelopes.

The Technology Alternative will result in higher significance ratings for certain aspects, such as, surface water, soil, flora and fauna, during the construction phase due to the elevated environmental risks associated with the extension of Eskom power cables. The post mitigation significance for the construction phase will be predominately low to medium. Increased impacts as compared to the Preferred Alternative, are anticipated for the disturbance and loss of hydrological function of water courses, soil erosion, loss of vegetation and disturbance to sensitive habitats (riparian) and wildlife corridors owing to the extension of the power cables.

The operational impacts will be similar to those of the Preferred Alternative, with residual impacts being mostly of low significance. Post mitigation significance will be moderate with regard to the higher operational costs in the long term associated with complete dependence on the Eskom utility, as well as, the greater impact on the visual quality of the receiving environment.

Taking the above into consideration, it is recommended that the Technology Alternative not be supported due to the increase in extent of the development footprint and the associated increase in negative impacts on the receiving environment.

SECTION E: RECOMMENDATION OF PRACTITIONER

The proposed development of the Lapalala Wilderness School will take place in Waterberg Mountain Bushveld was assessed by Mucina & Rutherford (2006) as Least Threatened. Limited encroachment into sensitive habitats (i.e. riparian) will occur and the 32 m buffer around watercourses, as well as, the 1:100 year flood line will be respected.

All significant negative impacts can be successfully mitigated and managed to acceptable levels (i.e. moderate to low) during all phases of the proposed development, and at all development sites.

All mitigation measures as detailed in this BAR, the attached Specialist Impact Assessments and the Draft Environmental Management Programme (EMPr) must be implemented and adhered for the duration of the project lifecycle (i.e. during the planning, construction and operational phases).

Assuming that the above recommendations are implemented and adhered to, there is no reason why the proposed development of the Lapalala Wilderness School should not take place. The Environmental Assessment Practitioner recommends that the development as proposed in Alternative 1 (Preferred Alternative) be supported.

File Reference Number: 

NEAS Reference Number: 

Date Received: 

Due date for acknowledgement: 

Due date for acceptance: 

Due date for decision: 

Kindly note that:

1. The report must be compiled by an independent Environmental Assessment Practitioner.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable tick the boxes that are applicable in the report.

4. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the Department of Economic Development, Environment and Tourism as the competent authority (Department) for assessing the application, it may result in the rejection of the application as provided for in the regulations.

5. An incomplete report may be returned to the applicant for revision.

6. Unless protected by law, all information in the report will become public information on receipt by the department. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.


9. The Department may require that for specified types of activities in defined situations only parts of this report need to be completed. No faxed or e-mailed reports will be accepted.

10. This application form must be handed in at the offices of the Department of Economic Development, Environment and Tourism:

<table>
<thead>
<tr>
<th>Postal Address:</th>
<th>Physical Address:</th>
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</thead>
<tbody>
<tr>
<td>Central Administration Office</td>
<td>Central Administration Office</td>
</tr>
<tr>
<td>Environmental Impact Management</td>
<td>Environmental Affairs Building</td>
</tr>
<tr>
<td>P. O. Box 55464</td>
<td>Cnr Suid and Dorp Streets</td>
</tr>
<tr>
<td>Polokwane</td>
<td>Polokwane</td>
</tr>
<tr>
<td>0700</td>
<td>0699</td>
</tr>
</tbody>
</table>

Queries should be directed to the Central Administration Office: Environmental Impact Management:

- For attention: Mr E. V. Maluleke
- Tel: (015) 290 7138/ (015) 290 7167
- Fax: (015) 295 5015
- Email: malulekeev@ledet.gov.za

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?  

| YES |

If YES, please complete the form entitled “Details of specialist and declaration of interest” or appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

The Lapalala Wilderness School (LWS) is currently situated within the 45 000 ha Lapalala Wilderness Reserve (LWR). It has been earmarked for relocation due to current proposed developments within the reserve. The proposal is to move the school, which has been running for more than 30 years, to a site immediately south of the reserve outside the LWR. Two areas are planned for development, a staff housing complex and the school itself. The proposed Lapalala Wilderness School entails the development of an environmental school facility to accommodate approximately 60 children, consisting of the following infrastructure:

School Site
- Dorms
- Boma
- Interpretive center
- Offices
- Kitchen
- Laundry area
- Teachers Rooms
- Dining Area
- Access roads and parking
- Field and obstacle course

Staff Accommodation Site
- Cottages
- Reception
- Parking

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¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
Gate house

All associated civil infrastructure (water, electricity and waste treatment) will be included. The total development footprint for the upgrades is 1.8 Ha and as such will not exceed 20 Ha.

The motivation for the project seeks to focus on environmental education programs, where it is recognized that all African countries, need to protect the biodiversity and ecosystems involved in supporting life (clean water and air, soil nutrients, forests, fisheries and other key ecosystems).

The United Nations Environment Program (UNEP) recommends urgent action to halt and reverse Africa’s environmental degradation, noting that the immense value of the continent’s environmental assets is particularly ill-understood. Against such a background, environmental education has moved beyond simply creating an awareness of Africa’s extraordinary celebration of diversity of fauna and flora to become intimately entwined with issues of development, survival, livelihoods, improved quality of education and quality of life, and more sustainable living practices.

The LWS has as its mission the identification and nurturing of the continent’s future environmental leaders, with emphasis on mentoring those who will promote sustainable living practices. This vitally important work is increasingly being recognized for the socio-economic value it holds for the future economy of South Africa.

In short the proposed extension and new facilities will have not only considerable social impact but also a far reaching environmental impact on society.

Activities applied for to be authorised

For Notice 1 (R.983, 08 December 2014) and Notice 2 (R.984, December 2014)

<table>
<thead>
<tr>
<th>Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014</th>
<th>Activity No (s) (in terms of the relevant notice) e.g. 1(a)</th>
<th>Describe each listed activity as per project description: e.g. Construction of a 600 mW generator</th>
</tr>
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<tbody>
<tr>
<td>GN R. 983 (08 December 2014)</td>
<td>12 (x) (xi) (xii) (c)</td>
<td>Portions of the proposed facility may be located within 32 meters of a watercourse.</td>
</tr>
<tr>
<td>GN R. 983 (08 December 2014)</td>
<td>27</td>
<td>The total cleared footprint is not expected to exceed 20 Ha. The total proposed building footprint is not greater than 2 Ha.</td>
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</table>

Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
For Notice 3 (R.985, 08 December 2014)

<table>
<thead>
<tr>
<th>Activity No (s) (in the notice) e.g. 1</th>
<th>No. of Geographical Area and Description as per project (vii) Core area of Waterberg biosphere reserve</th>
<th>Describe each listed activity as per project description 3 e.g. The construction of a billboard with a size of 20m² in Moletjie village</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>(a) (iii) (cc) (dd)</td>
<td>Raw water will be utilized for firefighting and therefore the minimum storage for raw water should at least be 342 cubic meters.</td>
</tr>
<tr>
<td>6</td>
<td>(a) (ii) (dd) (ee)</td>
<td>The proposed Lapalala Wilderness School entails the development of an environmental school facility to accommodate approximately 60 children and 18 on site staff members.</td>
</tr>
<tr>
<td>12</td>
<td>(a) (ii)</td>
<td>The construction of the resultant buildings for the proposed school will result in the clearance of more than 300 square meters of indigenous vegetation. The total building footprint is not greater than 2Ha.</td>
</tr>
<tr>
<td>14</td>
<td>(x) (xi) (xii) (c); (a) (ii) (ee) (ff)</td>
<td>Portions of the proposed facility may be located within 32 meters of a watercourse.</td>
</tr>
</tbody>
</table>

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the Department may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Only a technology alternative is being considered for the proposed project.

Preferred Alternative: Alternative 1
It is the intent of Lapalala Wilderness School to become completely off-grid and independent of Eskom power. To this end, the

3 Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description
LEDETA BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
existing powerlines will be removed from the property.

In the Preferred Alternative, electricity both the School and Staff Accommodation sites will be supplied via solar power. Each site will have roof mounted solar panels with a backup diesel generator to power the buildings.

Similarly, the security access point will also be solar powered.

**Advantages** of this technology for the proposed activity include the following:
- The use of renewable energy (solar power) as a primary source of energy generation at the LWS sites is an ecologically sustainable solution, which is particularly appropriate in this natural context.
- The use of off-grid power negates the requirement for ecologically and visually invasive electrical infrastructure (cabling) to the LWS sites.
- The use of off-grid renewable energy will mostly likely bring a long term saving on operational energy costs.

**Disadvantages** of this technology for the proposed activity includes the following:
- The decision to make use of renewable energy (solar power) will imply a higher capital cost for the LWS sites as this infrastructure is expensive when compared to conventional on-grid energy solutions.
- Solar panels represent additional hard surfaces, which in turn imply higher storm water and runoff volumes from within the LWS sites footprint.

**Technology Alternative: Alternative 2**

In the Technology Alternative, the existing Eskom powerlines will be extended to both of the LWS sites.

**Advantages** of this technology for the proposed activity include the following:
- The decision to make use of Eskom is a conventional on-grid energy solution of which the capital costs are known.

**Disadvantages** of this technology for the proposed activity includes the following:
- Existing energy supply, which will be extended, is not renewable and sustainable green technology.
- The use of Eskom power entails the requirement for ecologically and visually invasive electrical infrastructure (cabling) to each of the sites.
- The use of Eskom power entails an increase in the extent of the development footprint (owing to the fact that construction is taking place outside of the proposed LWS sites footprints).
- The long term cost of energy from Eskom is set to increase significantly in the future, meaning a long term escalation in operational energy costs.

Paragraphs 3 – 13 below should be completed for each alternative.

3. **ACTIVITY POSITION**

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the Hartebeeshoek 94 WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

<table>
<thead>
<tr>
<th>Sites</th>
<th>Latitude (S)</th>
<th>Longitude (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1: School</td>
<td>23° 56’</td>
<td>28° 21’</td>
</tr>
<tr>
<td></td>
<td>15.97”</td>
<td>49.90”</td>
</tr>
</tbody>
</table>

LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province

- 6
Sit 2: Staff Accommodation

In the case of linear activities:
Roads:

<table>
<thead>
<tr>
<th>Latitude (S)</th>
<th>Longitude (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23° 56' 32.18&quot;</td>
<td>28° 21' 44.90&quot;</td>
</tr>
</tbody>
</table>

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

4. **PHYSICAL SIZE OF THE ACTIVITY**

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Sites:**

<table>
<thead>
<tr>
<th>Site</th>
<th>Size of the activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1: School</td>
<td>13 592m²</td>
</tr>
<tr>
<td>Site 2: Staff Accommodation</td>
<td>4 258m²</td>
</tr>
</tbody>
</table>

or,

for linear activities:

**Roads:**

<table>
<thead>
<tr>
<th>Length of the activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length of proposed road</td>
</tr>
<tr>
<td>Alternative A2 (if any)</td>
</tr>
<tr>
<td>Alternative A3 (if any)</td>
</tr>
</tbody>
</table>

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Size of the site/servitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative A1 (preferred activity alternative)</td>
<td>m²</td>
</tr>
<tr>
<td>Alternative A2 (if any)</td>
<td>m²</td>
</tr>
<tr>
<td>Alternative A3 (if any)</td>
<td>m²</td>
</tr>
</tbody>
</table>

5. **SITE ACCESS**

Does ready access to the site exist?

**YES**
If NO, what is the distance over which a new access road will be built m

Describe the type of access road planned:

Even though there is already an existing site access road from the main road to the proposed sites, an additional ring road is proposed to allow for easier site access and deliveries to the School Site, parking area as well as the maintenance and kitchen loading area.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 metres;
6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
   - rivers;
   - the 1:100 year flood line (where available or where it is required by Department of Water Affairs);
   - ridges;
   - cultural and historical features;
   - areas with indigenous vegetation (even if it is degraded or invested with alien species);
6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.11 the positions from where photographs of the site were taken.

Please refer to Appendix A.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.
8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Please refer to Appendix C.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the expected capital value of the activity on completion?</td>
<td>R 25 million</td>
</tr>
<tr>
<td>What is the expected yearly income that will be generated by or as a result of the activity?</td>
<td>R 3.4 million</td>
</tr>
<tr>
<td>Will the activity contribute to service infrastructure?</td>
<td>YES</td>
</tr>
<tr>
<td>Is the activity a public amenity?</td>
<td>NO</td>
</tr>
<tr>
<td>How many new employment opportunities will be created in the development phase of the activity?</td>
<td>25</td>
</tr>
<tr>
<td>What is the expected value of the employment opportunities during the development phase?</td>
<td>R 1 575 000</td>
</tr>
<tr>
<td>What percentage of this will accrue to previously disadvantaged individuals?</td>
<td>100 %</td>
</tr>
<tr>
<td>How many permanent new employment opportunities will be created during the operational phase of the activity?</td>
<td>18</td>
</tr>
<tr>
<td>What is the expected current value of the employment opportunities during the first 10 years?</td>
<td>R 4.1 million</td>
</tr>
<tr>
<td>What percentage of this will accrue to previously disadvantaged individuals?</td>
<td>100 %</td>
</tr>
</tbody>
</table>
9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

**NEED:**

1. Was the relevant municipality involved in the application? | YES
2. Does the proposed land use fall within the municipal Integrated Development Plan? | YES

Lephalale Local Municipality Integrated Development Plan (IDP) recognizes that it has the potential to be the national pioneer in the Green Economy. The Green Economy in Lephalale will grant coupled benefits for the economy and the environment. The goals of the Lephalale Green Economy plan are to generate jobs, improve environmental quality, create enabling conditions for Green Growth, change behavioral and production patterns and build a new economic/environmental paradigm for Lephalale.

One way in which to implement this initiative would be through environmental education to improve productivity and sustainable growth. Against such a background, environmental education has moved beyond simply creating an awareness of Africa’s extraordinary celebration of diversity of fauna and flora to become intimately entwined with issues of development, survival, livelihoods, improved quality of education and quality of life, and more sustainable living practices. Since environmental education programmes are the focused work of the Lapalala Wilderness School the proposed development is seen as compatible with the IDP.

3. If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:

**DESIRABILITY:**

1. Does the proposed land use / development fit the surrounding area? | YES
2. Does the proposed land use / development conform to the relevant structure plans, Spatial development Framework, Land Use Management Scheme, and planning visions for the area? | YES

The Waterberg Spatial Development Framework (SDF) recognizes that the Waterberg Biosphere Reserve plays a pivotal role in conservation within the Waterberg District Municipality. It also recognizes that it is important that the environmental heritage, conservation areas, biodiversity hotspots and ecologically sensitive areas are actively protected, managed, and enhanced to ensure that they are not adversely affected by other activities. As such this area is exclusively used for conservation oriented activities, of which the proposed development of the Lapalala Wilderness School falls under.

The Waterberg District Environmental Management Framework (EMF) identifies various zones within the district. Lapalala Wilderness School falls within Zone 1: Protection of natural vegetation, scenic landscape and rock
paintings areas, with limited appropriate tourism, and Zone 2: Nature and cultural tourism focus areas within a high quality natural setting. Both of these zones allow for some sort of low impact developments.

iii. Will the benefits of the proposed land use / development outweigh the negative impacts of it?  YES

The benefits of the proposed development are positive, contributing to future green economic growth and environmental education within the local surrounding communities. Additionally, as a result of both the construction phase and operational phase numerous jobs will be created which is ideal in an area such as Lephalale where the unemployment rate is high.

iv. If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:

v. Will the proposed land use / development impact on the sense of place?  NO

The properties recently purchased by the Mapula Trust (the applicant) was previous utilised for agricultural purposes and will now be utilised for environmental education purposes. As such it is not expected that the proposed land use will impact on the sense of place. Additionally the development will be limited to single storey buildings constructed using natural materials and colours so as to blend into the surrounding natural environment.

vi. Will the proposed land use / development set a precedent?  NO

A precedent is not expected to be set.

vii. Will any person’s rights be affected by the proposed land use / development?  NO

It is not anticipated that any person’s rights will be infringed upon.

viii. Will the proposed land use / development compromise the “urban edge”?  NO

The urban edge will not be compromised as the proposed development site is not located within a built environment. The affected properties are located adjacent to the Lapalala Wilderness Reserve which is currently in the beginning stages of being formally declared as a Protected Area in terms of NEMPA.

ix. If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.

---

**BENEFITS:**

i. Will the land use / development have any benefits for society in general?  YES

ii. Explain:

The benefits of proposed project to the society in general include the following:

- Contributing to local economic growth through the establishment of a viable green economic activity
- Contributing to the ongoing of conservation through environmental education
- Teaching of sustainable living practices
- Educating communities about the importance of the protection of the biodiversity and ecosystems involved in supporting life (clean water and air, soil nutrients, forests, fisheries and other key ecosystems)
<table>
<thead>
<tr>
<th>iii.</th>
<th>Will the land use / development have any benefits for the local communities where it will be located?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>iv.</td>
<td>Explain:</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>The proposed development of the LWS will benefit the local communities in terms of the following:</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>• Employment opportunities and job creation</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>• Skills development and training</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>• Mentoring of young individuals who live in rural areas in close proximity to the school with a desire to pursue a career in conservation or environmental education</td>
<td>-----</td>
<td>----</td>
</tr>
</tbody>
</table>
10. **APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES**

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

<table>
<thead>
<tr>
<th>TITLE OF LEGISLATION, POLICY OR GUIDELINE</th>
<th>APPLICABILITY TO THE PROJECT</th>
<th>ADMINISTERING AUTHORITY</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEGAL FRAMEWORK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constitution of Republic of South Africa (Act No. 108 of 1996):</td>
<td>This is the fundamental law of South Africa, setting out the Bill of Rights as well as the relationship of various government structures to each other.</td>
<td>National Government</td>
<td>1996</td>
</tr>
</tbody>
</table>
| Conservation of Agricultural Resources Act (Act No. 43 of 1983): | Provides for control over the utilization of the natural agricultural resources of the Republic. The project will be required in terms of this legislation to ensure that:  
- The soil mantle is protected and conserved,  
- The natural water sources are protected,  
- Vegetative cover is conserved and weeds and invader plants are removed from the site. | Department of Agriculture | 1983 |
<p>| National Environmental Management Act (Act No. 107 of 1998) | To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. | Department of Environmental Affairs | 1998 |
| National Environmental Management: Protected Areas Act (Act No. 57 of 2003): | The Act provides for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas, and for matters in connection therewith. While the property is not a formally declared protected area, it does fall within the Waterberg Biosphere Reserve as recognized by UNESCO and an application for proclamation has been submitted. | Department of Environmental Affairs | 2003 |
| National Environmental Management: Biodiversity Act (Act No. 10 of 2004): | The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa’s biodiversity within the framework set out by NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed (see below). The Act lists species that are threatened or require protection to ensure their survival in the wild, while regulating the activities, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival. The Act has listed flora and fauna species. | Department of Environmental Affairs | 2004 |
| National Spatial Biodiversity Assessment, | The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels. | Department of Environmental Affairs | 2011 |</p>
<table>
<thead>
<tr>
<th>Act</th>
<th>Description</th>
<th>Relevant Department</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Forests Act (Act No. 84 of 1998)</td>
<td>This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees (first promulgated in 1976 and updated since).</td>
<td>Department of Agriculture, Forestry and Fisheries</td>
<td>1998</td>
</tr>
<tr>
<td>National Veld and Forest Fire Act (Act No. 101 of 1998)</td>
<td>The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic. The Act provides for a variety of institutions, methods and practices for achieving this purpose.</td>
<td>Department of Water Affairs</td>
<td>1998</td>
</tr>
<tr>
<td>National Heritage Resources Act (Act No. 25 of 1999)</td>
<td>The National Heritage Resources Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments exceed 300 metres in length. Potential impact on cultural heritage, paleontological or archaeological resources through excavation activities or disturbance will need to be monitored. Permits may be required per the National Heritage Resources Act (Act No. 25 of 1999).</td>
<td>South African Heritage Resources Agency (SAHRA)</td>
<td>1999</td>
</tr>
<tr>
<td>The National Water Act (Act No. 36 of 1998)</td>
<td>This Act aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. The development will have to ensure that local water resources are protected, used, developed, conserved, managed and controlled in a responsible way.</td>
<td>Department of Water Affairs</td>
<td>1998</td>
</tr>
<tr>
<td>The National Water Services Act (Act No. 108 of 1997)</td>
<td>The Act legislates the necessity to provide for the rights of access to basic water supply and basic sanitation; to provide for the setting of national standards and of norms and standards for tariffs; to provide for water services development plans; to provide a regulatory framework for water services institutions and water services intermediaries; to provide for the establishment and disestablishment of water boards and water services committees and their powers and duties; to provide for the monitoring of water services and intervention by the Minister or by the relevant Province; to provide for financial assistance to water services institutions; to provide for certain general powers of the Minister; to provide for the gathering of information in a national information system and the distribution of that information; to repeal certain laws; and to provide for matters connected therewith.</td>
<td>Department of Water Affairs</td>
<td>1997</td>
</tr>
<tr>
<td>National Environmental Management Waste Act (Act No. 59 of 2008)</td>
<td>The Waste Act reforms the law regulating waste management in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The development will be subject to this Act in terms of the disposal of waste.</td>
<td>Department of Environmental Affairs</td>
<td>2008</td>
</tr>
<tr>
<td>Hazardous Substances Act (Act No. 15 of 1973)</td>
<td>To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products; to provide for the division of such substances or products into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products; and to provide for matters connected therewith.</td>
<td>Department of Health</td>
<td>1973</td>
</tr>
<tr>
<td>National Environmental management Air Quality Act (Act No. 39 of 2004)</td>
<td>To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide</td>
<td>Department of Environmental Affairs</td>
<td>2004</td>
</tr>
</tbody>
</table>
for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

| Occupational Health and Safety Act, 1993 (Act No. 85 of 1993): | The purpose of this Act is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with, the activities of persons at work. | Department of Labour | 1993 |
| Integrated Environmental Management Information Series | IEM is a key instrument of NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. The aim of the information series is to provide general information on techniques, tools and processes for environmental assessment and Management. ERM have referred to these various documents for information on the most suitable approach to the environmental assessment process for the proposed development. | Department of Environmental Affairs | 1992 |

**REGIONAL PLANNING POLICIES**

| Waterberg District Municipality Spatial Development Framework | The Waterberg SDF has identified certain development objectives and strategies:  
1. Promotion and facilitation of economic development: support and develop strategic locations that contain the right characteristics inclusive of areas such as the biosphere and tourism nodes.  
2. The sustainable management of the natural environmental assets and heritage: identify and isolate valuable natural assets, ensure continuous ecological and open space systems, ensure conservation and sustainable management of the biosphere and other conservation areas.  
3. The promotion of tourism development: identify tourism development opportunities, ensure linkages to tourism development areas, and recognise the important role the private sector and land owners play in tourism development. | Waterberg District Municipality | 2009 |
| Lephalale Local Municipality Integrated Development Plan | Lephalale Local Municipality Integrated Development Plan (IDP) recognizes that it has the potential to be the national pioneer in the Green Economy. The Green Economy in Lephalale will grant coupled benefits for the economy and the environment. The goals of the Lephalale Green Economy plan are to generate jobs, improve environmental quality, create enabling conditions for Green Growth, change behavioural and production patterns and build a new economic/environmental paradigm for Lephalale. | Lephalale Local Municipality | 2014-2016 |
| Waterberg District Environmental Management Framework | The Waterberg Biosphere Reserve, as recognized by UNESCO, provides an opportunity to promote biodiversity conservation, as well as, advancing ecotourism. The Waterberg EMF identifies environmental management zones of which zones 1 (protection of natural vegetation, scenic landscape and rock painting areas, with limited appropriate tourism) and zone 2 (nature and cultural tourism focus areas within a high quality natural setting) have relevance. | Waterberg District Municipality | 2010 |
11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?
If yes, what estimated quantity will be produced per month?

| YES | Less than 20 m³ |

How will the construction solid waste be disposed of (describe)?

Items that can be recycled will be separately stored for collection. Other solid waste will be collected and stored in fenced “scavenger proof” areas at the development. The solid waste will be transported to and deposited at the closest registered disposal site by a registered waste disposal contractor.

The Municipality of Lephalale have issued a letter stating that they will provide integrated waste management services to the proposed LWS development. The applicant is, however, advised to make a special arrangement with the waste management office of the municipality regarding the level of service for refuse removal.

Please refer to Appendix G.2 for the Services Agreement Letter.

Where will the construction solid waste be disposed of (describe)?

The solid waste will be transported to and deposited at the closest registered disposal site by a registered waste disposal contractor.

The Municipality of Lephalale have issued a letter stating that they will provide integrated waste management services to the proposed LWS development. The applicant is, however, advised to make a special arrangement with the waste management office of the municipality regarding the level of service for refuse removal.

Please refer to Appendix G.2 for the Services Agreement Letter.

Will the activity produce solid waste during its operational phase?
If yes, what estimated quantity will be produced per month?

| YES | 26 m³ |

How will the solid waste be disposed of (describe)?

Items that can be recycled will be separately stored for collection. Other solid waste will be collected and stored in fenced “scavenger proof” areas at the development. The solid waste will be transported to and deposited at the closest registered disposal site by a registered waste disposal contractor.

The Municipality of Lephalale have issued a letter stating that they will provide integrated waste management services to the proposed LWS development. The applicant is, however, advised to make a special arrangement with the waste management office of the municipality regarding the level of service for refuse removal.

Please refer to Appendix G.2 for the Services Agreement Letter.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the department to determine whether it is necessary to change to an application for scoping and EIA.
Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? NO

If yes, inform the department and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? NO

If yes, then the applicant should consult with the Department to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? NO

If yes, what estimated quantity will be produced per month? m³

Will the activity produce any effluent that will be treated and/or disposed of onsite? YES

If yes, the applicant should consult with the Department to determine whether it is necessary to change to an application for scoping and EIA.

No municipal sewer services are available in the direct vicinity of the proposed development. As such, a 13kl/d septic tank with soakaway system or equivalent package plant will be constructed at the School Site. Likewise a 1kl/d septic tank with soakaway system or equivalent package plant will be constructed at the Staff Accommodation Site.

The sewage treatment systems will be designed to the specific requirements of each site based on the local environment in which each site has been placed.

The proposed development is situated within the quaternary catchment outside of the areas as excluded in Paragraph 3.4 of Section 21(1) of the General Authorization. Therefore, no Water Use License will be required.

All effluent discharged from a treatment system shall comply with the resource quality guidelines (National Water Act, No. 36 of 1998) and the relevant sections of South African Water Quality Guidelines (Department of Water Affairs and Forestry, 1996).

The estimated sewage flow for the proposed LWS development is 13.46kl/d.

Please refer to Appendix G.4 for the Services Availability Report.

Will the activity produce effluent that will be treated and/or disposed of at another facility? NO

If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:  

Cell:

E-mail:  

Fax:
Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

The overall approach of Lapalala Wilderness School is to be environmentally responsible and have the least impact on the environment as possible. In this regard all sites will have separate waste streams at the source. Approved grease traps will be installed at all kitchen waste outlets and environmentally friendly and/or organic based detergents and soaps will be used to limit the effects on the bio-organisms present in the treatment system.

The LWS sites will also be encouraged to feature sustainable systems such as:

- Dual flushing systems
- Low flow taps and water using fixtures
- Automatic Pulse Meters for water management and leak detection. Systems should be in place to track water received and water used in each bathroom, kitchens and other points

**11(c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere? [YES]  
If yes, is it controlled by any legislation of any sphere of government? [NO]  
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.  
If no, describe the emissions in terms of type and concentration:  
No emissions, other than that of exhaust emissions and dust associated with the removal of vegetation will be released into the atmosphere.

**11(d) Generation of noise**

Will the activity generate noise? [YES]  
If yes, is it controlled by any legislation of any sphere of government? [NO]  
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.  
If no, describe the noise in terms of type and level:  
Standard construction noise (i.e. heavy vehicles and site work) occurred during the construction phase. During operations, minimal noise will be generated at the LWS.

**12. WATER USE**

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

<table>
<thead>
<tr>
<th>municipal</th>
<th>water board</th>
<th>groundwater</th>
<th>river, stream, dam or lake</th>
<th>other</th>
<th>the activity will not use water</th>
</tr>
</thead>
</table>

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: 750000 Litres

Does the activity require a water use permit from the Department of Water Affairs? [NO]  
If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.
According to General Authorization legislation, the proposed development falls within the Department of Water and Sanitation (DWS) A50D quaternary drainage region and is permitted to abstract a maximum of 75kl/ha/annum. The maximum volume of groundwater that may be annually abstracted to preserve a sustainable abstraction is 10 000 – 15 000kl per annum. The Average Daily Demand (AADD) for the proposed development is 9 125kl per annum or 25kl per day.

Based on this information, it will not be necessary to apply for a Water Use License (WULA) at the DWS, however the abstraction from ground water source will need to be registered with the DWS as prescribed under the Revision of General Authorization in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) – Sections 21(a) and (b).

However, the commissioning of a formal monitoring system that would satisfy the legal framework is recommended. Additionally, apart from monthly water level measurements, weekly abstraction volumes and total monthly rainfall recordings, microbiological quality (assessed in terms of fecal coliforms) is to be sampled as often as possible but at least quarterly. The chemical quality including PH, ammonia and nitrate/nitrite should also be monitored at least annually (but quarterly if possible) as part of the regular water quality surveillance programme.

In principle, the ground water will be pumped from the borehole(s) to the raw water tanks or raw water reservoir. From here water will gravitate to a purification works where it will be purified through chlorination or UV sterilization and stored in clean water tank(s) or a clean water reservoir(s). The proposed development will be provided with clean water directly from the proposed clean water tanks/ reservoirs.

The clean water storage capacity will be 45kl for the School and 5kl for the Staff Accommodation. Sufficient for 48 hour storage. Raw water will be utilized for firefighting and therefore the minimum storage for raw water should be at least 342kl (342 cubic meters).

Please refer to Appendix G.4 for the Services Availability Report.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Design measures to ensure that the Lapalala Wilderness School is energy efficient will be the following:

- Lighting: LED lighting should be installed throughout the development
- Hot water: Hot water for both the children’s/teachers and staff accommodation facilities may be provided by means of a heat pump.
- Cooking: Gas will be utilized for cooking purposes

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Lapalala Wilderness School will be completely off-grid whereby all of the components of the proposed development will be powered by solar power with a backup generator.
SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:
1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A): A

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES

If YES, please complete the form entitled “Details of specialist and declaration of interest” for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property description/physical address:
- Portion 1 of the Farm Frischgewaagd 649-LR
- Portion 2 of the Farm Frischgewaagd 649-LR

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

The nearest town is Vaalwater.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:
- Agricultural

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? YES

Must a building plan be submitted to the local authority? YES

Locality map:
- An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:
  - an indication of the project site position as well as the positions of the alternative sites, if any;
  - road access from all major roads in the area;
  - road names or numbers of all major roads as well as the roads that provide access to the site(s);
  - all roads within a 1km radius of the site or alternative sites; and
  - a north arrow;
  - a legend; and
  - locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)
1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Site 1: School

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Site 2: Staff Accommodation

<table>
<thead>
<tr>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Flat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain
- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.)

LEDEN BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
4. GROUNDCOVER

Indicate the types of groundcover present on the site:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

<table>
<thead>
<tr>
<th>Natural veld - good condition</th>
<th>Natural veld with scattered aliens</th>
<th>Natural veld with heavy alien infestation</th>
<th>Veld dominated by alien species</th>
<th>Gardens</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sport field</td>
<td>Cultivated land</td>
<td>Paved surface</td>
<td>Building or other structure</td>
<td>Bare soil</td>
</tr>
</tbody>
</table>

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

BIODIVERSITY ASSESSMENT

The terrestrial ecology of two potential development sites was assessed over a one-day period in October 2016. The proposed sites are all situated within Waterberg Mountain Bushveld which is not considered to be threatened. However, the Limpopo Province Biodiversity Conservation Assessment classifies the study area and general surroundings as a Critical Biodiversity Area 1 (CBA1), an area deemed to be Irreplaceable.

No threatened plant species were confirmed during fieldwork but one Near Threatened and four species protected either under the Limpopo Environmental Management (Act No. 7 of 2003) or the National Forests Act (No. 30 of 1998) were recorded. No threatened plant species potentially occur. In total, 59 plant species were recorded from the two sites. One threatened fauna species was recorded: Hippopotamus, although in the adjacent Lephalale River and not from within the two sites.

In addition, one Near Threatened species was also confirmed: Brown Hyaena. Four confirmed species are protected either under the Limpopo Environmental Management (Act No. 7 of 2003) or the National Environmental Management: Biodiversity Act Threatened or Protected Species (No. 10 of 2004). Two threatened species have a moderate or high likelihood of occurring within the study area: Martial Eagle (Endangered) and Lanner Falcon (Vulnerable).

Based on this sensitivity assessment, the following recommendations can be made:

i. All infrastructure at the School Site to be situated outside of the riparian zone and above the 1/100 year floodline of the Lephalale River.

ii. Prior to any construction at any of the sites, an experienced botanist should conduct a walk-through of these sites during the wet season (Dec-Apr), marking each plant species of conservation concern to be avoided or that may need to be relocated prior to any site clearance activity taking place.

iii. All proposed roads to contain adequate stormwater drainage and erosion control measures, especially in the area between the two proposed development sites where the road is currently in a bad condition.

iv. Wherever possible, tall trees should be left unharmed, whether protected by law or not.

Provided the recommendations suggested in this report are followed, there is no objection to the proposed development in terms of the terrestrial ecosystems of the study area.

Please refer to Appendix D.1 for the terrestrial ecology report.
VISUAL IMPACT ASSESSMENT

A visual impact assessment was undertaken by NuLeaf Planning and Environmental in order to determine the possible visual impact of the proposed Lapalala Wilderness School.

Land use within the study area is predominately private game farms and to a lesser degree agriculture. The study area is situated within the Waterberg Mountain Bushveld vegetation type, which is in the Central Bushveld Bioregion of the Savanna Biome. Landover comprises low to mid-high woodland that is dominated by deciduous, broad-leaved tree species, and has a grass-dominated herbaceous layer.

The majority of the study area is sparsely populated, with the highest concentration of people living in the town of Vaalwater. The study area consists of a landscape that can be described as remote due to its considerable distance from any major metropolitan centres or populated areas. Settlements, where they occur, are usually rural homesteads and farmsteads.

The visual quality of the receiving environment within the study areas is high, by virtue of the vast and undeveloped nature of the environment. This lends a distinct sense of place to the area. This area is known as a tourist destination owing to its location in the Waterberg Biosphere Reserve and the Game reserves within the region. The only identified conservation area within the study area is the Lapalala Wilderness Reserve, which is located to the north of the proposed development.

Majority of the visual impact will occur within a 1 – 3km radius of the proposed development, with a low to very low visual impact occurring in certain areas to the north west and south east. It is, therefore, expected that the visual impact associated with the proposed development will further contribute to the visual impact currently present to the affected farmsteads in these areas.

The high VAC of the area and the low occurrence of sensitive visual receptors in close proximity, are of relevance and has affected the significance rating of the anticipated visual impacts.

The primary visual impact, namely the presence of the proposed Lapalala Wilderness School, may be mitigated from a visual perspective, due to the nature and scale of the development (i.e. development footprint and height of the buildings). This mitigation potential is further supported by the nature of the receiving environment. As such, all expected visual impacts are determined to be of moderate significance and can be mitigated to low. In addition, none are considered to be fatal flaws from a visual perspective.

Please refer to Appendix D.3 for the Visual Impact Report.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

<table>
<thead>
<tr>
<th>5.1 Natural area</th>
<th>x</th>
<th>5.22 School</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 Low density residential</td>
<td>5.23 Tertiary education facility</td>
<td></td>
</tr>
<tr>
<td>5.3 Medium density residential</td>
<td>5.24 Church</td>
<td></td>
</tr>
<tr>
<td>5.4 High density residential</td>
<td>5.25 Old age home</td>
<td></td>
</tr>
<tr>
<td>5.5 Medium industrial AN</td>
<td>5.26 Museum</td>
<td></td>
</tr>
</tbody>
</table>
5.6 Office/consulting room | 5.27 Historical building
5.7 Military or police base/station/compound | 5.28 Protected Area
5.8 Spoil heap or slimes dam | 5.29 Sewage treatment plant
5.9 Light industrial | 5.30 Train station or shunting yard
5.10 Heavy industrial | 5.31 Railway line
5.11 Power station | 5.32 Major road (4 lanes or more)
5.12 Sport facilities | 5.33 Airport
5.13 Golf course | 5.34 Harbour
5.14 Polo fields | 5.35 Quarry, sand or borrow pit
5.15 Filling station | 5.36 Hospital/medical centre
5.16 Landfill or waste treatment site | 5.37 River, stream or wetland
5.17 Plantation | 5.38 Nature conservation area
5.18 Agriculture | 5.39 Mountain, koppie or ridge
5.19 Archaeological site | 5.40 Graveyard
5.20 Quarry, sand or borrow pit | 5.41 River, stream or wetland
5.21 Dam or Reservoir | 5.42 Other land uses (describe)

If any of the boxes marked with an “N” are ticked, how will this impact / be impacted upon by the proposed activity?

If any of the boxes marked with an “An” are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain:

If NO, specify:

If any of the boxes marked with an “H” are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If NO, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site? YES

If YES, explain: One possible Iron Age settlement was recorded during the survey.
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

<table>
<thead>
<tr>
<th>Briefly explain the findings of the specialist:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A total of one possible Iron Age settlement (Site 1) was recorded during the survey. Only two surface scatters of hardened clay were recorded that might indicate the remains of Late Iron Age houses. No other deposits (middens) or structures were recorded in association. It is important to note that all archaeological sites are protected by the NHRA (Act No. 25 of 1999, Section 35) and as such the site must be clearly demarcated during the construction phase.</td>
</tr>
</tbody>
</table>

The proposed new Lapalala Wilderness School, staff accommodation and associated infrastructure may proceed as there is no objection from a heritage perspective.

Also please note that archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (cf. NHRA (Act No. 25 of 1999), Section 36 (6)).

Please refer to Appendix D.2 for the Heritage Impact Assessment.

<table>
<thead>
<tr>
<th>Will any building or structure older than 60 years be affected in any way?</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?</td>
<td>NO</td>
</tr>
</tbody>
</table>

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

**SECTION C: PUBLIC PARTICIPATION**

**1. ADVERTISEMENT**

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—

(i) the site where the activity to which the application relates is or is to be undertaken; and

(ii) any alternative site mentioned in the application;

(b) giving written notice to—

(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
(v) the municipality which has jurisdiction in the area;
(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
(vii) any other party as required by the department;

(c) placing an advertisement in—

(i) one local newspaper; or

(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in sub regulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—

(i) illiteracy;
(ii) disability; or
(iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

(b) state—

(i) that the application has been submitted to the department in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

(v) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the department in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any Gazette that is published specifically for the purpose of providing notice to the public of applications made in terms of these Regulations.

Advertisements and notices must make provision for all alternatives.

LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province - 26
4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the department to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

- A list of interested and affected parties (I&AP’s), as well as, compliance authorities was compiled inclusive of Local and District Municipalities, and local landowners.
- Written notification of the proposed development, including a background information document, was sent to all identified I&AP’s and Compliance Authorities on 21 October 2016.
- A printed advertisement was placed in the Northern News, a local publication, on the 21 October 2016.
- Site notices were placed at the main entrances to the affected property on 24 October 2016.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in these Regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Please refer to Appendix E.4 for a full list of stakeholders

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

<table>
<thead>
<tr>
<th>Name of Authority informed:</th>
<th>Comments received (Yes or No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lephalale Local Municipality</td>
<td>No</td>
</tr>
<tr>
<td>Waterberg District Municipality</td>
<td>No</td>
</tr>
<tr>
<td>Department of Agriculture, Forestry and Fisheries</td>
<td>No</td>
</tr>
<tr>
<td>Department of Water and Sanitation</td>
<td>No</td>
</tr>
</tbody>
</table>

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the department.

LEDEN BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?  Yes

If “YES”, briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

<table>
<thead>
<tr>
<th>Summary of main issues raised by I&amp;APs</th>
<th>Summary of response from EAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesiba – Community member 07 November</td>
<td>Anton Walker (a representative of Lapalala Wilderness) who knows the area very well contacted Lesiba to determine the exact location of the grave site. It was determined that the graves are not located on the affected property (Portion 1 &amp; 2 of the farm Frischgewaagd 649LR) but are instead located on one of the neighbouring properties (Portion 3 of Farm Frischgewaagd 649LR). As such, these graves will not be affected by the proposed development.</td>
</tr>
<tr>
<td>Phoned Nuleaf after having seen one of the posters advertising the proposed development. He expressed concern about graves been located on the affected property and been able to access these graves.</td>
<td></td>
</tr>
</tbody>
</table>

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Lesiba – Community member 07 November
Phoned Nuleaf after having seen one of the posters advertising the proposed development. He expressed concern about graves been located on the affected property and been able to access these graves.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

Anton Walker (a representative of Lapalala Wilderness) who knows the area very well contacted Lesiba to determine the exact location of the grave site. It was determined that the graves are not located on the affected property (Portion 1 & 2 of the farm Frischgewaagd 649LR) but are instead located on one of the neighbouring properties (Portion 3 of Farm Frischgewaagd 649LR). As such, these graves will not be affected by the proposed development.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.
Potential Impacts

All potential environmental impacts, both positive and negative, have been identified for the entire lifecycle of the project i.e. Planning / design, construction and operations. The decommissioning of the proposed development is not anticipated and has therefore not been assessed.

Planning and Design Phase

Direct impacts:

GROUND WATER
- None

SURFACE WATER
- Risk to ecological function of the riparian habitat along the Lephalala River and drainage lines due to possible placement of structures and infrastructure within the habitat.
- Risk to hydrological function (quality and fluctuation properties) along the Lephalala River and drainage lines due to activity and disturbance near the watercourse.

SOIL
- Erosion risk to soils due to increased hard surface, associated increase in storm water runoff.

AIR
- None

BIODIVERSITY (FLORA)
- Risk to Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness due to the placement of structures and infrastructure.
- Risk to sensitive habitats, specifically riparian zones along the Lephalala River due to the possible placement of structures and infrastructure.
- Risk to Conservation Important Species and protected trees. i.e. *Sclerocarya birrea* subsp. *caffra*, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana* due to the placement of structures and infrastructure within the habitat and/ or within the demarcated buffer zones.

BIODIVERSITY (FAUNA)
- Risk to the riparian zone which acts as a wildlife corridor and is an important faunal habitat for the confirmed Vulnerable-listed species such as the Hippopotamus due to the possible removal and alternation of the habitat and the development of structures and infrastructure.
- Risk of habitat fragmentation due to removal and alteration of the habitat and the development of structures and infrastructure.

LAND USE & AGRICULTURAL POTENTIAL
- None

HERITAGE
- Risk to Late Iron Age site located near the School site.

VISUAL
- Risk to visual quality of the surrounding area and sense of place due to the development of structures and infrastructure at the Lapalala Wilderness School property within an otherwise natural environment.
- Risk of glare from high-tech and reflective materials used for solar panels throughout the Lapalala Wilderness School.

SOCIO-ECONOMICS
- None

MUNICIPAL SERVICES & TRAFFIC
- None

**Indirect impacts:**
- None.

**Cumulative impacts:**

**BIODIVERSITY (FLORA)**
- Cumulative loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness. This will result in the overall reduction of Waterberg Mountain Bushveld vegetation.
- Cumulative loss of sensitive habitats, specifically riparian zones. This will result in the overall reduction of riverine vegetation.
- Cumulative reduction of Conservation Important Species and protected trees. i.e. *Sclerocarya birrea subsp. caffra*, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana*. This will result in the overall loss of these species.

**BIODIVERSITY (FAUNA)**
- Cumulative loss of faunal habitat.

**HERITAGE**
- Cumulative loss of Late Iron Age sites which would result in an overall loss of these artefacts.

**Construction Phase**

**Direct impacts:**

**GROUND WATER**
- Depletion of ground water due to overuse and waste during construction activities.
- Pollution and contamination of ground water due to:
  - Surface runoff
  - Unmanaged sewage discharge, leaks and spills
  - Solvent, paints and chemical spills
  - Hydrocarbon and fuel leaks and spills

**SURFACE WATER**
- Disturbance and loss of ecological function of the habitat (physical structure) along the Lephalala Rivers and drainage lines due to:
  - Clearing and destruction of riparian and wetland vegetation
  - Loss of fringing vegetation and erosion of denuded areas
  - Invasion by alien invasive trees and plants
- Alteration in natural fire regimes
- Shading of natural vegetation
- Destabilization of banks
- Risk to hydrological function (quality and fluctuation properties) along the Lephalala River and drainage lines due to activity and disturbance near the watercourse.

- Pollution and contamination of surface water of the Lephalala River due to:
  - Unmanaged runoff of grey water, cement slurry and wash water.
  - Unmanaged sewage discharge, leaks and spills
  - Solvent, paints and chemical spills
  - Litter and other inert construction waste.
  - Hydrocarbon and fuel leaks and spills

SOIL

- Soil contamination and pollution due to:
  - Unmanaged surface runoff (grey water, cement slurry and wash water)
  - Unmanaged sewage discharge, leaks and spills
  - Solvent, paints and chemical spills
  - Litter and other inert construction waste.
  - Hydrocarbon and fuel leaks and spills

- Soil erosion by wind and rain due to:
  - The removal of stabilising vegetation
  - Soil compaction by movement of construction vehicles, equipment and activities
  - Decrease in water infiltration and an increase of water runoff in construction areas
  - Disturbance of sensitive soils

AIR

- Air pollution due emissions from construction vehicles and equipment.
- Dust liberated by general construction activities and movement of construction vehicles.
- Smoke from open fires used by site staff for heating and cooking as well as from uncontrolled fires.

BIODIVERSITY (FLORA)

- Removal of invader alien species found in the riparian zones located along the banks of the watercourses (positive impact).
- Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness due to:
  - Site clearing ahead of construction
  - General construction activities and movement of construction vehicles
  - Unmanaged sewage discharge, leaks and spills
  - Solvent, paints and chemical spills
  - Hydrocarbon and fuel leaks and spills
  - Litter and other inert construction waste

- Disturbance of sensitive habitats, specifically riparian zones due to:
  - Site clearing ahead of construction
  - General construction activities and movement of construction vehicles
  - Unmanaged sewage discharge, leaks and spills
  - Solvent, paints and chemical spills
  - Litter and other inert construction waste.
- Hydrocarbon and fuel leaks and spills
  - Destruction and damage to Conservation Important Species and protected trees. i.e. *Sclerocarya birrea subsp. caffra*, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana* due to:
    - Site clearing ahead of construction
    - General construction activities and movement of construction vehicles
  - Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas due to:
    - Unmanaged cleared and disturbed areas, as well as, stockpiles
    - Unrehabilitated areas cleared and disturbed during construction
    - Construction vehicles operating on other sites and carrying material and seed onto site
  - Bush encroachment is the process, which transforms grassy vegetation into a woody species-dominated one. This is recognised as a very serious problem throughout Sub-Saharan Africa, as it means that large areas of grazing lands are lost (or reduced in capacity), and it transforms habitats and reduces species diversity.

**BIODIVERSITY (FAUNA)**
- Loss of riparian vegetation (faunal habitat) which acts as a wildlife corridor and is an important faunal habitat for the confirmed Vulnerable-listed species such as the Hippopotamus due to:
  - Site clearing ahead of construction
  - General construction activities and movement of construction vehicles
  - Construction dust
  - Construction material, litter and other inert construction waste
  - Loss of general faunal habitat and ecological connectivity.
- Mortality of fauna due to:
  - Dangerous trenches and excavations
  - Persecution and extermination
  - Solvent, paints and chemical spills (poisoning)
  - Construction material, litter and other inert construction waste (suffocation)
  - Collisions with construction vehicles
- Poaching and snaring of fauna on site by construction staff.
- Increased opportunity for smuggling of poached items out of the Lapalala Wilderness Reserve due to regular presence of large construction vehicles.

**LAND USE & AGRICULTURAL POTENTIAL**
- None.

**HERITAGE**
- *Possible discovery of new important artefacts (positive impact)*
- Damage to and/or destruction of archaeological, paleontological or historical artefacts unearthed during construction due to:
  - Site clearing ahead of construction
  - General construction activities and movement of construction vehicles
- Damage to and/or destruction of Late Iron Age site located near the School site.

**VISUAL**
- Visual impact of construction, lighting and dust on sensitive visual receptors owing to the presence of construction equipment, camps and workers.
• Visual impact of construction, lighting and dust on conservation areas within the region (Waterberg Biosphere Reserve & Lapalala Wilderness Reserve).

SOCIO-ECONOMICS

• Stimulation of the local economy, especially the local service delivery industry (i.e. accommodation, catering, cleaning, transport and security, etc.) (Positive impact).
• Creation of short-term employment and business opportunities and the opportunity for skills development and on-site training. (Positive impact). Jobs and employment opportunities will be created, with a percentage being low and semi-skilled.
• Noise, dust and safety impacts and disturbance to adjacent landowners due to general construction activities and movement of construction vehicles.
• An increase in construction workers and associated increase in social problems for the community, including:
  o An increase in alcohol and drug use;
  o An increase in crime levels;
  o An increase in teenage and unwanted pregnancies;
  o An increase in prostitution;
  o An increase in sexually transmitted diseases (STDs).
  o An increase in vandalism.
• Increase in casual workers and associated increase in poaching.
• Increased risk of veld fires due to the presence of construction workers on site.

MUNICIPAL SERVICES & TRAFFIC

• Increase in traffic on the surrounding local roads due to construction vehicles.
• Increase in the number and frequency of construction vehicles accessing the site and the resultant noise, dust, and safety impacts on other road users, residents of the local community and adjacent landowners.

Indirect impacts:

BIODIVERSITY (FLORA)

• Loss of floral biodiversity, Conservation Important Species and protected trees due to increased incidence of veld fires

BIODIVERSITY (FAUNA)

• Loss of faunal biodiversity due to increased incidence of veld fires

SOCIO-ECONOMICS

• Loss of property and threat to human life due to increased incidence of veld fires

MUNICIPAL SERVICES & TRAFFIC

• Degradation of local roads due to the increase in the numbers of heavy vehicles.

Cumulative impacts:

BIODIVERSITY (FLORA)

• Cumulative loss of Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness.
• Cumulative loss of ecological function of sensitive habitats, specifically riparian zones.
• Cumulative reduction and damage to Conservation Important Species and protected trees, i.e. *Sclerocarya birrea* subsp. *caffra*, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana*.

**BIODIVERSITY (FAUNA)**
• Cumulative loss of faunal habitat, particularly the sensitive riparian habitat.

**HERITAGE**
• Cumulative loss of Late Iron Age site resulting in an overall loss of these artefacts.

**SOCIO-ECONOMICS**
• *Community upliftment and the opportunity to up-grade and improve skills levels in the area (positive impact).*

**MUNICIPAL SERVICES & TRAFFIC**
• Cumulative increase in traffic and the resultant noise, dust, and safety impacts on other road users, residents of the local community and adjacent landowners.

**Operational Phase**

**Direct impacts:**

**GROUND WATER**
• Depletion of ground water resources due to over use and waste during operation.
• Pollution and contamination of ground water due to:
  o Unmanaged storm water runoff
  o Unmanaged sewage discharge
  o Sewage leaks and spills
  o Herbicides, pesticides and fertilisers
  o Discharge and spill of solvents, paints, chemicals and cleaning products
  o Discharge and spill of hydrocarbons and fuel

**SURFACE WATER**
• Disturbance and loss of ecological function of the habitat (physical structure) along the Lephalala River due to:
  o Encroachment of alien invasive species
  o Uncontrolled vegetation clearing and access by staff and visitors
• Pollution and contamination of surface water due to:
  o Unmanaged storm water runoff
  o Litter and uncontrolled waste
  o Sewage leaks and spills
  o Herbicides, pesticides and fertilisers
  o Discharge and spill of solvents, paints, chemicals and cleaning products
  o Discharge and spill of hydrocarbons and fuel
• Disturbance and loss of hydrological function (quality and fluctuation properties) along the Lephalala River due to:
  o Uncontrolled discharges into the water resource (storm water)
  o Alteration of surface characteristics (roughness) due to activity within the water course (uncontrolled access by staff and visitors)
  o Removal of stabilising vegetation (uncontrolled clearing and access by staff and visitors)
  o Sedimentation and siltation from erosion
**SOIL**

- Soil contamination and pollution due to:
  - Unmanaged storm water runoff
  - Litter and uncontrolled waste
  - Sewage leaks and spills
  - Herbicides, pesticides and fertilisers
  - Discharge and spill of solvents, paints, chemicals and cleaning products
  - Discharge and spill of hydrocarbons and fuel
- Soil erosion due to:
  - Soil compaction by uncontrolled movement of staff and visitors (especially vehicles)
  - Runoff over exposed or cleared areas that have failed to rehabilitate.
  - Disturbance of sensitive soils by uncontrolled movement of staff and visitors (especially vehicles)

**AIR**

- Air pollution by emissions from increased numbers of game drive vehicles and private vehicles.

**BIODIVERSITY (FLORA)**

- Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness due to:
  - Uncontrolled vegetation clearing and access by staff and visitors
  - Encroachment of alien invasive species
  - Litter and waste
- Disturbance of sensitive habitats, specifically riparian zones due to:
  - Uncontrolled vegetation clearing and access by staff and visitors
  - Encroachment of alien invasive species
  - Litter and waste
- Destruction and damage to Conservation Important Species and protected trees. i.e. *Sclerocarya birrea subsp. caffra*, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana* due to uncontrolled vegetation clearing and access by staff and visitors.
- Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas in the event that the rehabilitation process is not successful. Colonisation and re-emergence of exotic vegetation/alien species and bush encroachment into disturbed soils and poorly rehabilitated areas. Alien invasive species tend to out-compete indigenous, slower growing species and could also result in unsuccessful rehabilitation.

**BIODIVERSITY (FAUNA)**

- Loss of faunal habitat due to:
  - Uncontrolled vegetation and bush clearing and access by staff and visitors
  - Encroachment of alien invasive species
  - Litter and waste
- Faunal disturbances, displacement of taxa and changes in distribution and abundance due to:
  - Uncontrolled vegetation and bush clearing and access by staff and visitors
  - General operations (activities) of the facility
  - Noise from visitors, staff and vehicles
  - Night drives
  - Perimeter safety fences
- Mortality of fauna due to:
  - Persecution and extermination
Solvents, paints, chemicals and cleaning products (poisoning)
Litter and waste (suffocation)
Poaching and snaring of faunal species by staff.

Land Use & Agricultural Potential
None.

Heritage
Damage to and / or destruction of archaeological, paleontological or historical artefacts owing to uncontrolled access by visitors and staff.
Damage to and/or destruction of Late Iron Age site located near the School site owing to uncontrolled access by visitors and staff.

Visual
Potential visual impact on sensitive visual receptors in close proximity to the proposed developments.
Potential visual impact on sensitive visual receptors within the region.
Potential visual impact on protected and conservation areas (i.e. the Waterberg Biosphere Reserve & Lapalala Wilderness Reserve) within the study area.
Potential visual impact of the solar panels on sensitive visual receptors in close proximity thereto.
The potential visual impact of safety and security lighting of the developments at night on sensitive visual receptors in close proximity.

Socio-Economics
Stimulation of the local economy, especially the local service delivery industry (accommodation, catering, cleaning, transport, security etc. (positive impact).
Generation of funds to contribute to the conservation of the Lapalala Wilderness Reserve (positive impact).
Creation of long term employment and business opportunities as well as opportunities for skills development and transfer (positive impact).
Creation of opportunities for local SMME’s (positive impact).
Impact on adjacent land uses and activities.

Municipal Services & Traffic
Operational cost of running services and infrastructure, specifically electricity (positive impact). Operational cost is expected to be minimal in the long term as a result of off-grid design.
Increase in traffic on the surrounding roads due to increased visitor numbers.
Increase in the number and frequency of vehicles accessing the site, and the resultant noise, dust, and safety impacts on other road users, residents of the local community and adjacent landowners.

Indirect Impacts:
Visual
The potential visual impact of the development on the visual character of the landscape and sense of place of the region (particularly the Waterberg Biosphere Reserve and Lapalala Wilderness Reserve).
**Cumulative impacts:**

**Biodiversity (Flora)**
- Cumulative loss of Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness.
- Cumulative loss of ecological function of sensitive habitats, specifically riparian zones.
- Cumulative reduction and damage to Conservation Important Species and protected trees. i.e. *Sclerocarya birrea* subsp. caffra, *Boscia albitrunca*, *Elaeodendron transvaalense* and *Spirostachys africana*.

**Heritage**
- Cumulative loss of Late Iron Age site resulting in an overall loss of these artefacts.

**Visual**
- The accumulation of built forms and within an otherwise natural environment.

**Socio-Economics**
- Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area (positive impact)
- Promotion of social and economic development in the local communities and improvement in the overall wellbeing of the community (positive impact)

**Municipal Services & Traffic**
- Cumulative increase in traffic on the surrounding roads due to increased visitor numbers.
- Cumulative increase in the number and frequency of vehicles accessing the site, and the resultant noise, dust, and safety impacts for other road users, adjacent landowners and residents of the local communities.
- Waste disposal practices will have an accumulative effect on the local landfill site’s capacity to absorb waste.

**Decommissioning Phase**
The decommissioning of the facility is not anticipated at this stage and, therefore, no impacts are anticipated.

**Impact Summary: Alternative 1 (Preferred Alternative)**

The Preferred Alternative is inextricably linked with the location, manner and materials in which the school is constructed. In this alternative brick and mortar will be used to construct the accommodation units as well as the main buildings. However, this alternative will be designed to be completely off-grid i.e. solar panels.

The operational impacts are anticipated to have a low significance post mitigation. It should be noted that the significance rating for the operational cost of running services and infrastructure, specifically electricity, will be lower as renewable energy resources will be used to power the proposed School, in comparison with the other alternatives.

Most residual impacts are moderate or low. No high significance negative impacts persist, although some of the positive impacts (socio-economic) will be of high significance.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Impact summary</th>
<th>Significance (post mitigation)</th>
<th>Proposed mitigation / comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning and Design Phase</strong></td>
<td><strong>Direct impacts:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Water</td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Surface Water</strong></td>
<td>Risk to ecological function of the riparian habitat along the Lephalala River and drainage lines due to possible placement of structures and infrastructure within the habitat.</td>
<td>18 L</td>
<td>• EMPr section 7.1 • EMPr section 7.2</td>
</tr>
<tr>
<td></td>
<td>Risk to hydrological function (quality and fluctuation properties) along the Lephalala River and drainage lines due to activity and disturbance near the watercourse.</td>
<td>18 L</td>
<td></td>
</tr>
<tr>
<td><strong>Soil</strong></td>
<td>Erosion risk to soils</td>
<td>27 L</td>
<td>• Same as above</td>
</tr>
<tr>
<td><strong>Air</strong></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity (Flora)</strong></td>
<td>Risk to Waterberg Mountain Bushveld vegetation.</td>
<td>22 L</td>
<td>• Same as above</td>
</tr>
<tr>
<td></td>
<td>Risk to sensitive habitats, specifically riparian zones</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Destruction and damage to Red data species and protected trees.</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity (Fauna)</strong></td>
<td>Risk to riparian zone which acts as a wildlife corridor</td>
<td>27 L</td>
<td>• Same as above</td>
</tr>
<tr>
<td></td>
<td>Risk of habitat fragmentation</td>
<td>18 L</td>
<td></td>
</tr>
<tr>
<td><strong>Land use and agricultural potential</strong></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heritage</strong></td>
<td>Risk to Late Iron Age Site</td>
<td>42 M</td>
<td>• Same as above</td>
</tr>
<tr>
<td><strong>Visual</strong></td>
<td>Risk to visual quality of the surrounding area and sense of place due to the development of structures and infrastructure within an otherwise natural environment.</td>
<td>33 M</td>
<td>• EMPr section 7.2 • EMPr section 7.3</td>
</tr>
<tr>
<td></td>
<td>Risk of glare from high-tech and reflective materials used for solar panels.</td>
<td>30 L</td>
<td></td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Municipal services and traffic</strong></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indirect impacts:</strong></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative impacts:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Biodiversity (Flora)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Cumulative Loss</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative loss of Waterberg Mountain Bushveld vegetation</td>
<td>22 L</td>
<td></td>
</tr>
<tr>
<td>Cumulative loss of ecological function of sensitive habitats, specifically riparian zones.</td>
<td>22 L</td>
<td></td>
</tr>
<tr>
<td>Cumulative reduction of Red data species and protected trees.</td>
<td>24 L</td>
<td></td>
</tr>
</tbody>
</table>

### Biodiversity (Fauna)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Cumulative Loss</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative loss of faunal habitat</td>
<td>20 L</td>
<td></td>
</tr>
</tbody>
</table>

### Construction Phase

#### Direct Impacts:

<table>
<thead>
<tr>
<th>Ground water</th>
<th>14 L</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depletion of ground water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution and contamination of ground</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surface water</th>
<th>24 L</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance and loss of ecological function of the habitat along the Lephala River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution and contamination of surface water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Soil

<table>
<thead>
<tr>
<th>Soil contamination and pollution.</th>
<th>18 L</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil erosion via wind and rain.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Air

<table>
<thead>
<tr>
<th>Air pollution due to emissions from construction vehicles and equipment.</th>
<th>24 L</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation of dust owing to construction activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke generated from open fires used by workers for heating and cooking.</td>
<td>14 L</td>
<td></td>
</tr>
</tbody>
</table>

### Biodiversity (Flora)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Cumulative Loss</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of exotic and declared invader species (positive impact).</td>
<td>30 L</td>
<td></td>
</tr>
<tr>
<td>Loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness.</td>
<td>28 L</td>
<td></td>
</tr>
<tr>
<td>Disturbance of sensitive habitats, specifically riparian zones.</td>
<td>39 M</td>
<td></td>
</tr>
<tr>
<td>Destruction and damage to Red data species and protected trees.</td>
<td>30 L</td>
<td></td>
</tr>
<tr>
<td>Increase in exotic vegetation/ alien species and bush encroachment into disturbed soils and areas.</td>
<td>26 L</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Impact Description</td>
<td>Score</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Loss of riparian vegetation (faunal habitat) which acts as a wildlife corridor</strong></td>
<td>22</td>
<td>L</td>
</tr>
<tr>
<td><strong>Loss of general faunal habitat and ecological connectivity.</strong></td>
<td>30</td>
<td>L</td>
</tr>
<tr>
<td><strong>Fauna mortality</strong></td>
<td>14</td>
<td>L</td>
</tr>
<tr>
<td><strong>Poaching and snaring of faunal species by construction workers.</strong></td>
<td>27</td>
<td>L</td>
</tr>
<tr>
<td><strong>Increased opportunity for smuggling of poached items.</strong></td>
<td>27</td>
<td>L</td>
</tr>
<tr>
<td><strong>Land use and agricultural potential</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heritage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible discovery of new important artefacts (positive impact)</td>
<td>24</td>
<td>L</td>
</tr>
<tr>
<td>Damage to and/or destruction of archaeological, paleontological or historical artefacts unearthed during construction.</td>
<td>16</td>
<td>L</td>
</tr>
<tr>
<td>Damage to and/or destruction of Late Iron Age site</td>
<td>20</td>
<td>L</td>
</tr>
<tr>
<td><strong>Visual</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual impact of construction, lighting and dust on sensitive visual receptors owing to the presence of construction equipment, camps and workers.</td>
<td>21</td>
<td>L</td>
</tr>
<tr>
<td>Visual impact of construction, lighting and dust on conservation areas within the region (Waterberg Biosphere Reserve &amp; Lapalala Wilderness Reserve).</td>
<td>12</td>
<td>N</td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulation of the local economy, especially the local service delivery industry (positive impact)</td>
<td>24</td>
<td>L</td>
</tr>
<tr>
<td>Short term employment and business opportunities and the opportunity for skills development and on-site training. (Positive impact).</td>
<td>36</td>
<td>M</td>
</tr>
<tr>
<td>Noise, dust and safety impacts and disturbance to adjacent landowners</td>
<td>21</td>
<td>L</td>
</tr>
<tr>
<td>An increase in construction workers and associated increase in social problems for the community</td>
<td>16</td>
<td>L</td>
</tr>
<tr>
<td>Increase in casual workers and associated increase in poaching.</td>
<td>24</td>
<td>L</td>
</tr>
<tr>
<td>Increased risk of veld fires</td>
<td>21</td>
<td>L</td>
</tr>
<tr>
<td><strong>Municipal services and traffic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in traffic on the surrounding local</td>
<td>21</td>
<td>L</td>
</tr>
<tr>
<td>Increase in the number and frequency of construction vehicles accessing the site</td>
<td>15</td>
<td>L</td>
</tr>
<tr>
<td><strong>Indirect impacts:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity (Flora)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Category</td>
<td>Impact</td>
<td>Score</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Biodiversity (Flora)</strong></td>
<td>Cumulative loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness.</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Cumulative loss of ecological function of sensitive habitats, specifically riparian zones.</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Cumulative reduction and damage to Red data species and protected trees.</td>
<td>24</td>
</tr>
<tr>
<td><strong>Biodiversity (Fauna)</strong></td>
<td>Cumulative loss of faunal habitat</td>
<td>20</td>
</tr>
<tr>
<td><strong>Heritage</strong></td>
<td>Cumulative loss of Late Iron Age site</td>
<td>20</td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td>Community upliftment and the opportunity to increase the skill level in the area (positive impact).</td>
<td>24</td>
</tr>
<tr>
<td><strong>Services and traffic</strong></td>
<td>Cumulative increase in traffic and the resultant noise, dust, and safety impacts on other road users</td>
<td>16</td>
</tr>
<tr>
<td><strong>Ground water</strong></td>
<td>Depletion of ground water resources (water quality)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Pollution and contamination of ground water</td>
<td>22</td>
</tr>
<tr>
<td><strong>Surface water</strong></td>
<td>Disturbance and loss of ecological function of the habitat (physical structure) along the Lephalala River</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Pollution and contamination of surface water</td>
<td>20</td>
</tr>
</tbody>
</table>

**Cumulative impacts:**

- Loss of floral biodiversity, Red data species and protected trees: 16 L
- Loss of faunal biodiversity: 20 L
- Loss of property and threat to human life: 16 L
- Degradation of local roads due to the increase in the numbers of heavy vehicles: 21 L

**Direct Impacts:**

- Depletion of ground water resources (water quality): 18 L
- Pollution and contamination of ground water: 22 L
- Disturbance and loss of ecological function of the habitat (physical structure) along the Lephalala River: 18 L
- Pollution and contamination of surface water: 20 L

**EMPr Section References:**

- EMPr section 8.1
- EMPr section 8.2
- EMPr section 8.3
- EMPr section 8.4
- EMPr section 8.5
- EMPr section 8.6
- EMPr section 8.7
- EMPr section 8.8
- EMPr section 8.9
- EMPr section 8.10

Operational Phase

LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
<table>
<thead>
<tr>
<th>Environmental Impact Area</th>
<th>Impact Description</th>
<th>Impact Level</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance and loss of hydrological function</td>
<td>Loss of hydrological function (quality and fluctuation properties) along the Lephalala River</td>
<td>18 L</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>Pollution and contamination of the soil</td>
<td>18 L</td>
<td>As above</td>
</tr>
<tr>
<td>Soil erosion</td>
<td></td>
<td>18 L</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td>Air pollution by emissions from increased numbers of game drive vehicles and private vehicles</td>
<td>33 M</td>
<td>EMPr section 9.5</td>
</tr>
<tr>
<td>Biodiversity (Flora)</td>
<td>Loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness</td>
<td>18 L</td>
<td>EMPr section 9.1, EMPr section 9.2, EMPr section 9.3, EMPr section 9.4, EMPr section 9.5, EMPr section 9.6</td>
</tr>
<tr>
<td></td>
<td>Disturbance of sensitive habitats, specifically riparian zones</td>
<td>27 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Destruction and damage to Red data species and protected trees</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas in the event that the rehabilitation process is not successful</td>
<td>22 L</td>
<td></td>
</tr>
<tr>
<td>Biodiversity (Fauna)</td>
<td>Loss of faunal habitat.</td>
<td>18 L</td>
<td>As above</td>
</tr>
<tr>
<td></td>
<td>Faunal disturbances and changes in distribution and abundance.</td>
<td>27 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faunal mortality</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poaching and snaring of fauna by staff.</td>
<td>24 L</td>
<td></td>
</tr>
<tr>
<td>Land use and agricultural potential</td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heritage</td>
<td>Damage to and / or destruction of archaeological, paleontological or historical artefacts owing to uncontrolled access by visitors and staff.</td>
<td>18 L</td>
<td>EMPr section 9.1</td>
</tr>
<tr>
<td></td>
<td>Damage to and/or destruction of Late Iron Age site</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td>Visual</td>
<td>Potential visual impact on sensitive visual receptors in close proximity to the proposed developments.</td>
<td>24 L</td>
<td>EMPr section 9.5</td>
</tr>
<tr>
<td></td>
<td>Potential visual impact on sensitive visual receptors within the region</td>
<td>20 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potential visual impact on protected and conservation areas (i.e. the Waterberg Biosphere Reserve &amp; Lapalala Wilderness Reserve) within the study area.</td>
<td>8 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potential visual impact of the solar panels on sensitive visual receptors in</td>
<td>16 L</td>
<td></td>
</tr>
</tbody>
</table>
The potential visual impact of safety and security lighting of the developments at night on sensitive visual receptors in close proximity

<table>
<thead>
<tr>
<th>Socio-economic</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulation of the local economy, especially the local service delivery industry (positive impact)</td>
<td>33</td>
</tr>
<tr>
<td>Generation of funds to contribute to the conservation of the Lapalala Wilderness Reserve (positive impact)</td>
<td>27</td>
</tr>
<tr>
<td>Creation of long term employment and business opportunities as well as opportunities for skills development and transfer (positive impact)</td>
<td>56</td>
</tr>
<tr>
<td>Creation of opportunities for local SMME’s (positive impact)</td>
<td>48</td>
</tr>
<tr>
<td>Impact on adjacent land uses and activities</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service and traffic</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational cost of running services and infrastructure, specifically electricity (positive impact).</td>
<td>28</td>
</tr>
<tr>
<td>Increase in traffic on the surrounding roads</td>
<td>30</td>
</tr>
<tr>
<td>Increase in the number and frequency of vehicles accessing the site</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect impacts:</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cumulative impacts:</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity (Flora)</td>
<td>22</td>
</tr>
<tr>
<td>Cumulative loss of Loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness.</td>
<td>22</td>
</tr>
<tr>
<td>Cumulative disturbance of sensitive habitats, specifically riparian zones</td>
<td>22</td>
</tr>
<tr>
<td>Cumulative reduction and damage to Red data species and protected trees.</td>
<td>28</td>
</tr>
<tr>
<td>Heritage</td>
<td>22</td>
</tr>
<tr>
<td>Cumulative loss of Late Iron Age site</td>
<td>22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economic</td>
<td>33</td>
</tr>
<tr>
<td>Creation of permanent employment and skills and development opportunities for members from the local community and</td>
<td>33</td>
</tr>
</tbody>
</table>
**Impact Summary: Alternative 2 (Technology Alternative)**

The Technology Alternative encompasses the same layout as the Preferred Alternative and, as such, all arguments apply to this alternative. In this Alternative, however, Eskom power will be used to supply electricity to the proposed School. In doing so, overhead power cable will have to be installed. The increase in the development footprint will intensify the negative impacts and risks on the receiving environment, especially in terms of potential sensitive vegetation. Post mitigation significance ratings for the construction phase are predominately moderate, however, destruction and damage to red data species and protected trees will have a high post mitigation significance.

Most residual impacts are moderate or low. Some high significance negative impacts (biodiversity) persist.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Impact summary</th>
<th>Significance (post mitigation)</th>
<th>Proposed mitigation / comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative 2 (Technology Alternative)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning and Design Phase</td>
<td><strong>Direct impacts:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As per Alternative 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As per Alternative 1</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As per Alternative 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Biodiversity (Flora)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk to Waterberg Mountain Bushveld vegetation</td>
<td>33 M</td>
<td>Increased impact is expected owing to the extension of the existing overhead powerlines.</td>
</tr>
<tr>
<td></td>
<td>Destruction and damage to Red data species and protected trees.</td>
<td>60 H</td>
<td>This will result in the development footprint increasing and being located outside of the School and Staff Accommodation sites.</td>
</tr>
<tr>
<td></td>
<td><strong>Biodiversity (Fauna)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk of habitat fragmentation</td>
<td>33 M</td>
<td>Increased impact is anticipated owing to the extension of the existing overhead powerlines.</td>
</tr>
<tr>
<td></td>
<td><strong>Land use and agricultural potential</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>None.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Heritage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As per Alternative 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Visual</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| | Risk to visual quality of the surrounding | 45 | Increased impact is anticipated owing to the **creation of additional business and economic opportunities in the area.**  
(positive impact)

| Promotion of social and economic development in the local communities  
(positive impact) | 27 | L |
| **Services and traffic** | | |
| Cumulative increase in traffic on the surrounding roads | 22 | L |
| **EMPr section 7.1** | | |
| **EMPr section 9.2** | | |
| **EMPr section 9.5** | | |
| Cumulative increase in the number and frequency of vehicles accessing the site | 22 | L |
| Waste disposal practices will have an accumulative effect on the local landfill site’s capacity to absorb waste. | 22 | L |

Decommissioning phase
None
area and sense of place due to the development of structures and infrastructure within an otherwise natural environment.

**Socio-economic**
None.

**Municipal services and traffic**
None.

**Indirect impacts:**
None.

**Cumulative impacts:**

| Biodiversity (Flora) | Cumulative loss of Waterberg Mountain Bushveld vegetation | 33 M | Increased impact is expected owing to the extension of the existing overhead powerlines. This will result in the development footprint increasing and being located outside of the School and Staff Accommodation sites. |
| Biodiversity (Fauna) | Cumulative loss of faunal habitat | 33 M | Increased impact is expected owing to the extension of the existing overhead powerlines. This will result in the development footprint increasing and being located outside of the School and Staff Accommodation sites. |

**Construction Phase**

| Direct impacts: |
| Ground water |
| As per Alternative 1 |
| Surface water |
| Disturbance and loss of ecological function of the habitat along the Lephalale River | 32 M | Increased impact is expected owing to the extension of the existing overhead powerlines. This will result in the development footprint increasing and being located outside of the School and Staff Accommodation sites. |
| Pollution and contamination of surface water. | 30 L | The removal of stabilizing vegetation along the banks of the watercourses could lead to bank destabilization. |
| Soil |
| Soil erosion via wind and rain. | 33 M | The removal of stabilizing vegetation along the banks of the watercourses could lead to bank destabilization. |
| Air |
| As per Alternative 1 |
| Biodiversity (Flora) |
| Loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness. | 36 M | This impact is expected to be slightly higher owing to the increase in the development footprint due to the extension of the powerlines. |
| Disturbance of sensitive habitats, specifically riparian zones | 39 M |
| Destruction and damage to Red data species and protected trees. | 36 M |
| Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas. | 33 M |
| Biodiversity (Fauna) |
| Loss of riparian vegetation (faunal habitat) which acts as a wildlife corridor | 39 M |
| Loss of general faunal habitat and ecological connectivity. | 39 M |

**Land use and agricultural potential**
None.
### Indirect impacts:

**Biodiversity (Flora)**
- As per Alternative 1

**Biodiversity (Fauna)**
- As per Alternative 1

**Socio-economics**
- As per Alternative 1

**Operational Phase**

### Direct Impacts:

**Heritage**
- As per Alternative 1

**Visual**
- As per Alternative 1

**Socio-economic**
- As per Alternative 1

**Municipal services and traffic**
- As per Alternative 1

<table>
<thead>
<tr>
<th>Biodiversity (Flora)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative loss of Waterberg Mountain Bushveld vegetation and associated loss of species richness.</td>
<td>33</td>
<td>M</td>
</tr>
<tr>
<td>Cumulative loss of ecological function of sensitive habitats, specifically riparian zones.</td>
<td>39</td>
<td>M</td>
</tr>
<tr>
<td>Cumulative reduction and damage to Red data species and protected trees.</td>
<td>42</td>
<td>M</td>
</tr>
</tbody>
</table>

**Biodiversity (Fauna)**
- Cumulative loss of faunal habitat

<table>
<thead>
<tr>
<th><strong>Heritage</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual impact of the overhead</td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

This impact is expected to be slightly higher owing to the increase in the development footprint due to the extension of the powerlines.

- As above
powerlines on the sense of place of the region.

**Socio-economic**
As per Alternative 1

**Service and traffic**
Operational cost of running services and infrastructure, specifically electricity.

**Indirect impacts:**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Impact summary</th>
<th>Significance (post mitigation)</th>
<th>Proposed mitigation / comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No-project Alternative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning and Design Phase</td>
<td><strong>Direct impacts:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socio-economics</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect Impacts</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Impacts</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socioeconomic</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Direct impacts:</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td>Construction phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational phase</td>
<td><strong>Direct impacts:</strong></td>
<td>No stimulation of the local economy, especially the local service delivery industry.</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No short term and long term employment through skills development and on-site training.</td>
<td>52</td>
<td>M</td>
</tr>
</tbody>
</table>
### Indirect impacts:
None

<table>
<thead>
<tr>
<th>Cumulative impacts:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No opportunity to up-grade and improve skill levels in the area.</td>
<td>52 M</td>
</tr>
</tbody>
</table>

### Decommissioning phase
None

## 1. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

### Alternative 1 (Preferred alternative)

**Lapalala Wilderness School** is situated within the Waterberg Mountain Bushveld vegetation type, which is in the Central Bushveld Bioregion of the Savanna Biome. Waterberg Mountain Bushveld was assessed by Mucina & Rutherford (2006) as Least Threatened.

The LWS is not situated in any floristic centres of endemism and is not listed as a Threatened Ecosystem.

The Limpopo Province Biodiversity Conservation Assessment classifies the property and general surroundings as a Critical Biodiversity Area 1 (CBA1). CBA1’s are described as Irreplaceable Sites that are required to meet biodiversity pattern and/or ecological processes targets (Desmet et al., 2013).

No threatened plant species were confirmed during fieldwork but one Near Threatened and three species protected either under the Limpopo Environmental Management (Act No. 7 of 2003) or the National Forests Act (No. 30 of 1998) were recorded. No threatened plant species potentially occur.

**School and Staff Accommodation Sites:**

A tread lightly approach will be encouraged for the development of both the School and Staff Accommodation Sites, in terms of the design and layout. A 32 m buffer will be respected with regard to all watercourses and drainage lines, namely the Lephalala, River. Additionally, the 100 year flood line for the Lephalala River will be respected. This is of particular relevance to the School Site which is located near the Lephalala River.

Both sites are located in areas with a low biodiversity/development conflict sensitivity.

The riparian zone near the School site is home to a confirmed Vulnerable listed fauna species, the Hippopotamus and also acts as a corridor for wildlife. The School sites development envelope is however not located within the riparian zone.

One possible Late Iron Age settlements was recorded near the School site. Once again, this site is not located within the development envelope. All identified sensitive sites will be demarcated as no-go zones and strict mitigation measures put in place.

Sewage treatment will be septic tanks with soakaway or equivalent package plant. The environmental impacts will be minimal, and this closed and self-contained system does not pose a threat to the ground or surface water.

Power to the LWS will be via solar power units and backup generators. Solar panels will roof mounted.

**Statement:**

All of the proposed development sites are acceptable for development and not fatally flawed in any way. The construction impacts, if effectively managed according to the mitigation measures proposed in this report, the specialist reports and the draft EMPR will have a predominately low residual significance rating. Moderate post mitigation significance ratings are anticipated in terms of disturbance of sensitive habitats such as the riparian zone near the School site. Even though the School Site development is not located within the riparian zone its close proximity to the development envelope poses a
possibly higher risk to this sensitive zone during construction.
Operational impacts can also be mitigated and will result in low post mitigation significance ratings.
Positive impacts include job creation and employment opportunities for both the construction and operational phases, as well as, skills transfer and development.

In light of the above discussion it is recommended that all of the development sites be supported on the condition that all mitigation measures mentioned in this report, the specialist studies and the draft EMPr are implemented and adhere to throughout the project lifecycle.

**Alternative 2 (Technology alternative)**

The Technology Alternative includes the same sites and roads as Alternative 1 (Preferred Alternative) and as such, all arguments hold true for this alternative. All service aspects will also be as per the Alternative 1 (Preferred Alternative), with the exception that power will not be supplied off grid but rather via Eskom. As a result the existing Eskom lines will be extended posing a greater risk to the vegetation and habitats.

The extent of the development footprint is also increased owing to the fact that construction is taking place outside of the proposed School and Staff Accommodation development envelopes.

**Statement:**

The Technology Alternative will result in higher significance ratings for certain aspects, such as, surface water, soil, flora and fauna, during the construction phase due to the elevated environmental risks associated with the extension of Eskom power cables. The post mitigation significance for the construction phase will be predominately low to medium. Increased impacts as compared to the Preferred Alternative, are anticipated for the disturbance and loss of hydrological function of water courses, soil erosion, loss of vegetation and disturbance to sensitive habitats (riparian) and wildlife corridors owing to the extension of the power cables.

The operational impacts will be similar to those of the Preferred Alternative, with residual impacts being mostly of low significance. Post mitigation significance will be moderate with regard to the higher operational costs in the long term associated with complete dependence on the Eskom utility, as well as, the greater impact on the visual quality of the receiving environment.

Taking the above into consideration, it is recommended that the Technology Alternative not be supported due to the increase in extent of the development footprint and the associated increase in negative impacts on the receiving environment. The Preferred Alternative, which includes green energy technology, is favoured owing to renewable energy generation.

**No-go alternative (compulsory)**

The No-go Alternative implies that the development of the proposed Lapalala Wilderness School will not take place. In this scenario, the receiving environment will not be impacted upon negatively in any manner, with particular reference to cultural heritage, protected flora and surface water.

However, it should also be noted that no positive impacts will be realized such as job creation and employment opportunities, skills transfer and development, as well as environmental education.

This would not be ideal owing to the high unemployment rate in the local municipality and the fact that the majority of the population lives in a rural environment. Additionally, direct employment benefits and community beneficiation will not materialize.

In light of the above, as well as the fact that all negative impacts can be adequately mitigated and managed, it is not recommended that the No-go Alternative be supported.

For more alternatives please continue as alternative D, E, etc.
LEDET BA Report, EIA 2014: Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
SECTION E: RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES

If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the department in respect of the application:

The proposed development of the Lapalala Wilderness School will take place in Waterberg Mountain Bushveld was assessed by Mucina & Rutherford (2006) as Least Threatened. Limited encroachment into sensitive habitats (i.e. riparian) will occur and the 32 m buffer around watercourses, as well as, the 1:100 year flood line will be respected.

As discussed in the preceding section, all significant negative impacts can be successfully mitigated and managed to acceptable levels (i.e. moderate to low) during all phases of the proposed development, and at all development sites.

All mitigation measures as detailed in this BAR, the attached Specialist Impact Assessments and the Draft Environmental Management Programme (EMP) must be implemented and adhered for the duration of the project lifecycle (i.e. during the planning, construction and operational phases).

In addition, the following specific recommendations apply:

Planning and Design Phase:

- Register boreholes to be used for potable water extraction as per DWS requirements.
- All infrastructures (including storm water attenuation measures) at all the sites to be situated outside of the riparian zone and above the 1/100 year floodline of drainage lines and rivers.
- The sensitivity map for both the school and staff accommodation sites must be used as a decision tool to guide the layout design. Development on areas of high environmental sensitivity must be avoided.
- A suitably experienced ecologist / botanist should undertake a pre-construction (planning phase) walk-through all the sites earmarked for development and marking each plant species of conservation concern to be avoided or that may need to be relocated prior to any site clearance activity taking place.
- Prior to any construction at any of the sites, an experienced botanist should conduct a walk-through of these sites during the wet season (Dec-Apr), marking each plant species of conservation concern to be avoided or that may need to be relocated prior to any site clearance activity taking place.
- Wherever possible, tall trees should be left unharmed, whether protected by law or not.

Construction Phase:

- A suitably experienced botanist should be present on site at the time of pegging so as to identify sensitive plants or habitats.
- All proposed roads to contain adequate stormwater drainage and erosion control measures, especially in the area between the two proposed development sites where the road is currently in a bad condition.
- A suitably experienced botanist should be appointed to search the footprint of each site and associated...
infrastructure prior to site clearance.

- An experienced botanist should accompany the road construction teams and walk ahead of construction in order to mark plant species of conservation concern to be avoided or that may need to be relocated prior to any site clearance activity taking place.

- Wherever possible, tall trees should be left unharmed, whether protected by law or not.

- All infrastructures (including storm water attenuation measures) at all the sites to be situated outside of the riparian zone and above the 1/100 year floodline of drainage lines and rivers.

- Where avoidance or pruning of the nationally or provincially protected trees is not possible, pruning or removal of the trees can only be undertaken once a permit authorising the contractor to do so has been granted by the Department of Agriculture, Forestry and Fisheries (DAFF) or LEDET. The activity can only proceed, once the permit has been issued.

- Archaeological sites (possible Late Iron Age site) must be clearly demarcated to prevent any damage/ destruction.

Operational Phase:

- Management measures to eradicate and control alien plants need to be informed by the properties invasive species management program.

- Grounds staff should be trained to recognize and eradicate potential invasive plants.

- Undertake yearly removal of aliens within the area (done in summer) until equilibration is reached. This may take several years

- Monitor the effectiveness of the screen planting continuously in order to maintain its mitigation function.

- After fitting the PV arrays, monitor the potential for glare during the months of the year when the sun angle is low, i.e. during early mornings and late afternoons.

Assuming that the above recommendations are implemented and adhered to, there is no reason why the proposed development of the Lapalala Wilderness School should not take place. The Environmental Assessment Practitioner recommends that the development as proposed in Alternative 1 (Preferred Alternative) be supported.

Is an EMPr attached?

The EMPr must be attached as Appendix F.
SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)
   A.1: Locality
   A.2: School Site Layout
   A.3: School Sensitivity
   A.4: Staff Accommodation Site Layout
   A.5: Staff Accommodation Sensitivity

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports
   D.1: Terrestrial Ecology Study and Biodiversity Sensitivity Assessment
   D.2: Cultural Heritage Assessment
   D.3: Visual Impact Assessment
   D.4: Specialist declarations
      D.4.1: Specialist declaration Biodiversity
      D.4.2: Specialist declaration Heritage
      D.4.3: Specialist declaration VIA

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information
   G.1: Impact Assessment
   G.2: Services Agreement Letter
   G.3: EAP Details & Declaration
   G.4: Services Report
SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Peter Gerard Velcich, declare that I –

(a) act as the independent environmental practitioner in this application;
(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
(c) do not have and will not have a vested interest in the proposed activity proceeding;
(d) have no, and will not engage in, conflicting interests in the undertaking of the activity;
(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
(f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;
(h) will keep a register of all interested and affected parties that participated in a public participation process; and
(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Nuleaf Planning and Environmental (Pty) Ltd
Name of company:

Date:
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APPENDIX A: SITE MAPS
Proposed Development of the Lapalala Wilderness School on Portion 1 and 2 of the Farm Frischgewaagd 649LR, outside Lapalala Wilderness, Limpopo Province
APPENDIX C: FACILITY ILLUSTRATION(S)
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APPENDIX D.2: CULTURAL HERITAGE ASSESSMENT
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APPENDIX D.3: VISUAL IMPACT ASSESSMENT
APPENDIX D.4: SPECIALIST DECLARATIONS
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APPENDIX E: COMMENTS & RESPONSES REPORT
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APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)
APPENDIX G: OTHER INFORMATION
APPENDIX G.1: IMPACT ASSESSMENT
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APPENDIX G.3: EAP DETAILS & DECLARATION
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APPENDIX G.4: SERVICES REPORT