



**PROPOSED DEVELOPMENT OF THE PHALABORWA
WILDLIFE ACTIVITY HUB, KRUGER NATIONAL PARK,
LIMPOPO PROVINCE**

Final Basic Assessment Report

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Prepared for:



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Today's Impact | Tomorrow's Legacy

EXECUTIVE SUMMARY

Introduction and Background

South African National Parks (SANParks)(The Applicant) appointed Enviroworks, an Independent Environmental Assessment Practitioner (EAP), to undertake the required Basic Assessment (BA) Process for the proposed Wildlife Activity Hub (WAH) (hereafter referred to as the Proposed Project) at the Phalaborwa Gate within the Kruger National Park, Limpopo Province.

The proposed project is a listed activity in terms of Sections 24(2) and 24(d) of the National Environmental Management Act, 1998 (Act No. 107 of 1998)(NEMA)(as amended). The Environmental Impact Assessment (EIA) Regulations, 2017 promulgated in terms of Chapter 5 of the NEMA provide for the control of certain activities that are listed in Government Notice Regulation (GN R.) No. 327, 325 and 324. Activities listed in these notices must comply with the regulatory requirements listed in GN R. 326, which prohibits such activities until written authorisation is obtained from the Competent Authority (CA). Such Environmental Authorisation (EA), which may be granted subject to conditions, will only be considered once there has been compliance with the EIA Regulations of 2017. GN R. No. 326 sets out the procedure and documentation that need to be compiled with undertaking a Basic Assessment Report.

Project Description

SANParks proposes the development of the Phalaborwa Wildlife Activity Hub at the Phalaborwa Entrance Gate within the boundary of the Kruger National Park. The proposed development site is situated on the border fence within the Kruger National Park on the right hand side as you enter through the Phalaborwa Gate.

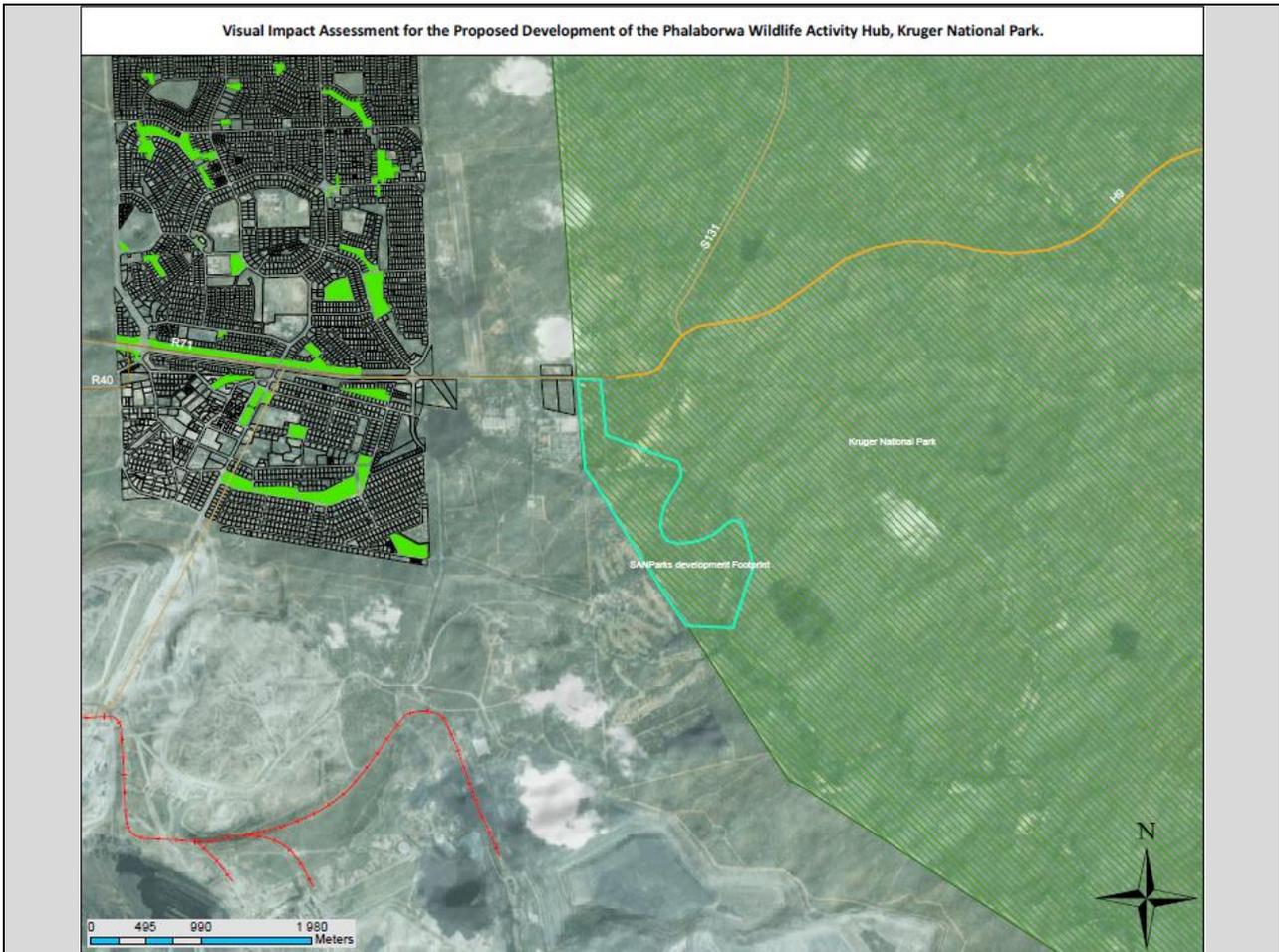


Figure 1: Proposed Site Location

The proposed project is one of three SANParks enhancing projects earmarked by the Department of Tourism for the 2016/2017 financial year to ensure tourism attraction and provide job creation for Local Communities. The specific site was chosen due to its close proximity to Phalaborwa, thus eliminating the need for additional guest and staff housing.

As per the five (5) year Strategic Plan 2016/2017 – 2019/2020 *“Through the implementation of the Expanded Public Works Programme, SANParks has provided significant support to SMMEs particularly in rural areas. In the first 9 months of the 2015/16 financial year 780 SMMEs were supported through the implementation of a range of EPWP Programmes. This component of the rural enterprise development continues to be part of the Strategic Plan for the next five years. Further initiatives to stimulate the development of rural enterprise include Wildlife Economy programmes and the development of an Activity Hub at Phalaborwa”.*

A Rhino Orphanage will help educate the public and will be aimed at public awareness (Rhino Poaching). Nine different hubs (discussed below) will be looked at with interlinking shuttle system connecting the various activity hubs with a hop-on hop off experience. Thus public parking will be catered for and no private vehicles will be given access to the development.

The proposed project entails the development of the following infrastructure:

- Activity Hub Main Building (Development Footprint 20 000m²) constituting the following entities:

- Eight (8) Kiosk Shops;
- Two (2) Take Away Restaurants;
- One (1) Ice Cream Shop;
- One (1) General Shop;
- An Information Centre;
- Two (2) Admin Offices;
- A sit down restaurant;
- Ablution Facilities;
- Six (6) Braai Areas;
- An Amphitheatre; and,
- A lobby.



Figure 2: Artistic Impression of the Activity Hub

- Backpacker Facility Area (Development Footprint 13 050m²) constituting of the following:
 - Six (6) backpacker facilities which can accommodate 72 tourists in total;
 - Six (6) braai area facilities; and,
 - Two (2) kitchen areas to cater for the guests.



Figure 3: Artistic Impression of the sleeping unit.

- Two Bird Viewing Areas (Development Footprint 8550m² each) constituting of:
 - Ablution facilities;
 - Two (2) viewing containers; and,
 - A drop-off area.



Figure 4: Artistic Impression of the Bird Viewing Area

- Two (2) Cool Down Areas (Development Footprint 4500m²) constituting of:
 - Two (2) water fountains;
 - An Ablution Block;
 - Six (6) Braai's; and,
 - Three (3) Cool Down spray areas.



Figure 5: Artistic Impression of the Cool Down Area

During the pre-application Public Participation Meeting, Interested and Affected Parties mentioned that a swimming pool would be more desirable than the development of the cool down areas. The Public

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debated that should a swimming pool be installed, kids from the local town of Phalaborwa would have something to do over weekends. SANParks is in the process of investigating the option of replacing the cool down areas with a swimming pool.

- Rhino Orphanage (Development Footprint 23 200m²) entailing:
 - Two (2) waiting areas;
 - An Amphitheatre;
 - Six (6) viewing containers;
 - A Veterinary Clinic Area;
 - An Office and Information Centre; and,
 - Security Room.



Figure 6: Artistic Impression of the Rhino Orphanage

- Entrance Gate (Development Footprint 7225m²) constituting of:
 - A Parking Area (49 Car Bays and 5 Bus Bays) as the facility will be a park and go facility;
 - A Security Office with two (2) security boom gates;
 - An Information Centre;
 - Reception Area;
 - Two (2) admin Offices;
 - Ablution Facilities,
 - Golf Cart Parking,
 - Public Seating, and,
 - A Public Waiting Area.



Figure 7: Artistic Impression Entrance Gate

- Eight (8) Public Areas (Combined Development Footprint 25 106m²) entailing:
 - Braai Areas;
 - Picnic Sites; and,
 - Ablution Facilities.

The amount of braai's and Picnic sites will differ from area to area.

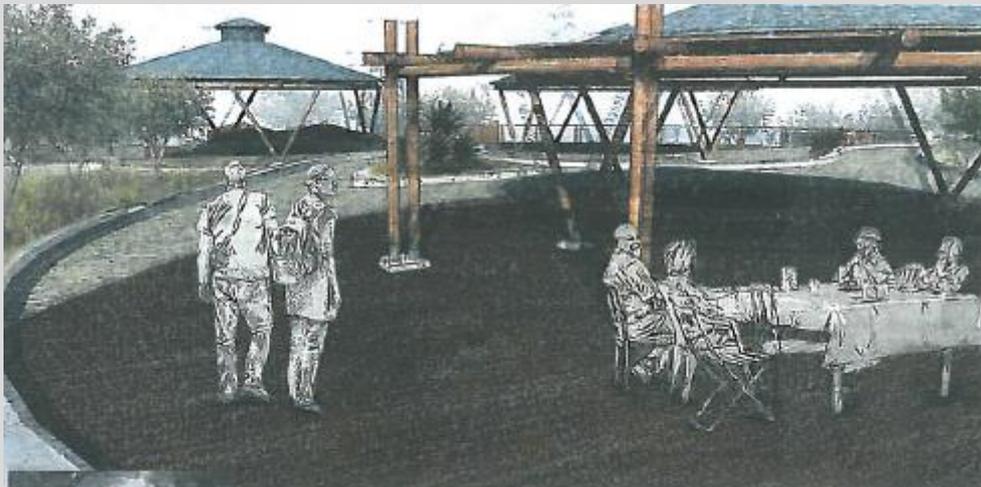


Figure 8: Artistic Impression of Public Areas.

- Specific Activities Area (Total Development Footprint 21 653m²) and may include (to be finalised):
 - Hot air balloon activity (anchored);
 - Archery activities;
 - Game drives;
 - Restaurants;
 - Entertainment Areas; and,
 - Spa's
- Tent Camp (Development Footprint 16 900m²) and includes:
 - Tent camping area;
 - Six (6) braai areas; and,
 - Two (2) ablution facilities.

Legislative Context

The proposed project constitutes the following listed activities of the NEMA:

Government Notice 327 of 2017: Listing Notice 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Activity 12: The development of –

- (ii) infrastructure or structures with a physical footprint of 100 square metres or more;

Where such development occurs –

- (a) within a watercourse;
- (c) if no development setback exist, within 32 metres of a watercourse, measured from the edge of a watercourse.

Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal, or moving of soil, sand, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.

Activity 27: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.

Government Notice 324 of 2017: Listing Notice 3 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Activity 6: The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more.

e. In Limpopo Province:

i. Outside urban areas, in:

(aa) A protected area identified in terms of NEMPAA, excluding conservancies;

(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

(dd) Sites or areas identified in terms of an international convention;

(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

(hh) Areas within a watercourse; or within 100 metres from the edge of a watercourse.

Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

e. Limpopo

i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004.

ii. Within critical biodiversity areas identified in bioregional plans;

iii. On land, where, at the time of the coming into effect of this Notice or thereafter such as land was zoned open space, conservation or had an equivalent zoning.

Activity 14: The development of –

(ii) infrastructure or structures with a physical footprint of 10 square metres or more;

Where such development occurs –

(a) within a watercourse;

(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from

the edge of a watercourse;

e. Limpopo

i. Outside urban areas:

- (aa) A protected area identified in terms of NEMPAA, excluding conservancies;
- (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
- (ee) Sites or areas identified in terms of an international convention;
- (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bio-regional plans.

Activity 17: The expansion of a resort, lodge, hotel, tourism or hospitality facilities where the development footprint will be expanded and the expanded facility can accommodate an additional 15 people or more.

e. Limpopo

i. Outside urban areas:

- (aa) A protected area identified in terms of NEMPAA, excluding conservancies;
- (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
- (dd) Sites or areas identified in terms of an international convention;
- (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

Activity 23: The expansion of –

- (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;

Where such expansion occurs –

- (a) within a watercourse;
- (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.

e. Limpopo

i. Outside Urban Areas:

- (aa) A protected area identified in terms of NEMPAA, excluding conservancies;
- (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
- (dd) Sites or areas identified in terms of an international convention;
- (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.

Report Structure

This Report is set out as followed:

- **Section A: Activity Description** provides an overview of the development proposal and listed activities which are triggered in terms Listing Notices GN R. 983 and R. 985; of the

EIA Regulations of 04 December 2014.

- **Section B: Description of Receiving Environment** provides detail on the affected landscape in its present state. A range of aspects relating to the biophysical (e.g. geology, soil surface and sub-surface water and biodiversity), socio-economic and historic and cultural character of the immediate site and surrounding areas are described herein, whilst applicable legislation, policies and guidelines considered are recognised.
- **Section C: Public Participation** describes the consultation component of this study between the EAP and Interested and Affected Parties (I&AP's) as well as Organs of State. Regulatory requirements of the process are discussed, with a summary of consultation made with state departments as well as comments and response are given. Comment periods were afforded to parties, with an initial registration period provided to parties.
- **Section D: Impact Assessment, Management, Mitigation and Monitoring Measures**, describe how the proposed project may impact on the geographical and physical, biodiversity, socio-economic and historical and cultural aspects of the receiving environment. Resource uses of the proposed project phases, attributes to waste and emissions, water use, power supply and energy efficiency are further discussed.
- **Section E: Recommendations of the EAP** provides, based on such findings as various site surveys, impact assessment, investigation of alternatives and the review of strategic policies to consider the needs and desirability, the outgoing opinion of the EAP is detailed. Any noteworthy recommendations emanating from the study are described here.
- **Section F: Appendices** list all supportive documents enclosed with this report, after which declarations of the Applicant, EAP and Specialists are given.

Alternatives

Layout Alternative

Two Layout Alternatives have been considered for the project.

Preferred Layout Alternative

- Consideration has been given to the layout of infrastructure to ensure minimum disturbance on vegetation as well as on the watercourse.
- Where possible infrastructure is placed on degraded areas, keeping vegetation intact enhancing the visual absorption capacity.
- The backpackers, tent camp and Public Area (Braai and Picnic) Phase 2 is situated at least fifty metres (50m) from the river minimising flooding as well as impacts on the river.
- As per the findings of the Heritage Specialist it is ensured that no development will occur within fifty metres (50m) from the Heritage Sensitive area.
- Public Area (Braai and Picnic) Phase 2 has been moved to ensure that it will not contribute to erosion on the site already sensitive thereto.

Alternative 1 (Preferred Alternative) has the following disadvantage:

- In order to ensure minimal vegetation clearance the Rhino Orphanage as well as the Cool Down Areas (Phase 1 & 2) had to be moved closer to the border fence, which can create a visual obstruction to the Hans Merensky Golf Estate.

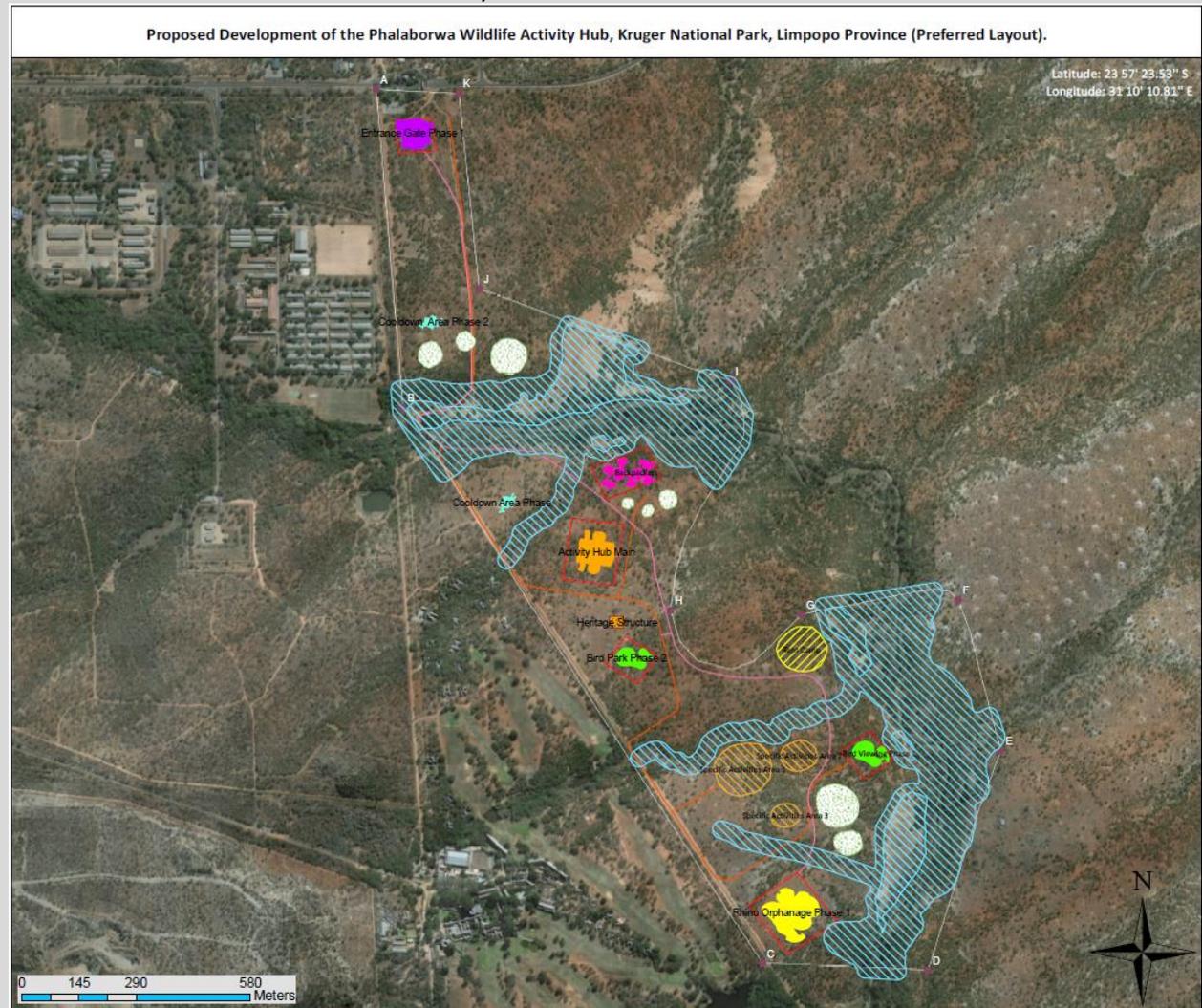


Figure 9: Preferred Layout Alternative

Layout Alternative 2

Alternative 2 is considered as a feasible and reasonable layout alternative.

Advantages:

- No infrastructure is situated within close proximity to the border fence, minimising the visual impact of the proposed development.
- The site footprint is one hundred metres (100m) (Point G on the Preferred Layout Alternative Map) smaller than that of layout alternative 1, due to the tent camp being closer to the river.

Disadvantages:

- Vegetation clearance will be higher due to the location of Cool Down Areas (Phase 1 & 2), the Bird Viewing Area (Phase 1), Public Areas (Braai and Picnic Phase 2), Tent Camp, the Backpackers as well as the Rhino Orphanage.
- The Tent Camp, Public Areas (Braai and Picnic Phase 2) and the Backpackers are situated within thirty two metres (32m) of the river enhancing the risk to flooding.

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- Public Areas (Braai and Picnic Phase 2) is situated on an area sensitive to erosion.

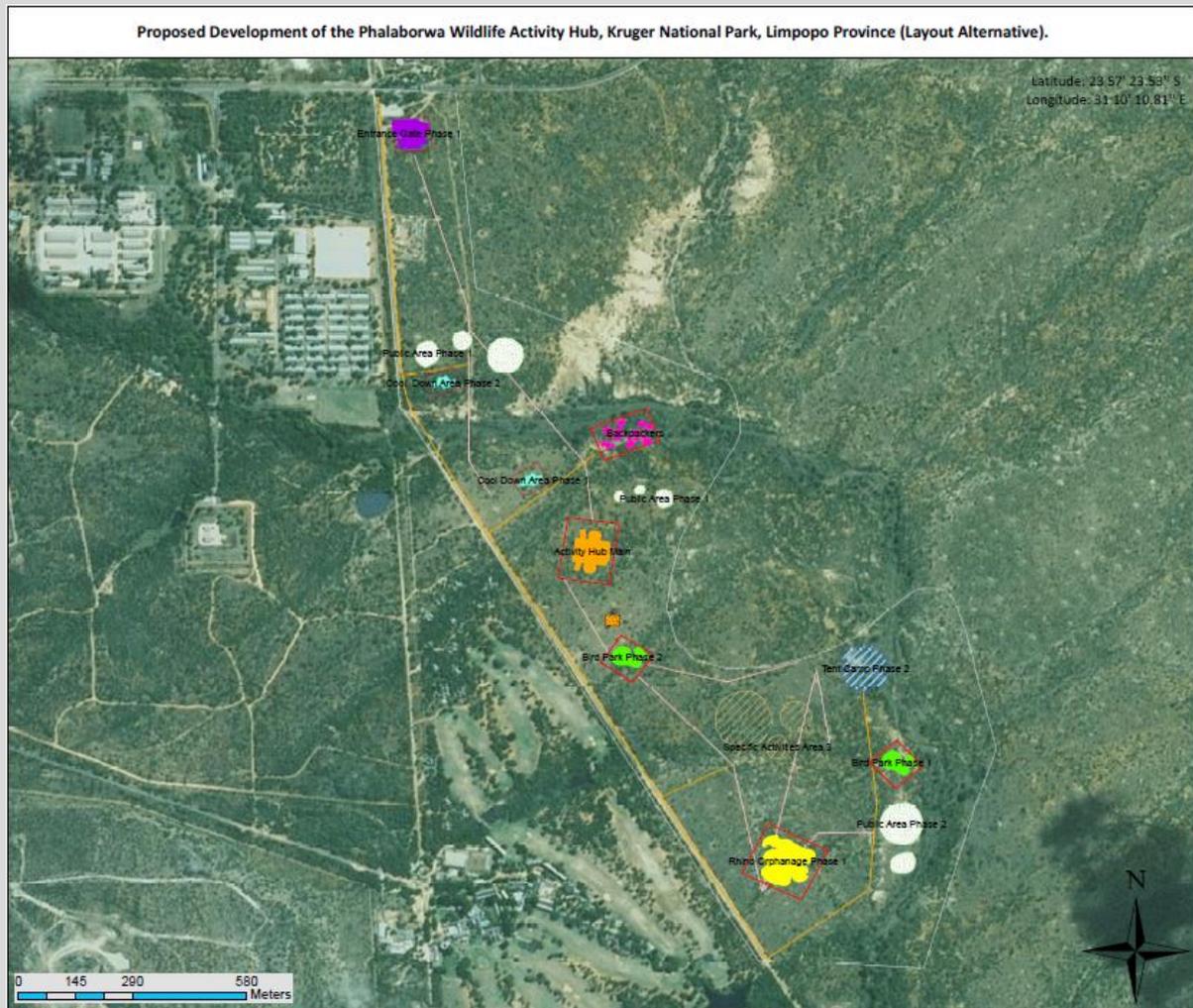


Figure 10: Layout Alternative 1

Public Participation Process

A comprehensive **Public Participation** will be undertaken to engage stakeholders and interested and affected parties on the development proposal. I&AP's will be informed of the Basic Assessment Process through an advertisement in one (1) national – and one (1) provincial newspaper and poster notices will be erected at strategic locations. The surrounding landowners will be informed of the proposed project by means of the distribution of comment forms and the Basic Assessment Report (BAR), as well as relevant Organs of State.

This BAR will be made available for a thirty (30) day comment period from 22 January 2018 to 22 February 2018. The BAR will be made available on Enviroworks website (www.enviroworks.co.za) and a link to the Enviroworks website will be sent via email to all relevant Stakeholders and Organs of State.

Specialist Findings

On assessment of the proposed location for alternatives, the specialist determined the

following:

Botanical Impact Assessment

The Botanical Impact Assessment was conducted by Green-Niche Biodiversity and Environmental Consultation on 08 October 2016. The specialist recommended that the following mitigation measures need to be incorporated into the Environmental Management Plan.

General:

- An Environmental Control Officer (ECO) must be appointed to oversee that the aspects stipulated in the Environmental Authorisation be carried out properly;
- Pre-construction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to;
- The areas to be cleared as well as the construction area should be clearly demarcated;
- All construction vehicles should adhere to clearly defined and demarcated roads;
- Dust suppression and erosion management should be an integrated component of the construction approach;
- No dumping of building waste or spoil material from the development should take place on areas other than a licensed landfill site;
- All hazardous materials should be stored appropriately to prevent contamination of the project site. Any accidental chemical, fuel and oil spills that occur at the project site should be cleaned up appropriately as related to the nature of the spill;
- The project site is situated in the close proximity of a tributary of the non-perennial stream which carries effluent from the Phalaborwa sewage works.

Flora:

- There should be a preconstruction walk-through of the development footprint / project site in order to locate individuals of Shepherd's trees as well as Leadwood trees which would have to be removed. Plant species of conservation concern (e.g. Aloes and bulbs) must also be located and relocated to a suitable and similar habitat where these plants can grow without any disturbance.
- Permits must be obtained from DAFF to remove the Camel Thorn (*Acacia erioloba*) individuals. The contractor must apply for these permits in a phased manner.
- Weed control measures must be applied to eradicate the noxious weeds (category 1a & 1b species) on disturbed areas.

Fauna:

- Any fauna threatened by the construction and operation activities should be removed to safety by the ECO or appropriately qualified environmental officer.
- All construction vehicles should adhere to a low speed limit (< 30km/h) to avoid collisions with susceptible species such as snakes and tortoises.

- If trenches need to be dug for drainage or other purposes, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

Archaeology Impact Assessment

The area designated as a Bird and Reptile Park Phase 2 is considered to be of high archaeological significance and is assigned a site rating of Local Significance Grade 3B with the recommendation that the furnace and associated remains should be retained and protected. The rest of the study area is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

Given the nature of the proposed development, preservation and excavation (for display) of the furnace and associated remains will enhance the educational aspect of the activity hub. It is advised that:

- The furnace area is protected and declared a no-go area until the developer appoints a suitably qualified archaeologist to conduct a Phase 2 archaeological assessment of the terrain and to draw up a heritage management plan for the site;
- The appointed archaeologist applies for a valid permit from SAHRA to excavate the furnace for display and educational purposes.

Visual Impact Assessment

The Visual Impact Assessment (VIA) for Phalaborwa was compiled by Mr Christoff du Plessis from Enviroworks and externally reviewed by Dr Herman Booysen, Geomatics Professional (Ph.D. Geography).

It is envisaged that the structures, will be highly visible from a 1km radius especially for tourist making use of the Hans Merensky Golf Course. The study area contains elevated areas minimising the visual impact to 5km. Beyond the five kilometre buffer the proposed project will be visible from elevated areas such as mine dumps and koppies in the southerly direction. It is anticipated that should the applicant decide to implement the recommended mitigation measures the overall visual impact of the Wildlife Activity Hub will be moderate. The following mitigatory considerations can assist in minimising the visual impact:

- Vegetation against the border fence with the Hans Merensky Golf Estate should remain intact and development must be situated behind the screen to minimise the visual impact.
- Minimum vegetation should be removed during the construction phase of the project.
- Measures need to be implemented to ensure that visitors stick to walkways in order to ensure that no damage is done to the environment.
- Infrastructure must contribute to the sense of place, natural earth colours need to be

used with thatched roofs.

Mitigation to minimise lighting impacts include the following:

- Shielding the sources of light by physical barriers (walls, vegetation or structures itself);
- Limit mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights);
- Make use of downward directional lighting fixtures;
- Make use of minimum lumen or wattage in lights;
- Use motion sensors to activate lighting ensuring light is available when needed.

Mitigation of visual impacts associated with the construction phase would entail proper planning, management and rehabilitation of the construction site. Mitigation measures include the following:

- Reduce the time of construction through careful planning of logistics and ensure the productive implementation of resources;
- Limit disturbance of the environment to the development footprint.
- Ensure waste management is applied on site as stated in the EMP'r;
- Limit construction activities to business hours (07:00 – 17:00).

Traffic Impact Assessment

With regards to the traffic impact and the occurrence of congestion at the main gate, it is recommended that surveys be carried out at a similar development within the Kruger National Park. This would provide for better information in order to estimate future scenarios. At this point; however, no significant change in traffic patterns is foreseen.

Therefore, from a traffic perspective it is recommended that the planning of the development can continue.

Geo-Hydrological Impact Assessment

The study area is located south of the Phalaborwa entrance gate to the Kruger National Park. The area is situated within the Olifants Water Management Area (WMA) in quaternary catchment B71C. The provision of water to meet ecological requirements is one of the controlling factors in the management of water resources throughout the water management area (NWRS).

The Olifants WMA is characteristically impacted on by mining activities and irrigation return flows, elevating pH, EC and Sulphate concentrations at unacceptable levels. There are unacceptable phosphate concentrations in the Salati and in the lower Olifants below the Selati confluence. These are associated with sewage return flows and effluents from the mining and

industrial activities around Phalaborwa.

Most rainfall only occurring during mid-summer months. The study area has an approximate elevation varying from four hundred and twenty five meters above sea level (425 mamsl) to two hundred and ninety five meters above sea level (295 mamsl) with an overall topographical decline from the north west to south east.

The study area is seen to be predominantly underlain by Makhutswi Gneiss (Zm) from the Swazian Era. While the local geology is characteristically intruded by dykes or stock-like unmigmatite biotite gneiss, multiple north east to south west and north west to south east striking lineaments are indicated to intersect the study area. Surface to groundwater infiltration rates are expected to increase at these contact boundaries. Mentioned boundaries should be considered to minimise possible spillage infiltration during construction and operational phases. The study area is located on a minor aquifer system with a groundwater vulnerability estimated to be least. EC values are expected to range between one hundred and fifty milliSiemens per meter (150 mS/m) and three hundred and seventy milliSiemens per meter (370 mS/m).

A total of eight (8) non-perennial rivers and five (5) alluvial soil/sodic sites were identified to intersect the area of investigation and were assessed according to their Present Ecological State (PES). It is estimated that the proposed development will have a limited impact on the intersecting watercourse and hydrological regime if the recommendations and mitigations are upheld. These aspects mentioned below must be added into the Environmental Management Plan.

A monitoring program should therefore be in place not only to ensure conformance with the EMP, but also to monitor any environmental issues and impacts, which have not been accounted for in the EMP or could result in significant environmental impacts for which corrective action is required.

With regard to potential impacts on the aquatic environment the following is proposed:

- Monitoring of any spills, erosion of cleared areas or downstream sedimentation should occur on a daily basis, with any remediation being instituted immediately.
- Water that is discharged from dewatering during construction should be released in “silt bays” made from semi-permeable material, such as hay bales and geotextile material. These siltation structures should be located outside of prescribed buffer zones, while water is released in a diffuse pattern.

Sediment should be trapped before stormwater is released into water courses, while any erosion features that develop immediately downstream of stormwater discharge points should be stabilised once observed. This is especially of high importance due to high total of geo-

morphological degradation/erosion observed at the study area.

Recommendations of the EAP

As per comments received the following mitigation measures need to be included:

- Induction and Environmental Awareness training must be done periodically over the duration of the project.
- All activities must be conducted where reasonable and possible during the drier months.
- A periodic photo journal must be kept in order to document the condition of the work areas over the duration of the project.
- A master plan must be kept for each site. The master plan must indicate temporary and permanent infrastructure, diversions, no-go areas, demarcated areas, sensitive areas, stockpiles, material lay down areas, rest & eat area, access, parking, offices and storerooms.
- An incident register must be kept on site and updated regularly.
- Where temporary toilets are to be provided it must be emptied regularly well in advance of filling up.
- Mitigation measures as described in the EMP must be adhered to strictly.
- No open fires will be allowed on site, and demarcated smoking areas must be set out and indicated on the site layout plan.
- No vegetation may be removed/moved without the relevant footprint.
- Vegetation clearance must be limited to the development footprint only.
- Where possible use existing access roads, should new ones need to be developed it must cross the shortest distance.
- No chemicals or hazardous substances may be stored within 100 metres of a watercourse.
- Drip trays to be placed beneath all stationary equipment and used during refuelling.
- No animals may be killed, should snakes be discovered a trained person must be called upon to move them.
- All activities must be conducted as stipulated in the Method Statements.

BASIC ASSESSMENT REPORT CONTENT REQUIREMENTS

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Content Requirements of a Basic Assessment Process	Section in the Report
(a) details of – (i) the EAP who prepared the report, and (ii) the expertise of the EAP, including a curriculum vitae;	Appendix H
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section B
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale;	Appendix A
(d) a description of the scope of the proposed activity, including – (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	Section A
(e) a description of the policy and legislative context within which the development is proposed including – (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools framework, and instruments;	Section A
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section A
(g) a motivation for the preferred site, activity and technology alternative;	Section A
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent,	

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<p>duration and probability of the impacts, including the degree to which these impacts –</p> <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; <p>(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risk associated with the alternatives;</p> <p>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) the outcome of the site selection matrix;</p> <p>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;</p>	
<p>(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including –</p> <ul style="list-style-type: none"> (i) a description of all environmental issues and risk that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	<p>Appendix F</p>
<p>(j) an assessment of each identified potentially significant impact and risk, including-</p> <ul style="list-style-type: none"> (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impacts and risk occurring; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated; 	<p>Appendix F</p>
<p>(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulation and an indication as to how these findings and recommendations have been</p>	<p>Section D</p>

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included in the final report;	
(l) an environmental impact statement which contains – (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the proposed site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section D
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMP'r;	Appendix G
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section E
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section D
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section E
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Section E
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t) any specific information that may be required by the competent authority; and	Appendix J
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

BASIC ASSESSMENT REPORT



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RELEVANT QUALIFICATIONS

Baccalaureus Scientiae (B.Sc.) in Environmental Geography: University of the Free State (2014)
Baccalaureus Scientiae (B.Sc) Honours in Environmental Management: University of South Africa (2018)

WORK EXPERIENCE

January 2015 – Present: Environmental Specialist at Enviroworks

KEY PROJECT EXPERIENCE

ENVIRONMENTAL IMPACT ASSESSMENT EXPERIENCE

- Environmental Impact Assessment for the proposed 171ha expansion of Nalisview Cemetery in Bloemfontein on behalf of Mr. Jannie Nel

BASIC ASSESSMENT EXPERIENCE

- Construction of 30 Broiler Houses and an Abattoir, Leipoldtville, Western Cape Province (Mocke Poultry).
- Dewetsdorp Reservoir System Augmentation, Dewetsdorp, Free State Province (Bloemwater).
- Construction of the Palmiet Truck Stop, Vrede, Free State Province (DeStudio Town Planning).
- Section 24G for the unlawful operation of a Recycling Centre, Swellendam, Western Cape Province (Agri-World Recyclers).
- Construction of a 3.2 kilometre pipeline and associated infrastructure, Olifantshoek, Northern Cape Province (Ghamagara Local Municipality).
- Construction of 4 telecommunication masts, Cape Town, Western Cape Province (Highwave Consultants).
- Installation of a 90 000l LPG Cylinder, Bloemfontein, Free State Province (EASIGAS).
- Installation of a 45 000l LPG Cylinder, East London, Eastern Cape Province (EASIGAS).
- Upgrade of Day-visitor facilities at Kraalbaai, West Coast National Park, Western Cape Province (SANParks).
- Development of the Phalaborwa Wildlife Activity Hub, Kruger National Park, Limpopo Province (SANParks).
- Periodic maintenance of National Route 2 Section 4 between Riviersonderend (Km 0.0) and Swellendam (Km 56.9), Western Cape Province (SANRAL).
- Proposed development of the Klein Mooimaak Rest Camp Facility, West Coast National Park (SANParks).
- Proposed development of the 35m Buffeljagsrivier Monopole Mast, Western Cape Province (Coast to Coast Towers).
- Compilation of a River Maintenance Management Plan for Bath River, Caledon, Western Cape Province (Theewaterskloof Local Municipality).
- Proposed development of a 12.5 ha cemetery, Grabouw, Western Cape Province (Theewaterskloof Local Municipality).
- Proposed development of Hostels and Orientation Centres, Mapungubwe National Park, Limpopo Province (SANParks).

BASIC ASSESSMENT REPORT

- Proposed upgrade of the R27 Gate & Geelbek Restaurant, West Coast National Park, Western Cape Province SANParks).
- Proposed development of the 25m Joostenbergvlakte Monopole Mast, Western Cape Province (Coast to Coast Towers).
- Proposed development of 30 Chicken Houses and an Abattoir, Odendaalsrus, Free State Province (Chridel Consulting).
- Design, Rehabilitation / Improvement, Routine Maintenance works of N220: Chissano to Chibuto and N/C Crz. N220 to N1, Mozambique (World Bank).
- Proposed development of a Curro Castle on Portion 54 of the Farm Blue Hills No. 397, Midrand, Gauteng Province (Curro Holdings).
- Proposed development of a 25m Monopole Mast on Portion 25 of the Farm Klein Bottelary No. 17, Brackenfell, Western Cape Province (Coast to Coast Towers).
- Proposed development of a Housing Development in Hartswater, Northern Cape Province (Makespace Architects).

EXPERIENCE IN PERMITS AND LICENCING

- Water Use License (General Authorisation) for the expansion of a cemetery by more than 2500 m² (Jannie Nel).
- Water Use License for 30 Broiler Houses and Abattoir, Leipoldtville, Western Cape Province (Mocke Poultry).
- Waste Management License and Section 24 G report for Agri World Recycling, Swellendam, Western Cape Province (Agri-World Recycling).
- Water Use License (General Authorisation) for the construction of a 3.2km pipeline, Olifantshoek, Northern Cape Province (Ghamagara Local Municipality).

ENVIRONMENTAL CONTROL OFFICER (ECO)

- The construction of the Cecilia Park powerline and sub-station, Bloemfontein, Free State Province (Centlec).
- The construction of a dual carriageway and bridge from Mthatha up to and including the Ngqeleni interchange of Provincial Road 61 Section 8, Eastern Cape Province.
- The construction of a road from Moretele to Khaukhwe, North West Province (Department Public Works).
- The construction of a 14km water pipeline, Botshabelo, Free State Province (Bloemwater).
- The construction of a sub-station, Bloemfontein, Free State Province (Centlec).
- The rehabilitation of bridges on National Route 14: Upington to Kuruman, Northern Cape Province (SANRAL).
- The rehabilitation of the Theekloof Pass, Fraserburg, Northern Cape.
- Annual Audit on the Waste Management License for Elgin Fruit Juice, Grabouw, Western Cape (Elgin Fruit Juice).
- Reseal of Diversional Road 1468, 1470, 1473 and Minor Road 5873 on behalf of Actophambili, Witzenberg, Western Cape Province.
- Reseal of Section MR 201 and MR 305 on behalf of Actophambili, Wolsely, Western Cape Province.
- Reseal of the National Route 1, on behalf of Actophambili, Leeu Ghamka, Western Cape Province (SANRAL).
- The widening of Pella Road on behalf of the City of Cape Town, Atlantis, Western Cape Province (City of Cape Town).
- The widening of structures over the Orange River on National Route 12 Section 9 near Hopetown, Northern Cape Province (SANRAL).

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- The construction of a bulk water supply reservoir, Olifantshoek, Northern Cape Province (Ghamagara Local Municipality).
- Rehabilitation of the Donkergat Road within the West Coast National Park on behalf of BVI Procurement Management Engineers, Western Cape Province (Department of Defence & Department of Public Works).
- Periodic Maintenance of National Route 2 Section 4 between Swellendam and Riviersonderend, Western Cape Province (SANRAL).

VISUAL IMPACT ASSESSMENT (VIA):

- Phalaborwa Wildlife Activity Hub, Kruger National Park, Limpopo Province (SANParks).
- 4.9ha Sand Mine on Portion 5 of the Farm Doornekraal No. 830, Western Cape Province (Greenmined).
- Proposed development of the Harvard Powerline, Bloemfontein, Free State Province (Centlec).
- Proposed development of the 35m Buffeljagsrivier Monopole Mast, Buffeljagsrivier, Western Cape Province (Coast to Coast Towers).
- Proposed development of the 25m Robertson Monopole Mast, Robertson, Western Cape Province (Coast to Coast Towers).
- Proposed development of the Klein Mooimaak Rest Camp Facility, West Coast National Park (SANParks).
- Proposed development of a Sand Mine near Malmesbury, Western Cape Province (Greenmined).
- Proposed upgrade of the R27 Gate and Geelbek Restaurant, West Coast National Park, Western Cape Province (SANParks).
- Proposed development of the 25m Roodekrans Monopole Mast, Krugersdorp, Gauteng Province (Coast to Coast Towers).
- Proposed development of a 25m Monopole Mast on Portion 25 of the Farm Klein Bottelary No. 17, Brackenfell, Western Cape Province (Coast to Coast Towers).
- Proposed development of a Landfill Site on Portion 3 of the Farm Katbosch No. 93, Sasolburg, Free State Province (Metsimaholo Landfill).
- Proposed development of numerous visitor information centres at Schroda and Mapungubwe Hill, Mapungubwe National Park, Limpopo Province (SANParks).

WETLAND DELINEATION STUDIES:

- Development of 13 borrow pits along National Road 8, Ladybrand, Free State Province (SANRAL).
- Development of a 12.5ha cemetery on Erf 4233, Western Cape Province (Theewaterskloof Local Municipality).
- Proposed development for the proposed Alfred Nzo Agri-Hub, Cederville, Eastern Cape Province (Department Public Works).

STORMWATER MANAGEMENT PLANS:

- Stormwater Management Plan for a Recycling Plant on Erf 5172, Swellendam, Western Cape Province (Agri-World Recycling).
- Stormwater Management Plan for the proposed Granite Mine on the Remaining Extent of the Farm Biesjesfontein No. 218, Springbok, Northern Cape Province (Greenmined Environmental).
- Stormwater Management Plan for the proposed development of Six Layer Hen Houses on the Remaining Extent of the Farm Helena 1492, Bloemfontein, Free State Province (Katawa Trading)

OTHER EXPERIENCE

- Conducting the Public Participation Process on the Draft Management Plan for the Goukamma Nature Reserve Complex, Western Cape Province (Cape Nature).

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- Compilation of an Environmental Management Plan and a Risk Assessment for the pressure testing of a 1 000 000 litre LPG Cylinder within the Port Elizabeth Harbour, Eastern Cape Province (EASIGAS).
- Compilation of an Environmental Management Plan for the development of two billboards, Bloemfontein, Free State Province (Outdoor Network).
- Decommissioning Audit for the closure of a warehouse, Cape Town, Western Cape Province (Wheatherford).
- GIS mapping and technical for various projects, including the drawing of locality, sensitivity, and alien and invasive management maps.
- Public Participation Processes and assistance to several projects.

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ACRONYMS AND ABBREVIATIONS

BA	–	Basic Assessment
BAR	–	Basic Assessment Report
CBA	–	Critical Biodiversity Area
DEA	–	Department of Environmental Affairs
EAP	–	Environmental Assessment Practitioner
ECO	–	Environmental Compliance Officer
EIA	–	Environmental Impact Assessment
EMF	–	Environmental Management Framework
EMPr	–	Environmental Management Programme
ESA	–	Ecological Support Area
GN R	–	Government Notice Regulation
I&AP	–	Interested & Affected Party
IDP	–	Integrated Development Plan
KNP	–	Kruger National Park
LED	–	Local Economic Development
LM	–	Local Municipality
NDT	–	National Department of Tourism
NEM:PAA	–	National Environmental Management: Protected Areas Act
NEM:WA	–	National Environmental Management: Waste Act
NEMA	–	National Environmental Management Act
NHRA	–	National Heritage Resources Agency
NPA	–	National Parks Act
NWA	–	National Water Act
PSDF	–	Provincial Spatial Development Framework
SAHRA	–	South African Heritage Resources Agency
SANParks	–	South African National Parks
SAPS	–	South African Police Service
SDF	–	Spatial Development Framework

BASIC ASSESSMENT REPORT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2017, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2017 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **07 April 2017**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. 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.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. 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 competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

1 SECTION A: ACTIVITY INFORMATION

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

YES	<input type="checkbox"/>
X	<input checked="" type="checkbox"/>

If YES, please complete the form entitled “Details of specialist and declaration of interest” for the specialist appointed and attach in Appendix I.

1.1 PROJECT DESCRIPTION

1.1.1 Describe the project associated with the listed activities applied for

SANParks proposes the development of the Phalaborwa Wildlife Activity Hub at the Phalaborwa Entrance Gate within the boundary of the Kruger National Park. The proposed development site is situated on the border fence within the Kruger National Park on the right hand side as you enter through the Phalaborwa Gate.

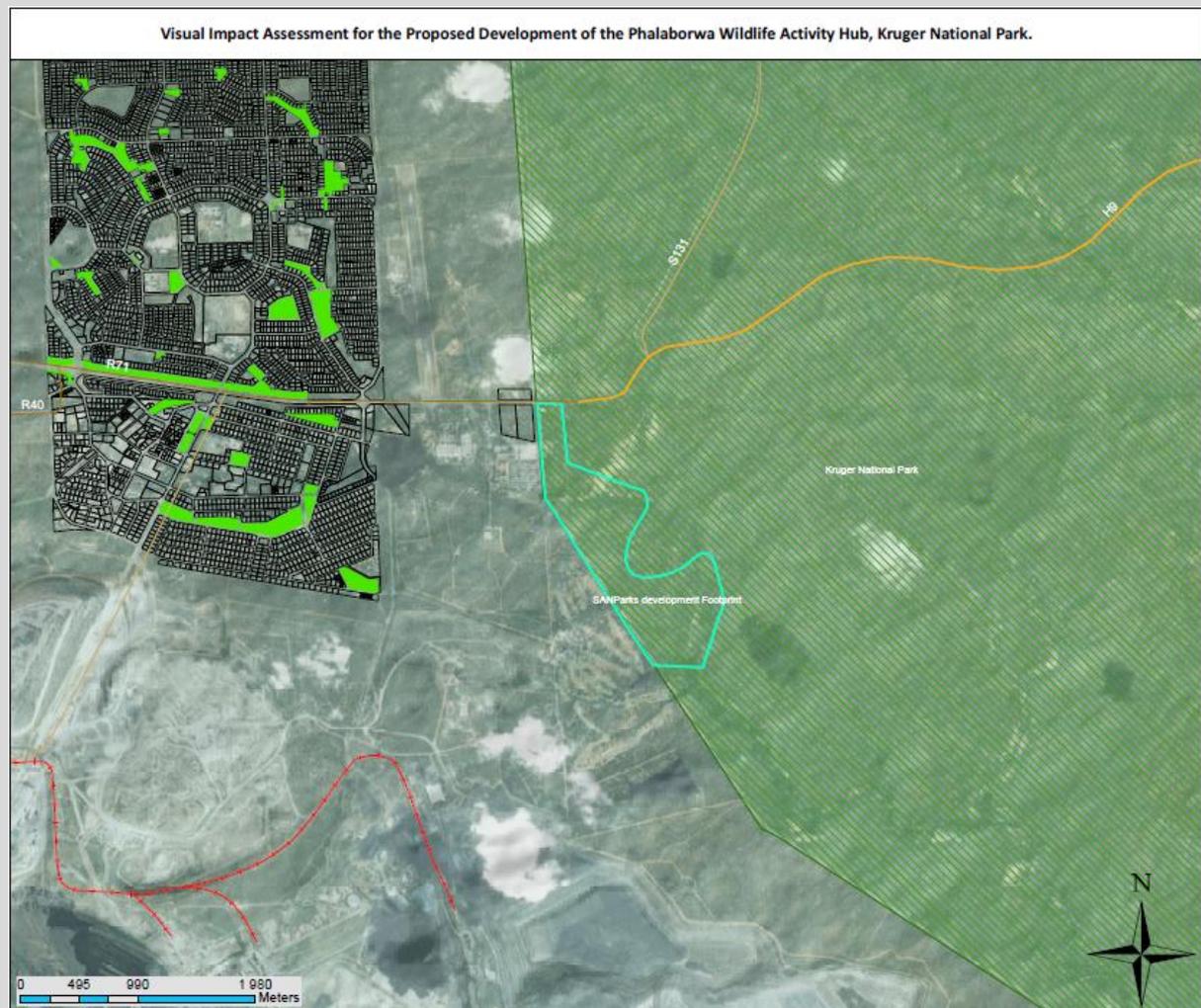


Figure 11: Locality of the proposed development

The proposed project is one of three SANParks enhancing projects earmarked by the Department of Tourism for the 2016/2017 financial year to ensure tourism attraction and provide job creation for Local Communities. The specific site was chosen due to its close

proximity to Phalaborwa, thus eliminating the need for additional guest and staff housing.

As per the five (5) year Strategic Plan 2016/2017 – 2019/2020 “Through the implementation of the Expanded Public Works Programme, SANParks has provided significant support to SMMEs particularly in rural areas. In the first 9 months of the 2015/16 financial year 780 SMMEs were supported through the implementation of a range of EPWP Programmes. This component of the rural enterprise development continues to be part of the Strategic Plan for the next five years. Further initiatives to stimulate the development of rural enterprise include Wildlife Economy programmes and the development of an Activity Hub at Phalaborwa”.

A Rhino Oprhanage will help educate the public and will be aimed at public awareness (Rhino Poaching). Nine different hubs (discussed below) will be looked at with interlinking shuttle system connecting the various activity hubs with a hop-on hop off experience. Thus public parking will be catered for and no private vehicles will be given access to the development.

The proposed project entails the development of the following infrastructure:

- Activity Hub Main Building (Development Footprint 20 000m²) constituting the following entities:
 - Eight (8) Kiosk Shops;
 - Two (2) Take Away Restaurants;
 - One (1) Ice Cream Shop;
 - One (1) General Shop;
 - An Information Centre;
 - Two (2) Admin Offices;
 - A sit down restaurant;
 - Ablution Facilities;
 - Six (6) Braai Areas;
 - An Amphitheatre; and,
 - A lobby.



Figure 12: Artistic Impression of the Activity Hub

- Backpacker Facility Area (Development Footprint 13 050m²) constituting of the following:
 - Six (6) backpacker facilities which can accommodate 72 tourists in total;
 - Six (6) braai area facilities; and,
 - Two (2) kitchen areas to cater for the guests.



Figure 13: Artistic Impression of the sleeping unit.

- Two Bird Viewing Areas (Development Footprint 8550m² each) constituting of:
 - Ablution facilities;
 - Two (2) viewing containers; and,
 - A drop-off area.



Figure 14: Artistic Impression of the Bird Viewing Area

- Two (2) Cool Down Areas (Development Footprint 4500m²) constituting of:
 - Two (2) water fountains;
 - An Ablution Block;

- Six (6) Braai's; and,
- Three (3) Cool Down spray areas.



Figure 15: Artistic Impression of the Cool Down Area

During the pre-application Public Participation Meeting, Interested and Affected Parties mentioned that a swimming pool would be more desirable than the development of the cool down areas. The Public debated that should a swimming pool be installed, kids from the local town of Phalaborwa would have something to do over weekends. SANParks is in the process of investigating the option of replacing the cool down areas with a swimming pool.

- Rhino Orphanage (Development Footprint 23 200m²) entailing:
 - Two (2) waiting areas;
 - An Amphitheatre;
 - Six (6) viewing containers;
 - A Veterinary Clinic Area;
 - An Office and Information Centre; and,
 - Security Room.



Figure 16: Artistic Impression of the Rhino Orphanage

- Entrance Gate (Development Footprint 7225m²) constituting of:
 - A Parking Area (49 Car Bays and 5 Bus Bays) as the facility will be a park and go facility;
 - A Security Office with two (2) security boom gates;
 - An Information Centre;
 - Reception Area;

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- Two (2) admin Offices;
- Ablution Facilities,
- Golf Cart Parking,
- Public Seating, and,
- A Public Waiting Area.



Figure 17: Artistic Impression Entrance Gate

- Eight (8) Public Areas (Combined Development Footprint 25 106m²) entailing:
 - Braai Areas;
 - Picnic Sites; and,
 - Ablution Facilities.

The amount of braai's and Picnic sites will differ from area to area.

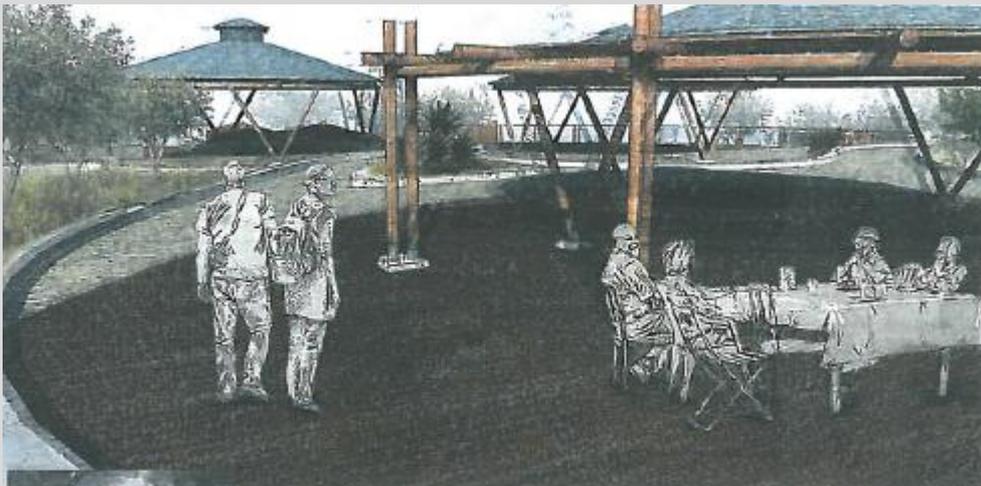


Figure 18: Artistic Impression of Public Areas.

- Specific Activities Area (Total Development Footprint 21 653m²) and may include (to be finalised):
 - Hot air balloon activity (anchored);
 - Archery activities;
 - Game drives;
 - Restaurants;
 - Entertainment Areas; and,
 - Spa's

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- Tent Camp (Development Footprint 16 900m²) and includes:
 - Tent camping area;
 - Six (6) braai areas; and,
 - Two (2) ablution facilities.

1.1.2 Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 327, 325 and 324	Description of project activity
<p>GN R327 (LN 1), Activity 12:</p> <p>The development of –</p> <p style="padding-left: 20px;">(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>Where such development occurs –</p> <p style="padding-left: 20px;">(a) within a watercourse;</p> <p style="padding-left: 20px;">(c) if no development setback exist, within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	<p>Sewerage lines and power cables would need to cross through the river.</p>
<p>GN R327 (LN 1), Activity 19:</p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal, or moving of soil, sand, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.</p>	<p>Sewerage lines and power cables would need to cross through the river.</p>
<p>GN R327 (LN 1), Activity 27:</p> <p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.</p>	<p>The total development footprint will total 18.18 hectares.</p>
<p>GN R324 (LN3), Activity 6:</p> <p>The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more.</p> <p>e. Limpopo</p> <p>i. Outside Urban Areas:</p> <p style="padding-left: 20px;">(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p style="padding-left: 20px;">(cc) Sensitive areas as identified in an</p>	<p>The backpacker facility as well as the tent camp will provide for accommodation that sleeps more than 15 people.</p>

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<p>environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an international convention;</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(hh) Areas within a watercourse; or within 100 metres from the edge of a watercourse.</p>	
<p>GN R324 (LN3), Activity 12:</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>e. Limpopo</p> <p>(i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>(ii) Within critical biodiversity areas identified in bioregional plans;</p> <p>(iv) On land, where, at the time of the coming into effect of this Notice or thereafter such as land was zoned open space, conservation or had an equivalent zoning.</p>	<p>The total development area will be 18.18 hectares.</p>
<p>GN R324 (LN3), Activity 14:</p> <p>The development of –</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square</p>	<p>Should Layout Alternative 2 be considered the Cooldown Area (Phase 2), Bird view area (Phase 2), tent camp and backpackers will be situated within 32 metres of a watercourse.</p>

<p>metres or more;</p> <p>Where such development occurs –</p> <ul style="list-style-type: none"> (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; <p>e. Limpopo</p> <ul style="list-style-type: none"> i. Outside urban areas: <ul style="list-style-type: none"> (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an international convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bio-regional plans. 	
<p>GN R324 (LN3), Activity 17:</p> <p>The expansion of a resort, lodge, hotel, tourism or hospitality facilities where the development footprint will be expanded and the expanded facility can accommodate an additional 15 people or more.</p> <p>e. Limpopo</p> <ul style="list-style-type: none"> i. Outside urban areas: <ul style="list-style-type: none"> (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of 	<p>The proposed development will be built in Phases; however, the BAR includes the final development footprint once all construction is finished.</p>

<p>the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an international convention;</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	
<p>GN R324 (LN3), Activity 23:</p> <p>The expansion of –</p> <p>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;</p> <p>Where such expansion occurs –</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.</p> <p>e. Limpopo</p> <p>i. Outside Urban Areas:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an international convention;</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	<p>The proposed development will be built in Phases; however, the BAR includes the final development footprint once all construction is finished.</p>

1.2 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;
- € the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) 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, competent authority 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.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. 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.

1.2.1 Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Corner A	23° 56' 44.91" S	31° 09' 53.91" E
Corner B	23° 57' 11.21" S	31° 09' 56.12" E
Corner C	23° 57' 57.10" S	31° 10' 25.65" E
Corner D	23° 57' 57.71" S	31° 10' 39.23" E
Corner E	23° 57' 39.55" S	31° 10' 45.23" E
Corner F	23° 57' 27.11" S	31° 10' 41.72" E
Corner G	23° 57' 28.35" S	31° 10' 28.87" E
Corner H	23° 57' 27.96" S	31° 10' 18.08" E
Corner I	23° 57' 09.04" S	31° 10' 23.04" E
Corner J	23° 57' 01.38" S	31° 10' 02.38" E
Corner K	23° 56' 45.24" S	31° 10' 00.71" E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)

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N/A		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

In the case of linear activities:

	Latitude (S):	Longitude E:
Alternative:		
Alternative S1 (preferred)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S2 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

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.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

1.2.2 Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Activity Hub	23° 57' 23.31" S	31° 10' 11.77" E
Backpackers	23° 57' 16.65" S	31° 10' 14.43" E
Entrance Gate Phase 1	23° 56' 48.87" S	31° 09' 56.96" E
Cool Down Area Phase 1	23° 57' 19.13" S	31° 10' 04.59" E
Cooldown Area Phase 2	23° 57' 04.34" S	31° 09' 58.19" E
Public Area Phase 1	23° 57' 07.13" S	31° 10' 04.85" E
Public Area Phase 1 (2)	23° 57' 18.89" S	31° 10' 17.93" E
Public Area Phase 2	23° 57' 44.48" S	31° 10' 31.72" E
Bird Park Phase 1	23° 57' 39.77" S	31° 10' 34.08" E
Bird Park Phase 2	23° 57' 32.05" S	31° 10' 14.88" E
Specific Activities Area Phase 1	23° 57' 41.32" S	31° 10' 24.07" E
Tent Camp	23° 57' 31.40" S	31° 10' 28.83" E
Rhino Orphanage	23° 57' 53.17" S	31° 10' 27.96" E
Heritage Structure	23° 57' 28.94" S	31° 10' 13.66" E
Alternative 1 (Preferred Alternative) include the following advantages:		
<ul style="list-style-type: none"> • Consideration has been given to the layout of infrastructure to ensure minimum disturbance on vegetation as well as on the watercourse. • Where possible infrastructure is placed on degraded areas, keeping vegetation intact enhancing the visual absorption capacity. 		

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- The backpackers, tent camp and Public Area (Braai and Picnic) Phase 2 is situated at least fifty metres (50m) from the river minimising flooding as well as impacts on the river.
- As per the findings of the Heritage Specialist it is ensured that no development will occur within fifty metres (50m) from the Heritage Sensitive area.
- Public Area (Braai and Picnic) Phase 2 has been moved to ensure that it will not contribute to erosion on the site already sensitive thereto.

Alternative 1 (Preferred Alternative) has the following disadvantage:

- In order to ensure minimal vegetation clearance the Rhino Orphanage as well as the Cool Down Areas (Phase 1 & 2) had to be moved closer to the border fence, which can create a visual obstruction to the Hans Merensky Golf Estate.

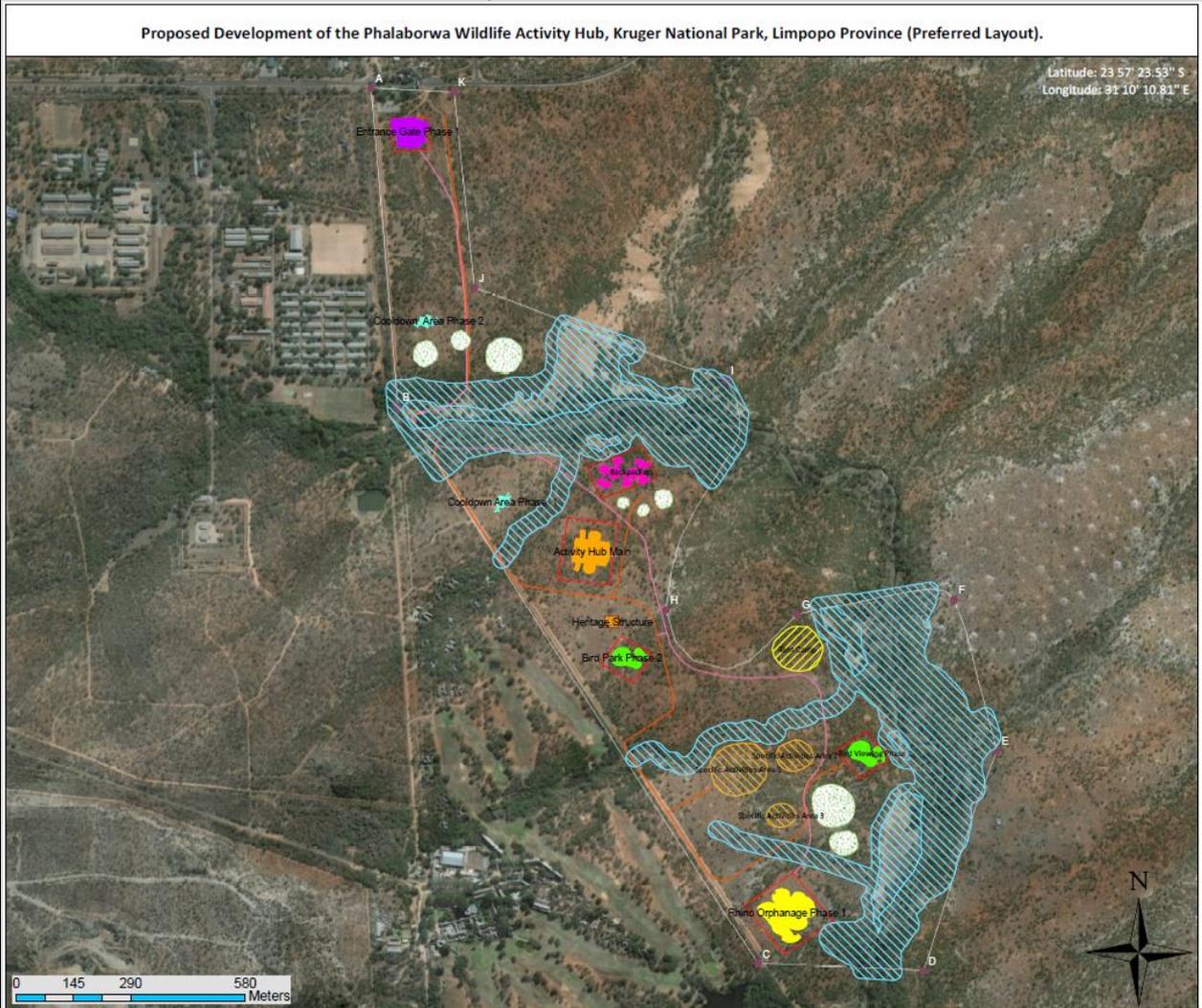


Figure 19: Layout Alternative 1 (Preferred Alternative).

Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Activity Hub	23° 57' 23.31'' S	31° 10' 11.77'' E
Backpackers	23° 57' 13.24'' S	31° 10' 14.31'' E
Entrance Gate Phase 1	23° 56' 48.87'' S	31° 09' 56.96'' E
Cool Down Area Phase 1	23° 57' 17.44'' S	31° 10' 06.96'' E
Cool Down Area Phase 2	23° 57' 09.56'' S	31° 09' 59.30'' E
Public Area Phase 1	23° 57' 19.13'' S	31° 10' 04.59'' E
Public Area Phase 1 (2)	23° 57' 18.26'' S	31° 10' 15.87'' E
Public Area Phase 2	23° 57' 47.98'' S	31° 10' 37.29'' E

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Bird Park Phase 1	23° 57' 40.94'' S	31° 10' 37.20'' E
Bird Park Phase 2	23° 57' 32.21'' S	31° 10' 15.00'' E
Specific Activities Area Phase 1	23° 57' 37.69'' S	31° 10' 26.87'' E
Tent Camp	23° 57' 32.82'' S	31° 10' 34.62'' E
Rhino Orphanage	23° 57' 49.07'' S	31° 10' 27.79'' E
Heritage Structure	23° 57' 28.94'' S	31° 10' 13.66'' E

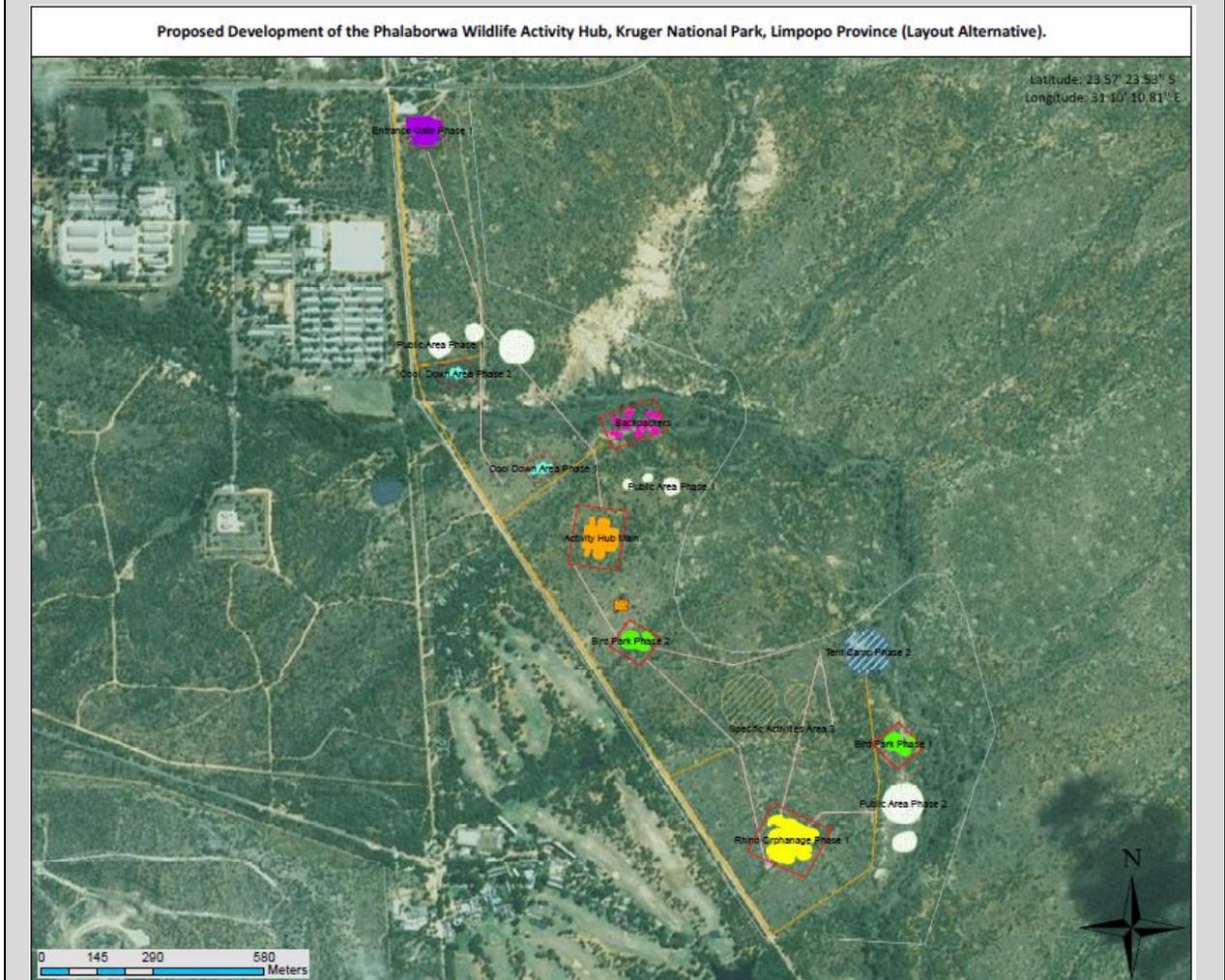
Alternative 2 is considered as a feasible and reasonable layout alternative.

Advantages:

- No infrastructure is situated within close proximity to the border fence, minimising the visual impact of the proposed development.
- The site footprint is one hundred metres (100m) (Point G on the Preferred Layout Alternative Map) smaller than that of layout alternative 1, due to the tent camp being closer to the river.

Disadvantages:

- Vegetation clearance will be higher due to the location of Cool Down Areas (Phase 1 & 2), the Bird Viewing Area (Phase 1), Public Areas (Braai and Picnic Phase 2), Tent Camp, the Backpackers as well as the Rhino Orphanage.
- The Tent Camp, Public Areas (Braai and Picnic Phase 2) and the Backpackers are situated within thirty two metres (32m) of the river enhancing the risk to flooding.
- Public Areas (Braai and Picnic Phase 2) is situated on an area sensitive to erosion.



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Figure 20: Proposed Alternative Layout 2

Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

1.2.3 Technology alternatives

Alternative 1 (preferred alternative)
N/A
Alternative 2
N/A
Alternative 3
N/A

1.2.4 Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (Preferred Design Alternative)
N/A
Design Alternative 2
N/A
Alternative 3
N/A

1.2.5 No-go alternative

The no-go alternative will result in the proposed development not taking place. This will result in the area retaining its natural state as it is situated within a Protected Area. Biodiversity within the area will remain unaltered with no additional wheel traffic within the immediate vicinity of the development footprint.

The town of Phalaborwa currently experiences a low influx of tourists, as the gate is utilised as a stop-over destination and not a holiday destination. The aim of the Activity Hub is to promote tourism in the Phalaborwa area as it will offer a range of activities and not to compete with local industry. The vision of the hub will be to serve as an information centre and a communal area that will inform tourists of other activities within the area and offer tours into the town promoting the local economy. Furthermore, as tourism within the area grows more employment opportunities will arise from the development. Should the development not be approved these advantages will not occur.

The Kruger National Park offer limited overnight facilities near the Phalaborwa Gate with the Imbali Safari Lodge situated thirty kilometers (30 km) towards the north-west, the Letaba Camp forty kilometers (40 km) towards the east and the Njovu Kruger Game Lodge situated thirty kilometers (30 km) towards the south east of the gate. In conjunction with local businesses tourists can enjoy affordable accommodation while enjoying the local culture the community has to offer.

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

1.3 PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative A1¹ (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

Size of the activity:

181 757 m ²
181 757 m ²
N/A

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

Length of the activity:

N/A
N/A
N/A

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

Alternative:

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

Size of the site/servitude:

1 204 521 m ²
1 175 294 m ²
N/A

1.4 SITE ACCESS

Does ready access to the site exist?

YES X	
N/A	

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

Describe the type of access road planned:

N/A

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.

1.5 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:

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

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- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- 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 and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

1.6 LAYOUT/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:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

1.7 SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

1.8 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 report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

1.9 FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 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.

1.10 ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES X	
<p>The KNP is a protected area, with land declared in terms of the NPA (Act No. 57 of 1976) and the NEMPAA (Act No. 57 of 2003). The park has zoned areas (refer to Fig 19), which are based on the analysis and mapping of the sensitivity and value of the park's biophysical, heritage and scenic resource, an assessment of the regional context; and an assessment of the current and planned infrastructure and tourist routes/products, which are all interpreted in the context of park objectives.</p> <p>According to the Kruger National Park Management Plan of December 2008, several zones have been determined within which certain activities are permissible. These include:</p>		

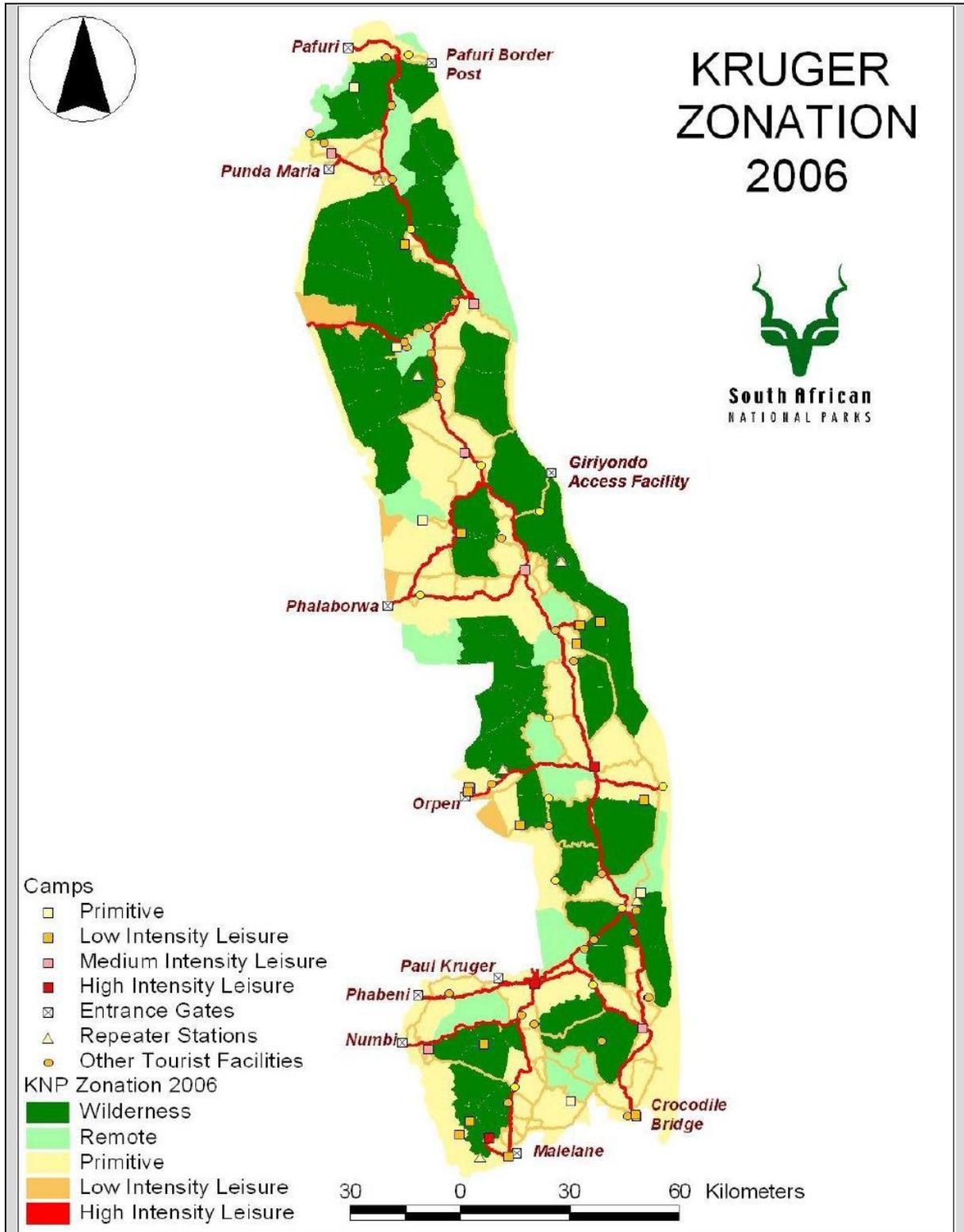


Figure 21: Broad Zonation Plan for KNP.

- **Wilderness Zone:** This is an area retaining an intrinsically wild appearance and character, or capable of being restored to such and which is undeveloped and without roads. The area provides outstanding opportunities for solitude and has awe-inspiring natural characteristics. It complies fully with the criteria for the designation in terms of the Protected Areas Act.
- **Remote Zone:** These areas provide a “wilderness experience”, but do not necessarily

comply with the criteria for legal designation as wilderness. Human impacts from outside the zone may be visible or audible from certain vantage points. There is no mechanised access or facilities within these zones for visitor use.

- **Primitive Zone:** The prime characteristic of the zone is the experience of primitive conditions and wilderness qualities with access controlled in terms of numbers, frequency and size of groups. The zone shares the wilderness qualities of the Remote zone, but with limited access roads and the potential for basic small-scale self-catering accommodation facilities such as bush camps or small concession lodges.
- **Low Intensity Leisure Zone:** These slightly modified landscapes can absorb larger concentrations of people. The underlying characteristic of this zone is motorized self-drive access with the possibility of small camps. Facilities along roads are limited to basic self-catering picnic sites with toilet facilities.
- **High Intensity Leisure Zone:** These areas are high density tourist development nodes with modern amenities, incorporating the high volume transport routes. Activities are concentrated and a range of infrastructure and facilities is on offer, although still reflecting the ethos and character of the park.

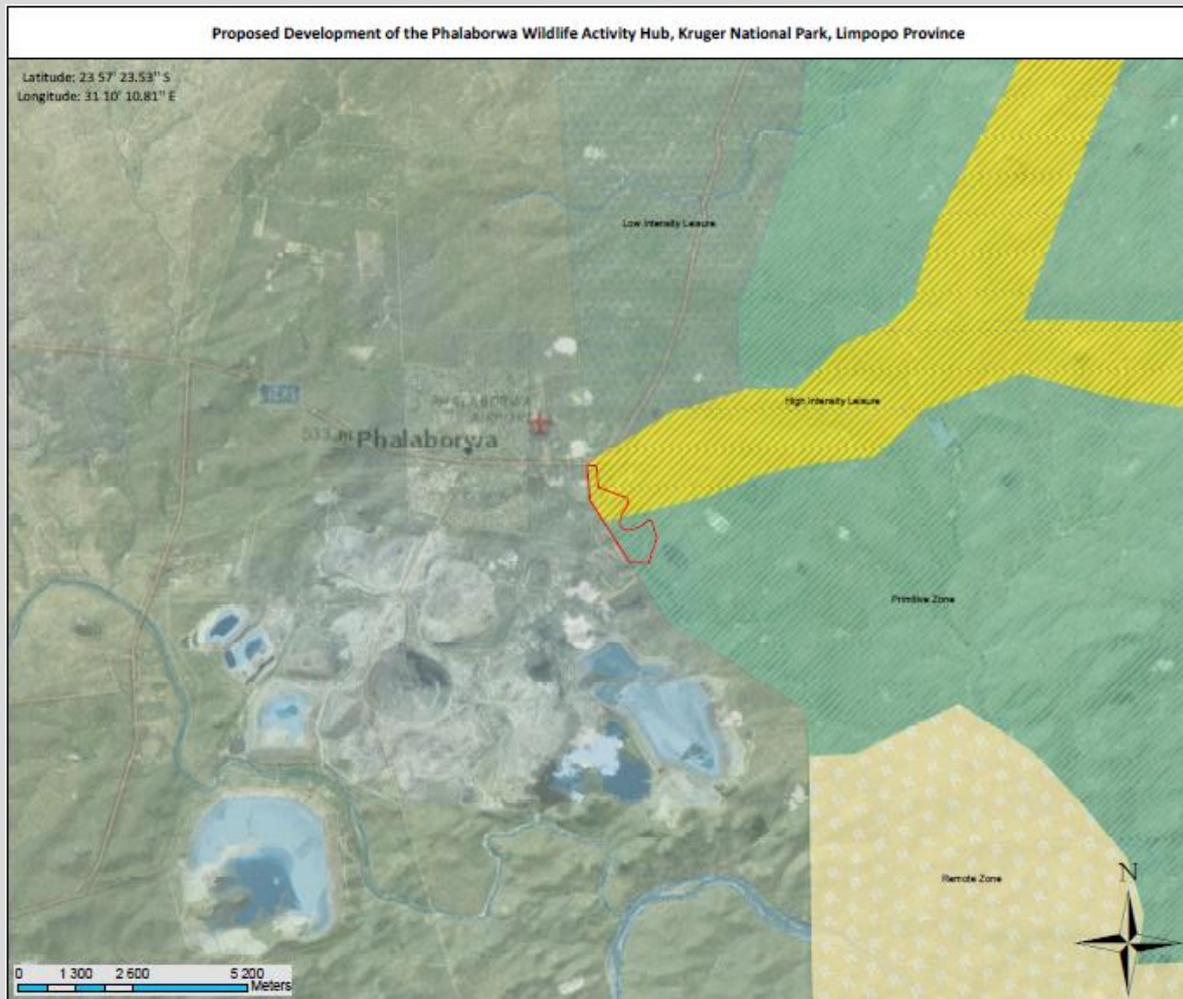


Figure 22: Zoning map of the development area.

The Phalaborwa Wildlife Activity Hub falls within the High Intensity Leisure and Primitive Zones. Although the southern area is situated within the primitive zone, it is adjacent to the border fence in an area which is degraded. The proposed development is therefore permitted in terms of the above mentioned zone and the properties existing land use right.

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2. Will the activity be in line with the following?		
(a) Provincial Spatial Development Framework (PSDF)	YES X	
<p>The proposed project is situated within the Limpopo Province in the town of Phalaborwa. As per the Spatial Development Framework for the Limpopo Province (2007) Local Economic Development which means the creation of local development activities and job opportunities in settlements (specifically higher order or priority nodes) which is likely to stimulate sustainable economic growth is classified as the general development determinants.</p> <p>The proposed development will create job opportunities during the operational phase as well as attract visitors to the Phalaborwa area which will contribute to the economy of the area.</p>		
(b) Urban edge / Edge of Built environment for the area		NO X
<p>The proposed project is situated within the Kruger National Park which is managed by SANParks and falls outside the jurisdiction of the Local Municipality, thus it is situated outside the urban edge of Phalaborwa.</p>		
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES X	
<p>As per the Integrated Development Plan (IDP) for the BA-Phalaborwa Local Municipality 2016/17 – 2017/18, tourism is identified as one of the key economic sectors with the most potential for development. Furthermore, the Municipality acknowledge that tourism facilities play an important role in job creation for youth.</p>		
(d) Approved Structure Plan of the Municipality	YES X	
<p>The proposed project falls within the authority of SANParks, a statutory body of the DEA. It is therefore outside of the mandate of the BA-Phalaborwa Local Municipal structural plans.</p>		
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)		NO X
<p>No Environmental Management Framework could be obtained for the Ba-Phalaborwa Local Municipality or the Mopani District Municipality.</p>		
(f) Any other Plans (e.g. Guide Plan)	YES X	
<p>The Kruger National Park is managed under the guidance of the park management plan (dated December 2008). Key functions of the management plan are to:</p> <ul style="list-style-type: none"> • Ensure that the KNP is managed according to the reason it was declared; • Be a tool to guide management of a protected area at all levels, from basic operational level to the Minister of Environmental Affairs; • Be a tool which enables the evaluation of progress against set objectives; • Be a document which can be used to set up key performance indicators for Park staff; and, • Set the intent of the Park, and provide explicit evidence for the financial support required 		

for the Park.

Furthermore, the plan also describes the status quo, zoning, the park expansion strategy and identified programmes and projects (refer to **Appendix A5** for the KNP Zoning Map).

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?

YES
X

The proposed development falls outside the mandate of the municipalities' planning framework, as it is situated within the KNP, a national statutory conservation body. The park zoning scheme illustrates that the proposed development is situated on the border of two zoning areas of the KNP. Despite not considering the Phalaborwa Activity Hub within the plan, tourism growth was identified as a project objective of the Ba-Phalaborwa Local Municipality IDP.

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)

YES
X

The proposed Phalaborwa Wildlife Activity Hub is seen as destination enhancement project by the Department of Tourism. The Ba-Phalaborwa Local Municipality currently has an unemployed figure of 37.4% (Statistics SA). The community and the area needs the activity as it will contribute to job creation, Local Economic Development and Education/skill development. The idea is that the Activity Hub serves as a gathering point from where services will extend into the Town of Phalaborwa, raising the economy of the town. The image below illustrates the possible tours into the town of Phalaborwa.

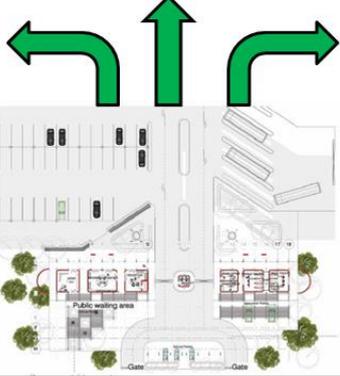
Background and Discussion

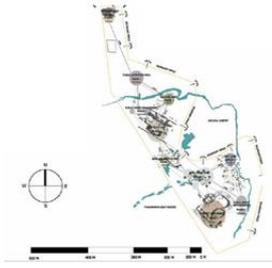


➔

Outside:

- Game viewing
- Day tours (to various destinations)
- Cultural tours
- Shebeen visits
- Mine tours
- Local crafts
- Micro light flights from the airport








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<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	<p>YES X</p>	
<p>Awaiting confirmation from the Local Municipality.</p>		
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>		<p>NO X</p>
<p>The proposed development will take place outside the jurisdiction of the municipality, and as such, infrastructure planning of the municipality will not need consideration. Furthermore, development needs of the Local Municipalities are concentrated around urban areas which compromise the small town within the region.</p>		
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>YES X</p>	
<p>The proposed development in part, aligns with the fourth programme of the National Department of Tourism (NDT) 2015/2016 – 2019/2020 Strategic Plan. A strategic objective of this is to implement tourism growth and development strategies to increase tourism’s contributions to inclusive economic growth. The proposed development would contribute to job creation within the town of Phalaborwa as well as attract more visitors to the Kruger National Park and surrounding areas, contributing to the income of the area.</p>		
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p>YES X</p>	
<p>SANParks identified the need for Activity Hubs following a strategic planning session where it was agreed that such hubs could optimise income to SANParks. However, it was agreed that such Hubs should be located on the periphery of the park as this is in line with certain strategies but also addresses some of the social staffing aspects. Phalaborwa was identified as an optimal location whereby both the town and parks visitors would be able to use the Hub. Areas to the north and south of the existing Phalaborwa gate were considered but the existence of the staff housing to the north made the south a more viable option.</p>		
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES X</p>	
<p>As the proposed project is situated within the boundary of a National Park the best practicable environmental option would be to leave the development area as is. However, taking into account factors such as design measures, the Kruger National Park Management Plan (site location), local economic development due to an escalation of tourists, job creation and the degraded state of the development area, the proposed development may be considered as a favourable development.</p>		

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The Wildlife Activity Hub will be managed by SANParks and if adherence is given to mitigation measures set out in the Impact Assessment Report and the Environmental Management Plan the impact on the receiving environment will be reduced significantly.		
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES X	
Benefits associated with the proposed development include an increase in tourism potential for the area on a local, provincial, national and international level. Findings of the ecological, archaeological and paleontological studies determined that impacts after mitigation would range between low and medium. If this is compared to the high tourism potential as described above, the benefits of the proposed development outweighs the negative impacts thereof.		
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?		NO X
The development is situated within the boundaries of a national park and as such, does not influence development activities in the Local Municipality as it is managed by SANParks.		
12. Will any person's rights be negatively affected by the proposed activity/ies?		NO X
The proposed development is situated within the boundaries of a national park, managed by an employed staff contingent. Given that no communities reside in the park other than staff, this will not be a concern. Furthermore, the proposed activities would be in the interest of the park and accommodated persons, as identified in the management plan. A comprehensive Public Participation Process will be undertaken to ensure that all concerns raised from adjacent landowners as well as the public are adequately addressed.		
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		NO X
The proposed project is situated within the boundaries of a national park which does not fall within the jurisdiction of the Ba-Phalaborwa Local Municipality, thus the urban edge is not applicable.		
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?		NO X
N/A		
15. What will the benefits be to society in general and to the local communities?	Please explain	
The proposed development of the Wildlife Activity Hub would benefit society through job creation, skill development/education and Local Economic Development. The proposed project is situated in close proximity to the town of Phalaborwa thus increasing money spent in the area. The idea is that the Activity Hub serves as a gathering point from where services will extend into the Town of Phalaborwa, raising the economy of the town.		

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16. Any other need and desirability considerations related to the proposed activity?	
None	
17. How does the project fit into the National Development Plan for 2030?	
The National Development Plan for 2030 recognises tourism investment as a mechanism for building and inclusive rural economy. This action is suited towards building sustained growth as the pooling of resources through investment, would diversify the range of recreational, adventure, cultural and other attractions, thus resulting in a robust and inclusive industry for all to benefit from. The proposed development aligns with this attribute NDP goal.	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
Through the undertaking of a Basic Assessment Process by a competent EAP, informed by guidelines, the consideration of impacts and alternatives (advantages and disadvantages coupled thereto) has been made. Moreover, the conducting of public participation and specialist investigations form part of the process, whilst mitigation measures and the need and desirability of the proposed project were interrogated. This ensured that all provisions of the Act were considered and as such Integrated Environmental Management were accounted for.	
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
<p>Through the undertaking of a Basic Assessment process by a competent EAP, informed by guidelines, the consideration of impacts and alternatives (advantages and disadvantages coupled thereto) has been made. Moreover, the conducting of a public participation process and specialist investigations formed part of this basic assessment process, whilst mitigation measures and the needs and desirability of the proposed project were interrogated. This ensured that all provisions of the Act were considered and as such integrated environmental management were accounted for as follow:</p> <p><i>(2) Environmental Management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural heritage and social interests equitably.</i></p> <p>The goal of this BA is to identify and mitigate potential socio-economic impacts in order to meet the terms of Section 24 of the Constitution.</p> <p><i>(3) Development must be socially, environmentally and economically sustainable.</i></p> <p>The overall goal of this BA is to predict, identify and manage potential positive and negative impacts in the socio-economic, cultural-heritage and biophysical environments in order to meet the needs of present generations without compromising the needs of future generations which will give effect to sustainable development.</p> <p><i>(4)(a) Sustainable development requires the consideration of all relevant factors including the following:</i></p> <ul style="list-style-type: none"> <i>i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</i> <i>ii. that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</i> <i>iii. that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and</i> 	

remedied;

- iv. that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner;*
- v. that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
- vi. that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
- vii. that a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and,*
- viii. that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*

An Environmental Management Program Report (EMP-r) was compiled to mitigate and manage all activities during the planning, construction and operational phases.

(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

All aspects, including socio-economic, cultural-heritage and biophysical was evaluated and assessed in order to minimise potential negative impacts which will give effect to Integrated Environmental Management, as set out in Chapter 5 of NEMA, 1998.

(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

A Public Participation Process (PPP) will be undertaken in terms of Section 41 of the NEMA EIA Regulations (GN R. 982), which came into effect on 4 December 2014, in order to give effect to Section 32 of the Constitution in such a way that adherence is given to Section 24 of the Constitution.

(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

This will be taken into account during the operational phase of the activity.

(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

The EMPr will be applicable throughout the lifecycle of the project.

(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

A PPP will be undertaken in terms of Section 41 of the NEMA EIA Regulations (GN R. 982), which came into effect on 4 December 2014, in order to give effect to Section 32 of the Constitution in

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such a way that adherence is given to Section 24 of the Constitution.

(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.

The Department of Environmental Affairs (DEA) decision making process has to be in accordance with the above.

(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

Where feasible efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. Furthermore, the proposed project will contribute to community education as well as raise environmental awareness through information boards.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

This BAR does give effect to Section 5 of NEMA whereby all social, economic and environmental impacts of activities were considered, assessed and evaluated.

(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.

Human rights will be taken into account during all phases of the proposed project.

(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.

The decision will take place in an open and fair manner and give effect to Section 32 of the Constitution. I&AP's will be notified of the decision in terms of the requirements as set out in Section 41 of the NEMA EIA Regulations (GN R. 982), 2014.

(l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.

All Governmental Authorities will be considered during the BA process to provide their inputs on the project.

(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.

Actual or potential conflicts of interest between organs of state should/will be resolved through conflict resolution procedures.

(n) Global and international responsibilities relating to the environment must be discharged in the national interest.

The Phalaborwa Wildlife Activity Hub is a proposed tourist attraction within the KNP, which is situated in the southern portion of the Limpopo Province. SANParks is the mandated institutional entity responsible for the management of conservation and tourism within the KNP and whose operational responsibility it will be to manage the Phalaborwa Wildlife Activity Hub in a sustainable manner. Accordingly, global and international responsibilities relating to the environment will be discharged in the national interest.

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(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

Through the appointment of various specialists, mitigation measures have been drawn up to ensure that the proposed project does not harm the environment. Architectural plans were designed according to South African Norms and Standards. An Ecologist as well as a Heritage Specialist were appointed to provide the EAP with mitigation measures to ensure impacts remain as low as possible.

(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.

An EMPr was compiled in order to prevent or minimise any potential negative impacts to the environment. It will be the responsibility of the Applicant and Contractor to adhere to all measures set out in the EMPr, in order to give effect to Section 28 (1) of NEMA.

(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

The recruitment selection process should seek to promote gender equality and the employment of woman wherever possible, particularly for less labour intensive work.

(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

A Sensitivity map containing all vulnerable vegetation, watercourses and ecosystems were prepared in order to determine that the proposed project will have no negative impact thereon. An Ecologist was appointed to conduct a study to determine the impacts on vegetation, wetlands and streams. All mitigation measures provided to the EAP are included within the EMP'r (Please refer to **Appendix G: EMP'r**).

1.11 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:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act, 1998 (Act No. 107 of 1998)	The NEMA is the foremost legislative framework for Environmental Management in South Africa. It is through the NEMA, that the EIA Regulations are presented.	National Department of Environmental Affairs (DEA)	1998
Environmental Impact Assessment Regulations (GN R. 982, R. 983 & 985) of 4 December 2014, as amended	The proposed project triggers listed activities as listed in GN R. 983 & 985.	National Department of Environmental Affairs (DEA)	2014
National Environmental Management Protected Areas Act, 2003 (Act No. 57)	The Kruger National Park is listed as a Protected Area.	National Department of Environmental Affairs (DEA)	2003

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of 2003)			
National Water Act, 1998 (Act No. 36 of 1998)	Section 21 of the NWA lists several water uses for which water use license applications are required in terms of the NWA. A General Authorisation must be obtained from DWS for constructing within 32 metres of a watercourse.	Department of Water and Sanitation (DWS)	1998
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The development area will exceed five thousand square metres (5000m ²).	South African Heritage Resources Agency	1999
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Protected plant species were observed within the development footprint. An Application must be submitted to DEA for the translocation of plant species.	National Department of Environmental Affairs (DEA)	2004
National Veld and Forest Fire Act, Act No. 101 of 1998	The purpose of the NVFFA is to prevent and combat veld, forest and mountain fires throughout the Republic. As such, fire prevention as an aspect of the EMPr must be accounted for.	Department of Agriculture, Forestry and Fisheries.	1998
South African National Biodiversity Institute Geographical Information Systems	BGIS is an online portal used for the distribution of Biodiversity Data for each province within South Africa.	National Department of Environmental Affairs (DEA)	2017
Kruger National Park: Management Plan	Park contains different zoning areas and these indicate which developments are allowed where.	SANParks	2008
BA-Phalaborwa Local Municipality Integrated Development Plan	The project is situated within the BA-Phalaborwa Local Municipality. It must be ensured as far as possible that the proposed development is in Line with the IDP.	BA-Phalaborwa Local Municipality	2016/17 – 2017/18
Limpopo Province Provincial Spatial Development Framework.	The proposed development is situated within the Limpopo Province.	Local Government of the Limpopo Province	2007
South Africa National Development Plan for 2030	Within the National Development Plan certain Sectors are described responsible for ensuring the LED of South Africa.	National Planning Commission	2030

1.12 WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

1.12.1 Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	
X	
T.B.C	

If YES, what estimated quantity will be produced per month?

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

Recycling will take place on site as per the waste classification system. All recyclable material will be disposed of at a Local Recycler. All non-recyclable waste will be disposed of at the Phalaborwa Landfill site.

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

Waste will be disposed of at the Phalaborwa Landfill site, which is classified as a G:S:B- landfill. The registration number of the landfill is 16/2/7/M200/D1/Z1/P276.

Will the activity produce solid waste during its operational phase?

YES	
X	
T.B.C	

If YES, what estimated quantity will be produced per month?

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

Recycling will take place on site as per the waste classification system. All recyclable material will be disposed of at a Local Recycler. All non-recyclable waste will be disposed of at the Phalaborwa Landfill site.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Waste will be disposed of at the Phalaborwa Landfill site, which is classified as a G:S:B- landfill. The registration number of the landfill is 16/2/7/M200/D1/Z1/P276.

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

N/A

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 competent authority 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 NEM:WA?

	NO
	X

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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Is the activity that is being applied for a solid waste handling or treatment facility?

	NO
	X

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

1.12.2 Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

	NO
	X

If YES, what estimated quantity will be produced per month?

N/A

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

	NO
	X

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.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

	NO
	X

If YES, provide the particulars of the facility:

Facility name:

Contact

person:

Postal

address:

Postal code:

Telephone:

E-mail:

N/A		
	Cell:	
	Fax:	

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

N/A

1.12.3 Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

	NO
	X

If YES, is it controlled by any legislation of any sphere of government?

	NO
	X

If YES, the applicant must 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 will be generated by the proposed project.

1.12.4 Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

	NO
	X

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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

1.12.5 Generation of noise

Will the activity generate noise?

YES X	
	NO X

If YES, is it controlled by any legislation of any sphere of government?

Describe the noise in terms of type and level:

Noise will be generated during the construction phase due to the following:

- The establishment of a site camp;
- Movement of construction vehicles on site;
- Presence of construction personnel working on site; and,
- Delivery of construction material.

Noise will be generated during the operational phase due to the following:

- Presence of personnel and tourists;
- Entertainment from the amphitheatre; and,
- Movement of vehicles and golf carts on site.

1.13 WATER USE

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

Municipal X	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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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:

N/A	
YES X	

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

1.14 ENERGY EFFICIENCY

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

Three hundred watt solar panels will be installed to lighten the electrical load on the Local Municipality (Please Note: The final position need to be determined).

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

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The proposed development will make use of solar power as well as wind power. It will be connected to the electricity grid as a backup system to feed any deficiencies that might occur.

2 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 B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. 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	
X	

If YES, please complete the form entitled “Details of specialist and declaration of interest” for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:	Province	Limpopo Province
	District Municipality	Mopani District Municipality
	Local Municipality	BA-Phalaborwa Local Municipality
	Ward Number(s)	Ward No. 12
	Farm name and number	Kruger National Park North No. 449
	Portion number	-
	SG Code	TOMT 0000 0000 0449 00000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:	National Park (Protected Area)
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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?

	NO
	X

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2.1 GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20 X	1:20 – 1:15 X	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20 X	1:20 – 1:15 X	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2.2 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 2.10 At sea	2.4 Closed valley 2.5 Open valley 2.6 Plain	2.7 Undulating plain / low hills 2.8 Dune 2.9 Seafront
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2.3 GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	NO X	NO X	YES	NO
Dolomite, sinkhole or doline areas	NO X	NO X	YES	NO
Seasonally wet soils (often close to water bodies)	YES X	YES X	YES	NO
Unstable rocky slopes or steep slopes with loose soil	NO X	NO X	YES	NO
Dispersive soils (soils that dissolve in water)	NO X	NO X	YES	NO
Soils with high clay content (clay fraction more than 40%)	NO X	NO X	YES	NO
Any other unstable soil or geological feature	YES X	YES X	YES	NO
An area sensitive to erosion	YES X	YES X	YES	NO

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

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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.

2.4 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).

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

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 (Please refer to **Appendix D1: Ecological Impact Assessment**).

2.5 SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES X	
Non-Perennial River	YES X	
Permanent Wetland		NO X
Seasonal Wetland		NO X
Artificial Wetland		NO X
Estuarine / Lagoonal wetland		NO X

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The following information has been extracted from the Geo-Hydrological Impact Assessment. A total of 8 non-perennial rivers were mapped to intersect the proposed development.

1. River 1/Tshutshi

The Tshutshi River, also referred to as River 1, was thoroughly investigated during the site visit. This river is originally mapped as a non-perennial river but has taken on perennial river characteristics. This is due to continuous effluent pumped into River 1 from an upstream WWTW.

Surface water was recorded to flow during the site visit, outside of the rain season at an estimated rate of bigger than ten litres per second (10 L/s). Water chemistry was recorded with an electrical conductivity concentration of eighty milliSiemens per meter (80 mS/s), a TDS of five hundred and sixty parts per million (560 ppm) and a pH of nine (8.93) at twenty one degrees (21.2 °C). These concentrations are considered as moderately altering to the receiving environment.

A large surface area of River 1 appears dry in the southern section of the study area. This is due to water flow seeping beneath the soil surface and continuing as subsurface flow. It is recommended that the culverts at the intersecting bridge be adapted for new increased flow volumes at River 1. Severe geomorphology degradation/erosion occur at downstream locations of River 1. River 1 regarded as having a PES rating of C (moderately modified) ranging on D (largely modified).

2. River 2

River 2 is observed to flow over a gravel road from the west, into the study area in an east direction. Apart from accumulated loose sand, this river does not appear to have a distinctive watercourse which varies from ten meters (10 m) to twenty meters (20 m) in width. Increased erosion is visible within the watercourse at localised areas.

River 2 is regarded as having a PES rating of B (largely natural).

3. River 3

River 3 appears in a good natural condition with a prominent watercourse and riverbed alluvial soil. River 3 is regarded as having a PES rating of A (natural/unmodified).

4. River 4

While River 4 has a moderately defined watercourse, this river is not expected to receive high flow volumes even during rainy seasons. Vegetation is seen growing within the river course. River 4 is regarded as having a PES rating of A (natural/unmodified).

5. River 5

River 5 has increased grass vegetation of the western border of the study area. This is expected to be caused by increased fertilizer concentrations in surface water used at the adjacent golf course. This may also be attributed by leaching of sub-surface water from the upstream water collection dam. This watercourse is expected to receive increased volumes of surface water flow from time to time depending on water control from the adjacent golf course and seasonal rainfall rates and volumes. Increased salt and mineral precipitation can be seen west of the study area's border, within the watercourse.

Geomorphological erosion is seen within this watercourse downstream of the gravel road. This erosion is seen to be increased by geological weathering caused by the mapped and observed geological dyke intrusions. River 5 is regarded as having a PES rating of B (largely natural).

6. River 6

River 6 does not have a prominent distinctive watercourse. Dense vegetation can be seen growing throughout the entirety of this river watercourse. While river 6 is regarded as having a PES rating of A (natural/unmodified), this river does not show evidence of contributing a high significance to the present hydrological system.

7. River 7

No evidence of alluvial soil or riparian vegetation was observed to suggest the presence of a watercourse or river at mapped River 7. Therefore no PES could be determined for this site as a river watercourse.

8. River 8

It is expected that the watercourse that was mapped as River 8, is not a natural river. Although this river has an accumulated riverbed alluvial soil, this river was in all likelihood constructed during the same time as the adjacent gravel road. This is motivated by the manmade river bank/wall on the northern border of River 8. This watercourse serves as a storm water flow diversion from the gravel road.

River 8 is regarded as having a PES rating of D (largely modified). River 8 does not appear to have an effect on the surrounding eco-system but serves a practical stormwater control function.

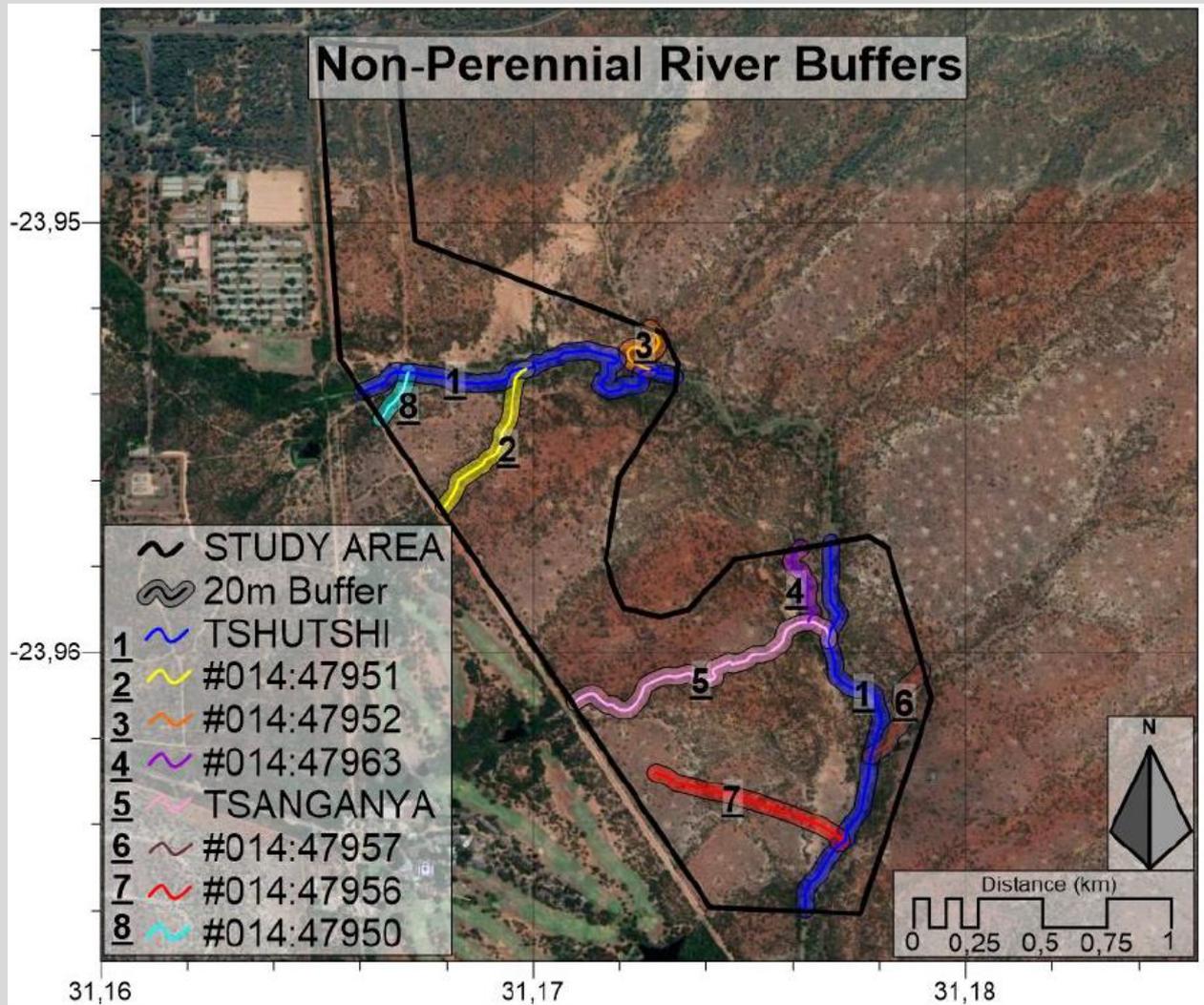


Figure 23: Rivers identified to intersect the study area.

2.6 LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that 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:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation

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Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	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? Specify and explain:

The Phalaborwa Airport might experience an increase in tourists visiting the Wildlife Activity Hub. If the proposed develop increase tourist attraction to the area, South African Airways can decide to add another flight to Phalaborwa (two flights currently a day). However; even with another flight added the airport has the capacity to accommodate the passengers. The proposed development will not have an impact on flight plans.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES X	
Core area of a protected area?	YES X	
Buffer area of a protected area?	YES X	
Planned expansion area of an existing protected area?		NO X
Existing offset area associated with a previous Environmental Authorisation?		NO X
Buffer area of the SKA?		NO X

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

2.7 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 paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES
X

Kruger National Park has produced several archaeological sites that range from the early Stone Age period and rock art to more recent Iron Age settlements and historical structures. The Phalaborwa region in particular, contains rich bodies of copper and iron ores and archaeologists had the opportunity to investigate the extensive indigenous copper mines at Phalaborwa before their destruction by modern mining. Copper as well as iron ores have been worked, discontinuously, for the past 1200 years by a succession of people representing three different archaeological complexes, namely the Loole, Sekgopo (which includes the iron ore production site at Masorini Hill), and Ga-Masisimale complexes. The settlements of the Loole site complex are associated with hills and are disturbed around the modern town of Phalaborwa with its eastern boundary represented by the border between the Kruger National Park and the town, which also includes the study area. The densest concentrations of sites occur on the farms Schiettocht and Loole with two settlements, namely, Kgopolwe and Sealeng hills, declared National Monuments.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

Dr Lloyd Russouw from the Bloemfontein National Museum conducted the field assessment on 11 October 2016. The following sections are extracted from the Heritage Impact Assessment.

Field Assessment

Several isolated stone tools were observed during the pedestrian survey and occurred derived as surface scatters. The artefacts are largely represented by informal tools such as chunks, flake blades, irregular flakes and small to medium-sized cores comparable to LSA stone tool industries. The material occurs widespread, but in very low densities across the study area and cannot be regarded as significant in terms of intact Stone Age open sites. A large area associated with ancient metal production has been identified in the area demarcated for the construction of the Bird and Reptile Park Phase 2, and includes the remains of a clay furnace and associated slag located within a 500 m² area. The furnace is located near the eastern periphery of what is designated the Shankare Hill settlement group within the Loole site complex. Radiocarbon dates from household debris from one of the middens at Shankare Hill provided a 17th to a 19th century date but settlements belonging to the Loole site complex, also had deposits of earlier phases of Iron Age occupation (900-1300 AD). Most of these settlements were associated with hills and their ruins occur on the slopes and on the flat areas immediately below the hills, which could also include the area designated Bird and Reptile Park Phase 2.

Impact Statement and Recommendations

The area designated Bird and Reptile Park Phase 2 is considered to be of high archaeological significance and is assigned a site rating of Local Significance Grade 3B with the recommendation that the furnace and associated remains should be retained and protected. The rest of the study area is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C. Given the nature of the proposed development, preservation and excavation (for display) of the furnace and associated remains will enhance the educational aspects of the activity hub.

It is advised that:

- The furnace area is protected and declared a no-go area until the developer appoints a

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suitably qualified archaeologist to conduct a Phase 2 archaeological assessment of the terrain and to draw up a heritage management plan for the site;

- The appointed archaeologist applies for a valid permit from SAHRA to excavate the furnace for display and educational purposes.

Will any building or structure older than 60 years be affected in any way?

YES	
X	
YES	
X	

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

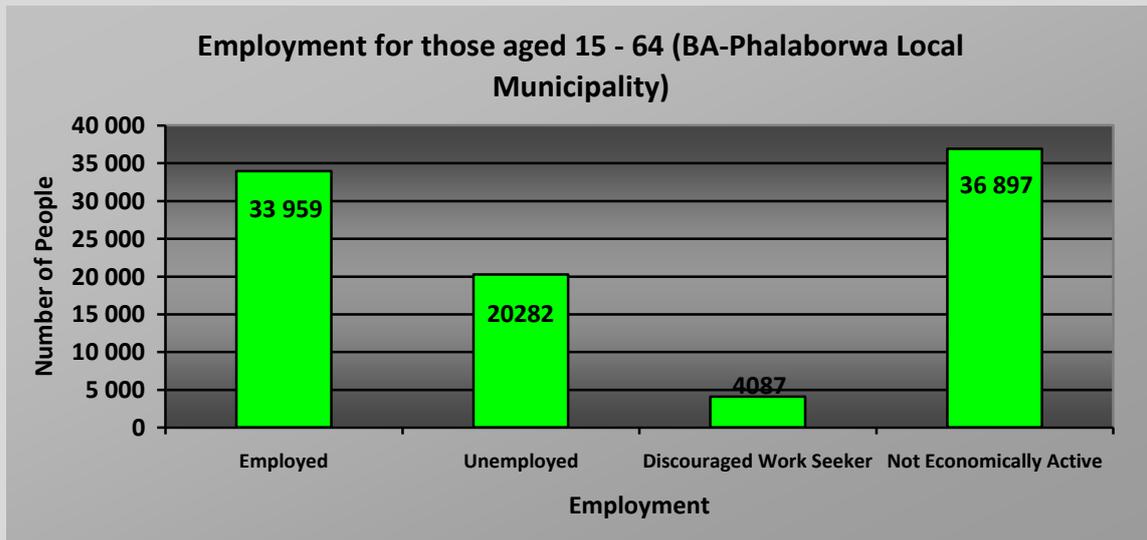
2.8 SOCIO-ECONOMIC CHARACTER

2.8.1 Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

A total of 20 282 (37.4%) individuals of the community within the BA-Phalaborwa Local Municipality are unemployed, while 33 959 (62.6%) of the community are employed.

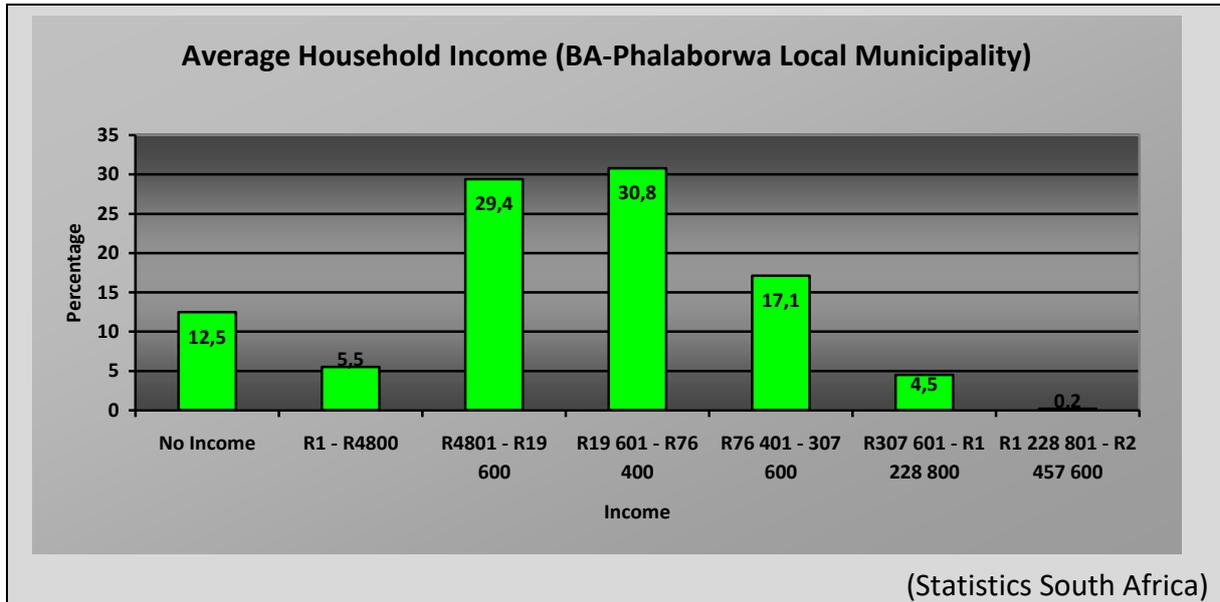


(Statistics South Africa)

Economic profile of local municipality:

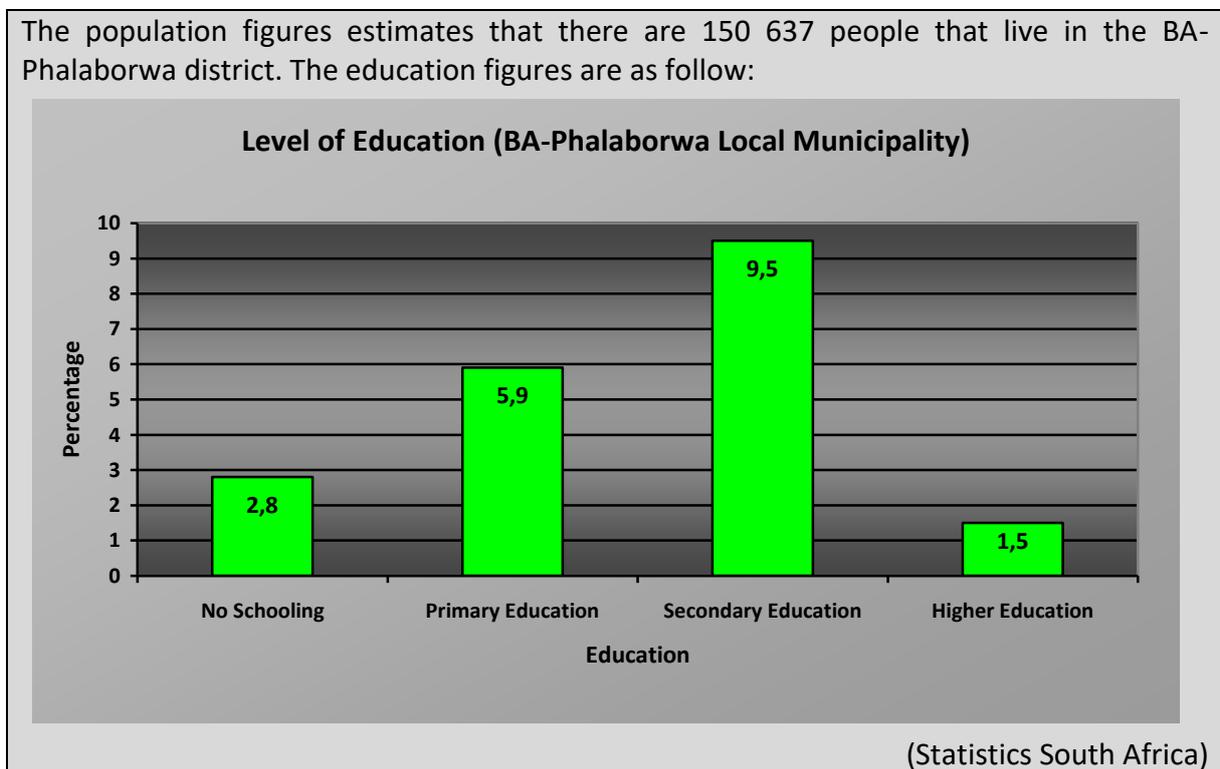
The Economic Profile of BA-Phalaborwa Local Municipality is summarized below.

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Level of education:

The population figures estimates that there are 150 637 people that live in the BA-Phalaborwa district. The education figures are as follow:



2.8.2 Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

R 15 000 000.00	
R 2 000 000.00	
	NO X
	NO X

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How many new employment opportunities will be created in the development and construction phase of the activity/ies?	6 SMME companies to benefit during construction.
What is the expected value of the employment opportunities during the development and construction phase?	T.B.C
What percentage of this will accrue to previously disadvantaged individuals?	6 SMME companies to benefit during construction.
How many permanent new employment opportunities will be created during the operational phase of the activity?	100
What is the expected current value of the employment opportunities during the first 10 years?	R 66 000 000.00
What percentage of this will accrue to previously disadvantaged individuals?	80%

2.9 BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

2.9.1 Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category		If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	<p>The proposed project falls within the Kruger National Park, and is classified as a Protected Area (National Park).</p> <p>As per the guidelines for bioregional plans protected areas are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses (Du</p>

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			Preez, 2016).
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2.9.2 Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	60%	As the area falls within a Protected Area the vegetation mostly compromise of indigenous species with three protected species occurring within the development footprint.
Near Natural (includes areas with low to moderate level of alien invasive plants)	15%	The largest concentration of alien plant species is along the road reserve, located along the western boundary of the project site, where species such as <i>*Argemone mexicana</i> , <i>*Datura stramonium</i> <i>*Tagetes minuta</i> , <i>*Bidens bipinnata</i> and <i>*Conyza bonariensis</i> could invade the area.
Degraded (includes areas heavily invaded by alien plants)	24%	Due to the draught experienced in 2016 a few areas had very little to no vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	1%	A service road currently exists along the fence bordering with the Hans Merensky Golf Course.

2.9.3 Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems					
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical X	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)		Estuary		Coastline	
				YES X	NO X	NO X	

2.9.4 Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

VEGETATION OVERVIEW

It was found that the vegetation of the project site is strongly related to the Phalaborwa-Timbavati mopaneveld as described by Mucina & Rutherford (2006). Small variations especially in terms of the dominant grass species and drainage line species occur throughout the site. Moisture regime, geology and the soil forms appear to be the driving force between the variations found between the different units.

Three different plant communities occur within the project site. The one covers the majority of the surface area and is dominated by dry savanna species and can be described as:

a) COLOPHOSPERMUM MOPANE – PELTOPHORUM AFRICANUM SAVANNA COMMUNITY

This is a typical dry savanna community which occurs on deeper sandy soils of the crest and slopes of the elevated areas. The ground layer is dominated by grasses such as *Andropogon gayanus*, *Hyperthelia dissoluta*, *Aristida congesta*, *Eragrostis lehmanniana*, *Schmidtia pappophoroides* and *Tricholaena monachne*. The tree *Colophospermum mopane* entirely dominates the tree layer. Other trees present are *Combretum imberbe*, *Phyllonoptera violacea*, *Combretum collinum*, *Combretum hereroense*, *Peltophorum africanum*, *Pappea capensis*, *Searsia leptodictya*, *Terminalia sericea*, *Acacia exuvialis*, and shrubs such as *Grewia bicolor*, *Grewia hexamita* and *Euclea divinorum*. The ground layer is dominated by *Cenchrus ciliaris*, *Aristida congesta* and *Dactyloctenium aegyptium*. The species richness is quite high with about 33 species noted.

Red List and protected plant species noted during the survey in this community:

No Red Data species were noted during the site survey. However three conservation worthy species were noted within the project site namely:

- *Boscia albitrunca* (LC)(Protected tree in terms of the Forest Act)
- *Combretum imberbe* (LC)(Protected tree in terms of the Forest Act)
- *Phyllonoptera violacea* (LC)(Protected tree in terms of the Forest Act)

Ecosystem Function:

- Grazing and browsing;
- Niche habitats for fauna – providing sheltered burrows and nesting sites, hence the high presence of fauna observed on and around these areas;
- Niche habitats for specific flora species;
- Micro-climate is created by the grasses housing species sensitive to direct sunlight or frost.

There should be a pre-construction walk-through of the development footprint in order to locate individuals of protected species which would have to be removed. Species of conservation concern must be located and relocated to a suitable and similar habitat where these plants can grow without any disturbance.

b) DIOSPYROS MESPILIFORMIS – EUCLEA DIVINORUM RIPARIAN COMMUNITY

This community is limited to the banks of the streams which drain the site. The dominant tree is *Diospyros mespiliformis* and the shrubs *Euclea divinorum*, *Gymosporea senegalensis*, *Phyllanthus reticulatus*, *Fluggea virosa*, *Grewia flavescens*, *Acacia exuvialis*, *Cissus cornifolia* and *Maerua angolensis*. The ground layer is dominated by grasses such as *Andropogon gayanus*, *Hyperthelia dissolute*, *Aristida congesta* and *Eragrostis lehmanniana*.

Red List and protected plant species noted during the survey in this community:

No Red Data species were noted during the site survey. However two conservation worthy species were noted within the project site namely:

- *Combretum imberbe* (LC)(Protected tree in terms of the Forest Act)
- *Philenoptera violacea* (LC)(Protected tree in terms of the Forest Act)

Ecosystem Function:

- Grazing and browsing;
- Niche habitats for fauna - providing sheltered burrows and nesting sites, hence the high presence of fauna observed on and around these areas;
- Niche habitats for specific flora species;
- Micro-climate is created by the grasses housing species sensitive to direct sunlight and frost.

There should be a pre-construction walk-through of the development footprint in order to locate individuals of protected species which would have to be removed. Species of conservation concern (e.g. bulbs) must be located and relocated to a suitable and similar habitat where these plants can grow without any disturbance.

c) DACTELOCTENIUM AEGYPTIUM – SPOROBOLUS NITENS SODIC SITE

The sodic site is a sensitive area and is unique in the sense that its soil has a relatively high pH and salt content. This means that only species which can tolerate these habitat conditions would grow on the sodic site. Typical species present on these sites are the grasses *Sporobolus nitens*, *Dactyloctenium aegyptium*, the forbs *Kyphocarpa angustifolia*, *Sida rhombifolia*, and *Schkuhriapinnata*. During the winter months and droughts these areas are barren which makes it prone to erosion.

d) ALIEN INVASIVE PLANTS (AIPs) CONFIRMED DURING THE SURVEY

The project site is relatively clean of alien species. The only ones noted were *Opuntia stricta*, *Argemone Mexicana* and the climber *Cocculus hirsutus*.

e) IMPACTS ON EPHEMERAL TRIBUTARIES AND OTHER WATER BODIES

A few ephemeral streams occur on site. The one has been transformed into a more perennial stream because of the effluent that flows from the Phalaborwa sewage works into the stream. Pollutants from the construction and operation of the proposed activity hub might end up in these seasonal streams. From here the downstream aquatic systems might also be affected. However

the impact caused by the sewage effluent is already causing major problem on the Kruger National Park side.

A recommendation to prevent pollutants from the proposed activity hub, especially at the rhino orphanage, from entering the stream is to construct a berm which can protect the stream by containing the storm water runoff from the various nodi. By implementing mitigation measures, including the construction of a berm to prevent the contaminated stormwater from entering the stream, the impacts on the stream can be reduced significantly.

CONCLUSION

In terms of the project in relation to the Phalaborwa-Timbavati mopaneveld and the Kruger National Park the proposed project site is very small and the planned nodi of the activity hub are placed in such a way that it has the minimum impact on the natural vegetation. All large trees will be kept and the construction will accommodate as many of these trees as possible. The proposed development will also be outside the riparian vegetation as well as the sodic site. There are thus no area too sensitive to develop

The terrestrial vegetation present on the project site is natural veld which is in a semi-degraded condition due to some overgrazing and drought stress. Extensive bare patches and sheet erosion were noted in places.

One protected plant species, which are listed in terms of the Limpopo Environmental Conservation Act (Act 7 of 2003), occur on site. No Red Data species occur in the project area but three protected trees, in terms of the National Forest Act (Act 84 of 1998), were found in the project area.

From an ecological perspective the project site is suitable for a development of this nature if the recommended mitigation measures are adhered to and implemented (Du Preez, 2006).

3 SECTION C: PUBLIC PARTICIPATION

3.1 ADVERTISEMENT AND NOTICE

Publication name		
Date published		
Site notice position	Latitude	Longitude
	23° 57' 02.49" S	31° 08' 10.58" E
	34° 06' 06.13" S	20° 11' 18.50" E
	23° 56' 44.11" S	31° 09' 56.37" E
	24° 59' 45.69" S	31° 35' 30.91" E
Date placed	29 June 2017	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

3.2 DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr Gerhard Smit	Against Interference in the Kruger our Nature (AIKONA)	gmlsmit2@gmail.com
Ms Lisbeth Scalabrini	Interested and Affected Party	Lisbeth.scalabrini@bluemail.ch
Mr Friedemann Essrich	Interested and Affected Party	fessrich@sim.co.za
Mr Fred de Groot	Africa Wild	fredde@iburst.co.za
Ms Anne-Marie Rosset	Interested and Affected Party	safronet@hotmail.com
Mr Adam Goloda	Interested and Affected Party	adamgoloda@hotmail.com
Ms Corina Bakker	Interested and Affected Party	Cees.corina@telkomsa.net
Mr Andrew Rogers	Interested and Affected Party	Andrew.rogers@aha.co.za
Ms Elsa Marx	Interested and Affected Party	melandsa@gmail.com
Mr Willem Botha	Interested and Affected Party	Sukuma@cks.co.za
Mr Fritz Neethling	Interested and Affected Party	fritz@xifati.co.za
Ms Zena Smit	Interested and Affected Party	zenatjie@gmail.com
Mr John Turner	Interested and Affected Party	johnturn@iafrica.com
Mr Corne Theron	Interested and Affected Party	corne@theronafricansafaris.co.za
Ms Debbie Turner	Interested and Affected Party	Debbie@bushveldterrace.co.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3.3 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Please Refer to Appendix E – PPP Report	

3.4 COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

3.5 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Civil Aviation Authority	Mr Harry Roberts	011 545 1071	-	robertsh@caa.co.za	P. Bag X73, Halfway House, 1685
Department of Environmental Affairs	Mr Vincent Chauke	012 399 9372	-	vchauke@environment.gov.za	P. Bag X447, Pretoria 0001
BA-Phalaborwa Local Municipality: Municipal Manager	Mr Kgosi Lucas Pilusa	082 809 0257	-	lucaspilusa@gmail.com	P.Bag X01020, Phalaborwa 1390
South African National Biodiversity Institute	Dr Tony Rebelo	021 799 8800	-	t.rebelo@sanbi.org.za	P.O. Box 1024, Mbombela 1200.
South African Heritage Resources Agency	T.B.C	021 462 4502	021 462 4509	info@sahra.org.za	P.O. Box 4637, Cape Town 8000
Department of Water and Sanitation	Malapane Marcia	013 235 4206	013 235 4745	malapanem@dws.gov.za	-
Limpopo Department of Economic Development, Environment and Tourism	P.E. Matukane	015 293 8300	015 291 1085	matukanepe@ledet.gov.za	20 Hans van Rensburg Street, Polokwane
Phalaborwa	Joris	015 780	015 780	joris@sefapane.co.za	P.O. Box

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Tourism and Business Chamber	Bertens	6700	6711		1621, Phalaborwa 1390
Limpopo Tourism Agency		015 293 3600	015 293 3655	info@golimpopo.co.za	P.O. Box 2814, Polokwane 0700.

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

3.6 CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) 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 competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

4 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.

4.1 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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts 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. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Impact Assessment Methodology

For each potential impact, the **EXTENT** (Spatial scale), **MAGNITUDE** (degree of the impact), **DURATION** (time scale), **PROBABILITY** (occurrence), **IRREPLACEABILITY** (loss of resources) and the **REVERSIBILITY** (degree to which the proposed impact can be reversed) will be assessed by the EAP as well as the Specialists. The assessment of the above criteria will be used to determine the significance of each impact, with and without the implementation of the proposed mitigation measures. The scale to be used to assess these variables and to define the rating categories are tabulated in **Table 1** and **Table 2** below.

Evaluation component	Ranking scale and description (criteria)
MAGNITUDE of NEGATIVE IMPACT (at the indicated spatial scale)	<p>10 - Very high: Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.</p> <p>8 - High: Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.</p> <p>6 - Medium: Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.</p> <p>4 - Low : Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.</p> <p>2 - Very Low: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.</p> <p>0 - Zero: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	<p>10 - Very high (positive): Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.</p> <p>8 - High (positive): Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.</p> <p>6 - Medium (positive): Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.</p> <p>4 - Low (positive): Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.</p> <p>2 - Very Low (positive): Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.</p> <p>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
DURATION	<p>5 - Permanent</p> <p>4 - Long term: Impact ceases after operational phase/life of the activity > 60 years.</p> <p>3 - Medium term: Impact might occur during the operational phase/life of the activity – 60 years.</p> <p>2 - Short term: Impact might occur during the construction phase - < 3 years.</p> <p>1 - Immediate</p>
	5 - International: Beyond National boundaries.

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EXTENT (or spatial scale/influence of impact)	<p>4 - National: Beyond Provincial boundaries and within National boundaries.</p> <p>3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries.</p> <p>2 - Local: Within 5 km of the proposed development.</p> <p>1 - Site-specific: On site or within 100 m of the site boundary.</p> <p>0 - None</p>
IRREPLACEABLE loss of resources	<p>5 – Definite loss of irreplaceable resources.</p> <p>4 – High potential for loss of irreplaceable resources.</p> <p>3 – Moderate potential for loss of irreplaceable resources.</p> <p>2 – Low potential for loss of irreplaceable resources.</p> <p>1 – Very low potential for loss of irreplaceable resources.</p> <p>0 - None</p>
REVERSIBILITY of impact	<p>5 – Impact cannot be reversed.</p> <p>4 – Low potential that impact might be reversed.</p> <p>3 – Moderate potential that impact might be reversed.</p> <p>2 – High potential that impact might be reversed.</p> <p>1 – Impact will be reversible.</p> <p>0 – No impact.</p>
PROBABILITY (of occurrence)	<p>5 - Definite: >95% chance of the potential impact occurring.</p> <p>4 - High probability: 75% - 95% chance of the potential impact occurring.</p> <p>3 - Medium probability: 25% - 75% chance of the potential impact occurring.</p> <p>2 - Low probability: 5% - 25% chance of the potential impact occurring.</p> <p>1 - Improbable: <5% chance of the potential impact occurring.</p>
Evaluation component	Ranking scale and description (criteria)
CUMULATIVE impacts	<p>High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>

Table 1: Evaluation components, ranking scales and descriptions (criteria).

Significance Points	Environmental Significance	Description
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

Table 2: Definition of significance ratings (positive and negative).

Once the evaluation components have been ranked for each potential impact, the significance of each potential

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impact will be assessed (or calculated) using the following formula:

- **SP (Significance Points) = (Magnitude + Duration + extent + irreplaceability + reversibility) x probability.**

The maximum value is 150 SP (Significance Points). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per **Table 2** above.

4.1.1 POTENTIAL IMPACTS DURING PLANNING, DESIGN AND CONSTRUCTION PHASE

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS:				
Nature of impact: Negative impact of haphazard placement of infrastructure on the environment.	Activity: The establishment of a main site office and storage site during the construction period will ensure that the poor placement of materials and infrastructure will be avoided. This could also result in the damage or pollution to surrounding areas caused by construction activities.			
Significance rating:	MH	L	MH	L
Cumulative impact:	L	-	L	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Draw up and submit for approval a Site Layout Master Plan. This plan must show the final positions and extent of all permanent and temporary site structures and infrastructure; • The planning for layout must be done in consultation on-site with the Environmental Control Officer (ECO); • After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows; • The contractor may not deface, paint, damage or mark any natural features situated in or around the site for survey or other purposes; • The contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times; • No servicing of vehicles must be permitted on site, unless for emergency purposes; • Stockpiles should not be situated such that they obstruct pathways; • Location of storage area must take into account prevailing winds, distance to water bodies and general on-site topography; • Protected Plant Species must be relocated (if possible); • Animal burrows must be monitored by the Environmental Control Officer (ECO) prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor; • Place infrastructure as far as possible on sites that have already been transformed; • Facilities may not be used as staff accommodation; 			
Nature of impact: Topsoil Removal and Soil Erosion	Activity: The clearing of topsoil and excavation for the establishment of building foundations may result in the destruction of fertile topsoil.			
Significance rating:	MH	M	MH	M
Cumulative impact:	L	-	L	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Remove topsoil approximately 300mm deep from establishment area and stockpile areas; • Topsoil stockpiles to be kept free from weeds; • Topsoil stockpiles to be placed on a levelled area and measures to be implemented to safeguard the piles from being washed away in the event of heavy rain/storm water; • Topsoil need to be stored on designated areas only. This need to be planned and indicated in the site-layout plan; • Ensure that topsoil is not mixed with subsoil and/or any other excavated material; • Provide containment and settlement facilities for effluents from concrete mixing and washing facilities; • Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan; • Provide spill containment facilities for hazardous materials like fuel and oil; and, 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	<ul style="list-style-type: none"> Topsoil must be used in all rehabilitation activities, and may not be compacted to ensure that its plant support capacity remain of high quality. 			
Nature of impact: Surface and groundwater contamination due to construction activities such as the use of hazardous materials on site e.g. fuel and oil.	Activity: Spills could possibly occur on site and lead to the contamination of soil and groundwater.			
Significance rating:	M	L	M	L
Cumulative impact:	MH	M	MH	M
Proposed Mitigation:	<ul style="list-style-type: none"> Concrete can be mixed on mixing trays only and not on exposed soil. Concrete must be mixed only in areas which have been specially demarcated for this purpose (preferable where no natural vegetation occur); Concrete mixing to be carried out away from sensitive areas and on impermeable surfaces; Material Safety Data Sheets (MSDSs) should be available on site for all chemicals and hazardous substances to be used on-site, including information on their ecological impacts and how to minimise the impacts in case of leakage; All spillage must be cleaned up immediately after they have occurred; Spillage of petrochemical products must be avoided. In the case of accidental spillage, contaminated soil must be removed for bioremediation or disposed of at a facility for the substance concerned. Disturbed land must be rehabilitated and seeded with vegetation seed naturally occurring on site; Do not locate any ablution facilities, sanitary convenience, septic tank or French drain within the 1:100 year flood line, or within a horizontal distance of 100m (whichever is greater) of a watercourse or drainage line; Vehicles and machinery must be regularly serviced to avoid leakages; No uncontrolled discharges from the site or working area to depressions may be permitted. All discharge points will require approval from the Environmental Site Agent (ESA); No water courses may be used to clean equipment, or for bathing. All cleaning operations should take place off site at a location where waste water can be disposed of correctly; The discharge of any pollutants such as cement, concrete, lime, chemicals, etc. into the natural environment and the storm water system must strictly be prohibited; Fuel and chemical storage should be done within a designated area only, which is properly bund and able to contain 110% of the capacity of fuel or chemicals stored within; Construction vehicles must be inspected every morning before work commence to ensure that no leakages do occur; All personnel must receive induction on how to report spillages, contain them and treat them accordingly; Spill kits must be available at each working station; Drip trays must be placed beneath all construction equipment that is stationary on site or within the site camp; and, Hazardous waste must be stored in bins with a lid in a demarcated waste area, and must be disposed of at a hazardous treatment facility with records on file. 			
Nature of impact: Handling of general waste materials on the development site.	Activity: The presence of personnel and construction operations on site will increase the likelihood of littering and the dumping of solid waste.			
Significance rating:	M	L	M	L
Cumulative impact:	L	-	L	-
Proposed Mitigation:	<ul style="list-style-type: none"> An adequate number of scavenger proof litter bins are to be placed throughout the site. Two waste bins at least must be present, one (1) for hazardous waste and one (1) for non-hazardous waste at each working site. Dumping of waste on site is prohibited; Waste sorting and separation should form part of the environmental induction and awareness 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	<p>programme, to encourage personnel to collect waste paper, glass and metal waste separately;</p> <ul style="list-style-type: none"> • Keep all work sites including storage areas, offices and workshops neat and tidy; • Dedicate a demarcated and signposted storage area on site for the collection of construction waste; • All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site (Phalaborwa Landfill site) as mentioned in the Basic Assessment Report; • Care should be taken to ensure that no waste fall off disposal vehicles on-route to the landfill. If needed, a tarpaulin can be utilised; • The burning or burying of solid waste on site is prohibited. Do not burn PVC pipes or other plastic materials, as this is regarded as hazardous waste; • Littering by construction workers shall not be permitted; • Workers from the immediate area need to be encouraged to take their waste with them at the end of each day; • General refuse/rubbish shall be removed from site on a weekly basis to an approved registered landfill site or as soon as the waste bins are reaching full capacity; • Minimise waste by sorting wastes into recyclable and non-recyclable waste; • Ablution facilities must be serviced by a registered service provider, cleaned at least once a week, and safe disposal slips must be on file at the site office; • A bi-weekly (twice a week) litter patrol of the entire site shall be conducted by the designated Environmental Control Officer (ECO); and, • Hazardous waste must be sorted from non-hazardous waste and disposed of at a hazardous treatment facility, records and proof of disposal must be kept. • A register must be kept of the quantities of waste disposed and proof of disposal must be available at the site office. 			
Nature of impact: Increased risk of veld fires.	Activity: Due to the presence of construction personnel in natural areas, fires can occur if not managed to the correct standard.			
Significance rating:	H	L	H	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Ensure the work site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veldt areas, and at least one fire extinguisher of the appropriate type irrespective of the site; • Workers must be adequately trained in the handling of firefighting equipment; • No open fires are permitted anywhere on site. • Do not store any fuel or chemicals under trees; • Do not store gas and liquid fuel in the same storage area (Hazardous substances to be stored in accordance with SANS); and, • Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area. A designated smoking area must be established on site. • All construction vehicles must be fitted with at least one fire extinguisher. 			
Nature of impact: Traffic impacts associated with the movement of construction vehicles on site.	Activity: The movement of vehicles on site may result in the destruction of biodiversity, compaction of valuable topsoil and mortalities of fauna on site.			
Significance rating:	M	L	M	L
Cumulative impact:	L	-	L	-
Proposed Mitigation:	<ul style="list-style-type: none"> • After the final layout has been approved, conduct a thorough footprint investigation (walk-through) to detect and map (by GPS) all protected plant species, which have to be removed and animal burrows present within the project site. • Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor; 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	<ul style="list-style-type: none"> • During construction create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas; • Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (storm water and erosion management plan required). • Ensure adequate drainage where roads cross drainage lines or ephemeral tributaries; • Monitor the establishment of (alien) invasive species and remove as soon as detected, before regenerative material can be formed; • Abnormal loads and machinery should avoid movement over gravel roads during and immediately after rainfall events, so as to limit destruction of road surfaces and sedimentation of downhill rivers/streams; • All vehicles must be road-worthy, be maintained to prevent fuel or oil leaks and drivers are to be licensed appropriately for the driving of their assigned vehicle. Drivers responsible for the transportation of personnel must be specifically licensed to do so; • Construction vehicles may not leave the designated roads and tracks, whilst U-Turns are prohibited on all roads; • Signage is to be placed on vehicles at all times; • All construction vehicles should adhere to construction sites and avoid off road to minimise impact on vegetation and soil; • After decommissioning, if access roads or portions thereof will not be of further use to the landowner, remove all foreign material and rip area to facilitate the establishment of vegetation, followed by a suitable revegetation program, and • Construction-related vehicles and machinery may not operate on site without reflective safety signage, car-top lights and reflective personnel gear. 			
Nature of impact: Traffic impacts associated with the movement of construction vehicle.	Activity: The movement of vehicles in the vicinity of the construction site may cause damage to road surfaces as well as increase in the traffic volume of Phalaborwa.			
Significance rating:	M	L	M	L
Cumulative impact:	H	M	H	M
Proposed Mitigation:	<ul style="list-style-type: none"> • Abnormal loads should be timed to avoid times of year when traffic volumes are likely to be higher, as would be expected over national holidays, weekends and school holiday periods; • Vehicles used for transport of materials and sand must be fitted with tarpaulins to prevent the release of such material or items onto road surfaces; • Any damage to public roads is to be reported to the management authority and repaired to its original condition; • Transport of materials should be limited to the least amount of trips possible; • Abnormal loads should not be transported after dark. 			

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS:				
Nature of impact: Direct impact on vegetation during construction and loss of species.	Activity: The construction of several permanent structures on site will result in the loss of vegetation due to foundation excavation.			
Significance rating:	H	MH	H	MH
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> • After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and active animal burrows; • Protected plant species must be relocated where possible; • Keep areas affected to a minimum, strictly prohibit any disturbance outside the demarcated 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	foundation footprint area; <ul style="list-style-type: none"> • Clear as little indigenous vegetation as possible, aim to maintain vegetation where it will not interfere with the construction or operation of the development, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations of the relevant EMP'r, if possible; • Indigenous vegetation unique to the area must be used during landscaping activities; • There should be a preconstruction environmental induction for all construction staff on site to ensure that basic environmental biodiversity principles are adhered to; • Where the ECO deems it necessary (e.g. sensitive, natural areas) the ecologist appointed to do the vegetation study will be utilized; • Restoration measures will be required to reinstate functionality in the disturbed soil and vegetation; • Impacts to sensitive sites (drainage lines) should be avoided; • No vegetation may be gathered for the purpose of creating fire; • SANParks must be consulted with prior to construction to identify and demarcate biodiversity conservation areas within close vicinity of the site; and, • No fires are allowed on site. 			
Nature of impact: Dust nuisance generated by the operation of machinery and vehicles.	Activity: The frequent upwelling of dust as consequence of the movement of vehicles and machinery on site may impact on worker health causing asthma and other respiratory conditions. Stockpiles are susceptible to the upwelling of fine particulate matter. Several ambient factors, the terrain characteristics, soil type and land use forms can attribute to the degree of loss and susceptibility of stockpiles towards the generation of dust. Regular watering of exposed surfaces may result in the reduction of wind-generated dust from stockpiles.			
Significance rating:	L	L	L	L
Cumulative impact:	M	-	M	L
Proposed Mitigation:	<ul style="list-style-type: none"> • Implement dust suppression measures by watering areas to be cleared as well as already exposed surfaces with damaged soil particles, particularly during dry, windy periods; • Ensure all vehicles remain on designated roads and avoid the opening of detour or by-pass tracks; • Implement speed restrictions for vehicles on gravel roads; • Manage and maintain roadside vegetation to allow for absorption of runoff from road surfaces during and after rainy periods; and, After construction decommissioning, if access roads or portions thereof will not be of further use to the landowner, remove all foreign material and rip area to facilitate the establishment of vegetation, followed by a suitable revegetation program. 			
Nature of impact: Fauna will be directly impacted as a result of construction activities and human presence at the site.	Activity: The construction of facilities will result in some habitat loss for resident fauna, as some species will occur within the affected areas. In addition, increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to resident fauna. Sensitive and shy fauna may move away from the area during the construction phase as a result of the noise and human activities present, while some slow-moving species (such as mole rats or blind snakes) would not be able to avoid the construction activities and might be killed.			
Significance rating:	M	L	M	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> • No hunting, snaring, shooting, nest raiding or egg collection by the construction staff should be allowed; • Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days should have places where the loose material has been returned to the trench to form an escape ramp present at regular intervals to allow any fauna that fall in to escape; • Fires should only be allowed within fire safe demarcated area; • Ensure that the construction area is fenced off from adjacent areas which may harbour wild animals; and, • Do not store building materials and excess stockpiled soils within riparian zones or within 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	areas where natural vegetation occur; and <ul style="list-style-type: none"> Should any fauna be discovered it should be relocated to an area outside the development footprint by a trained professional. 			

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS:

Nature of impact: Presence of construction workers in the area.	Activity: Construction workers pose a potentially negative risk to family structures and social networks in the area, especially from communities in the town of Phalaborwa. The risk are associated with behaviour of male construction personnel and include an increase in alcohol and drug use, a possible increase in crime levels, an increase in teenage and unwanted pregnancies, an increase in prostitution and an increase in sexually transmitted diseases.			
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Significance rating:	L	L	L	L
Cumulative impact:	-	-	-	-

Proposed Mitigation:	<ul style="list-style-type: none"> Where possible, implement a requirement for contractors to implement a local employment policy for construction jobs, particularly for semi and low-skilled job categories, thus reducing impact which foreign workers could have on local communities; A contractual requirement of potential contractors must be a preparation and implementation of a Code of Conduct for construction workers, identifying types of behaviour and activities which construction workers may not engage in. Workers who breach this code should be dismissed, on the grounds that such dismissals comply with South African labour legislation; The project manager responsible for contractor appointments and administration, should implement an HIV/AIDS awareness programme for all contractors and their construction workers prior to commencement of construction; Contractors must manage the transport and movement of workers on and off site on a daily basis, as well as allow for the returning home of workers intermittently over weekends to limit interaction with local communities during such periods; and, No personnel, with the exception of security officers, are permitted to stay overnight in the vicinity of the construction site and must be housed in a site camp. 			
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Nature of impact: The creation of job opportunities during the construction phase.	Activity: The construction period will create a few job opportunities for individuals residing in the area of Phalaborwa.			
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Significance rating:	L (+)	L (+)	L (+)	L (+)
Cumulative impact:	-	-	-	-

Proposed Mitigation:	<ul style="list-style-type: none"> Where reasonable and practical the contractors appointed by the applicant should appoint local contractors and implement a "local first" policy, especially for semi and low-skilled job categories. However; due to the low skill levels in the area, the majority of skilled posts are likely to be filled by personnel from outside the area; The recruitment selection process should seek to promote gender equality and the employment of women wherever possible, particularly for less labour-intensive work such as flag bearing and supervision; and, The ongoing presence of semi and high skilled personnel involved in the project construction phase will generate sustained clientele to a portion of the guest house industry within the vicinity of the development. 			
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Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS:

Nature of impact: Damage and destruction of vertebrate fossils	Activity: Excavation activities can result in the discovery of cultural and historical artefacts beneath the earth surface. Damage or loss can occur if the correct procedures are not followed.			
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BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
during excavation activities.				
Significance rating:	M	L	M	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Should any heritage resources (including but not limited to fossil bones, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts or bone remains, structures and other built features, rock art and rock engravings) be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped. A trained palaeontologist or heritage specialist must be notified to assess the finds, and this must then be reported to the applicable heritage authority; • Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from the heritage authority. A registered heritage specialist must be called to the site for inspection and removal once authority to do so, has been given; • Excavations must be limited to the footprint area and be maintained in a narrow corridor; • All operations of excavation equipment must be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures must be followed: <ul style="list-style-type: none"> ○ All construction in the immediate 50 m vicinity radius of the site must cease; ○ The heritage practitioner must be informed as soon as possible; ○ In the event of obvious human remains SAPS must be notified; ○ Mitigation measures (such as refilling, etc.) must not be attempted; ○ The area in a 50 m radius of the find must be cordoned off with hazard tape; • Public access must be limited and the area must be placed under guard; • The Furnace area must be protected and declared a no-go area until the developer appoints a suitably qualified archaeologist to conduct a Phase 2 archaeological assessment of the terrain and to draw up a heritage management plan for the site; and, • The appointed archaeologist must apply for a valid permit from SAHRA to excavate the furnace for display and educational purposes. 			

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL VISUAL IMPACTS:				
Nature of impact: Impact on the sense of place for surrounding users.	Activity: The movement of construction vehicles, machinery and personnel on site shall result in a visual impact on surrounding users. Furthermore to this, the storage of materials and excavation shall result in disturbance and an unsightly character.			
Significance rating:	M	L	M	L
Cumulative impact:	L	-	L	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Access roads are to be kept clean and dust suppression techniques should be implemented to minimise impacts of vehicle movement; • Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions. Roofs should be grey and non-reflective; • Construction camps as well as development areas should be screened with netting; • Lights within the construction camp should face directly down (angle of 180°); • Vegetation against the border fence with the Hans Merensky Golf Estate should remain intact and development must be situated behind the vegetation screen to minimise the visual impact; • Minimum vegetation should be removed to ensure the visual absorption capacity remain high; • Infrastructure design need to be in line with the sense of place, brown/beige/wooden colours need to be used with thatched roofs; • Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact; and, • Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare. 			

BASIC ASSESSMENT REPORT

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACTS ON NOISE ASPECTS:				
Nature of impact: Noise nuisance generated by construction works, vehicles and personnel.	Activity: The operating of vehicles and machinery on site results in the generation of noise disturbing users of the surrounding area.			
Significance rating:	M	L	M	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> Limit working hours of noisy equipment to daylight; All stationary noisy equipment such as compressors and pumps should be contained behind acoustic covers, screens or sheds where possible; The regular inspection and maintenance of equipment must be undertaken to ensure that all components is functioning optimally; Where recurrent use of machinery is frequent, machines should be shut down during intermediate periods; Fit silencers to equipment; Unless otherwise specified by the ESA, normal work hours will apply (i.e. from 06:30 to 17:00, Mondays to Fridays); Ensure that Employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours; and, No loud music is permitted on site or in the Camp. 			

4.1.2 ECOLOGICAL SPECIALIST IMPACT ASSESSMENT DURING THE CONSTRUCTION PHASE

1. Activity: Upgrading and/or creation of site road and internal maintenance tracks		
Environmental Aspect: Removal of vegetation, compaction and disturbance of soils, creation of runoff zone, destruction of animal burrows, impact on protected species, alteration of soil surface properties.		
Environmental Impact: Loss of vegetation, increase in runoff and erosion, possible distribution of alien and invasive species, possible disturbance and reduction of habitat or injury to burrowing vertebrates, possible change of natural runoff and drainage patterns, possible loss of protected species, possible permanent of revegetation potential of soil surface. Note: relatively large access roads already exist to parts of the project site.		
	Without Mitigation	With Mitigation
Extent (E)	Local (2)	Local (1)
Duration (D)	Long-term (4)	Long-term (4)
Magnitude (M)	Low (4)	Minor (2)
Probability (P)	Highly Probable (4)	High Probable (4)
Significance (S=E+D+M)*P	Medium (40)	Low (28)
Status (Positive, neutral or negative)	Negative	<ul style="list-style-type: none"> Neutral where situated on transformed areas or on existing access roads. Negative on undisturbed areas. Minimal new negative impacts expected.
Reversibility	Not Reversible	Relatively reversible
Irreplaceable loss of resources	Probable	Not likely
Can impacts be mitigated	Reasonably well	-
Mitigation: <ul style="list-style-type: none"> After the final layout has been approved, conduct a thorough footprint investigation (walk-through) to detect and map (by GPS) all protected plant species, which will have to be removed, and animal burrows present within the project site. Protected plant species must be relocated if possible. Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. 		

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If detected, such animals must be removed and relocated by a qualified professional/contractor.

- During construction create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas.
- Keep the clearing of natural and semi-natural vegetation to a minimum.
- If filling material is to be used, this should be sourced from areas free of invasive species.
- Topsoil (the upper 25cm of soil) is an important natural resource with a seedbank, where it has to be stripped, never mix it with subsoil or any other material. Store and protect is separately until it can be re-used, and minimise the handling of the topsoil.
- Reinforce portions of existing access routes that are prone to erosion, create structures or low berms to drain the access roads rapidly during rainfall events, yet preventing erosion of the track and surrounding areas.
- Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (storm water and erosion management plan required).
- No building infrastructure may be placed within drainage lines or ephemeral tributaries as well as the 50m buffer zones. Access roads (where unavoidable) may cross these drainage systems (with necessary mitigation measures, see below, in place). Power lines may also cross these drainage systems, however, no pylons may be placed directly within these drainage lines or within the 50m buffer areas.
- Ensure adequate drainage where roads cross drainage lines or ephemeral tributaries.
- Prevent leakage of oil or other chemicals or any other form of pollution.
- Monitor the establishment of (alien) invasive species and remove as soon as detected, before regenerative material can be formed.
- After decommissioning, if access roads or portions thereof will not be of further use to the landowner, remove all foreign material and rip area to facilitate the establishment of vegetation, followed by a suitable revegetation program.

Cumulative Impacts:

- Possible erosion of areas lower than the access roads,
- Possible contamination of lower-lying drainage lines, ephemeral tributaries and wetlands located outside of the project site due to oil or other spillages.
- Possible spread and establishment of alien invasive species.

Residual Impacts:

- Altered vegetation composition and structure.
- Altered topsoil conditions.
- Potential barren areas.
- Potential for erosion and invasion by weed or alien species.

2. **Activity:** Fencing area of area and maintenance road – may also serve as fire-break.

Environmental Aspect: (Note: Fencing already exists around the entire site, but will most likely be upgraded and reinforced). Removal of vegetation, compaction of soils, creation of runoff zone, impact on protected species, impact on movement of terrestrial vertebrates.

Environmental Impact: Loss of vegetation and specifically protected or red data species, window of opportunity for the establishment of alien and invasive species, altered topsoil characteristics prone to compaction, increased runoff and erosion, temporary disturbance of burrowing animals, possible reduction of habitat and forage availability to terrestrial vertebrates.

	Without Mitigation	With Mitigation
Extent (E)	Local (2)	Local (1)
Duration (D)	Long-term (4)	Long-term (4)
Magnitude (M)	Low (4)	Small (0)
Probability (P)	Highly Probable (4)	Probable (3)
Significance (S=E+D+M)*P	Medium (40)	Low (15)
Status (Positive, neutral or negative)	Negative	<ul style="list-style-type: none"> • Neutral where present on transformed areas.

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		<ul style="list-style-type: none"> Slightly Negative on natural areas. Minimal new negative impacts expected.
Reversibility	Partially reversible	Reversible
Irreplaceable loss of resources	Probable	Not likely
Can impacts be mitigated	Reasonably well	-
Mitigation: <ul style="list-style-type: none"> After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows. Protected plant species must be relocated if possible. Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor. During the design phase, the possible impact of burrowing vertebrates and rodents on the development must be determined, and fencing must be designed to either exclude these animal species if it will be detrimental or enable occasional migration of smaller vertebrates onto and across the site (which could be beneficial to small vertebrate populations). Minimise the area affected, especially during construction. During construction strictly prohibit any off-road driving or parking of vehicles and machinery outside the footprint areas. Prevent leakage of oil or other chemicals. Strictly prohibit littering of any kind. Monitor the establishment of alien and indigenous invasive species and remove as soon as detected, whenever possible before regenerative material can be formed. If the area will be used as a fire-break, maintain a suitably low grass layer by regular mowing or appropriate species selection, but do not leave soil bare. Alternatively, ensure that the soil is covered to prevent erosion. 		
Cumulative Impacts: <ul style="list-style-type: none"> Possible erosion of cleared areas and associated accelerated erosion from surrounding areas. Possible loss of ecosystems functioning due to an increase in invasive species. 		
Residual Impacts: <ul style="list-style-type: none"> Altered vegetation composition. Compaction of topsoil. Possibility for erosion and invasion by alien invasive species. 		

3. Activity: Construction and operation of temporary buildings and loading zones on semi-natural vegetation and disturbed areas.		
Environmental Aspect: Removal of or excessive damage to vegetation, compaction of topsoil, creation of runoff zone, redistribution and concentration of runoff from surfaces, displacement of terrestrial vertebrates, reduced buffering capacities of the landscapes during extreme weather events.		
Environmental Impact: Loss of vegetation and/or species of conservation concern, loss of and alteration of microhabitats, altered vegetation cover, site-specific altered distribution of rainfall and resultant runoff patterns, general increase in runoff from hard surfaces and/or bare areas and associated accelerated erosion, reduction of habitat and resource availability for terrestrial fauna, possible increase of detrimental effects during periods of extreme weather events, e.g. increased flooding, severe erosion or dust due to lower buffering capacity of sparser vegetation.		
	Without Mitigation	With Mitigation
Extent (E)	Local (2)	Local (1)
Duration (D)	Long-term (4)	Long-term (4)
Magnitude (M)	Moderate (6)	Low (4)
Probability (P)	Definite (5)	Definite (5)
Significance (S=E+D+M)*P	High (60)	Medium (45)
Status (Positive, neutral or negative)	Negative	Negative
Reversibility	Partially reversible	Partially Reversible

BASIC ASSESSMENT REPORT

Irreplaceable loss of resources	Probable	Slight Probability
Can impacts be mitigated	Reasonably	-
Mitigation:		
<ul style="list-style-type: none"> • After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and active animal burrows. • Protected plant species must be relocated if possible. • Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor. • Keep areas affected to a minimum, strictly prohibit any disturbance outside the demarcated footprint area. • Clear as little indigenous vegetation as possible, aim to maintain vegetation where it will not interfere with the construction or operation of the development, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations of the relevant EMPr, if possible. • Use only species that were part of the original indigenous species composition as listed in the specialist report. • Remove all invasive vegetation before and after construction and continuously up to decommissioning. • If filling material is to be used, this should be sourced from areas free of invasive species. • Topsoil (the upper 25 cm of soil) is an important natural resource; where it must be stripped, never mix it with subsoil or any other material, store and protect it separately until it can be re-applied, minimise the handling of topsoil. • Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan. • Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly. • Prevent leakage of oil or other chemicals, and strictly prohibit littering of any kind. • Monitor the establishment of all invasive species and remove as soon as detected whenever possible before regenerative material can be formed 		
Cumulative Impacts:		
If mitigation measures are not strictly followed the following could occur:		
<ul style="list-style-type: none"> • Erosion of areas and continued erosion of the development area with associated siltation and/or erosion of lower-lying wetlands located outside of the project site. • Contamination of drainage lines, lower-lying rivers or wetlands located outside of the project site. • Alteration of occupancy by terrestrial fauna beyond the project site, possible reduction of available habitat and food availability to terrestrial fauna. • Spread and establishment of invasive species. 		
Residual Impacts:		
<ul style="list-style-type: none"> • Altered topsoil characteristics. • Altered vegetation composition. 		

4. Activity: Temporary construction camps and sites where machinery is kept during construction.		
Environmental Aspect: Removal of vegetation, compaction of soils, creation of runoff zone, displacement of terrestrial vertebrates, possible contamination of topsoil and ground water by chemicals or oils.		
Environmental Impact: Loss of vegetation and/or species of conservation concern, loss of and alteration of microhabitats, altered vegetation cover, altered distribution of rainfall and resultant runoff patterns, increase in concentrated runoff from sealed or compacted surfaces and possibly higher accelerated erosion, reduction of habitat and resource availability for terrestrial fauna, possible contaminated topsoil, possible contaminated ground water or wetlands located outside of the project area.		
	Without Mitigation	With Mitigation
Extent (E)	Regional(4)	Local (1)
Duration (D)	Medium-term (3)	Short-term (2)
Magnitude (M)	Moderate (6)	Minor (2)
Probability (P)	Definite (5)	Probable (3)
Significance (S=E+D+M)*P	High (65)	Low (15)

BASIC ASSESSMENT REPORT

Status (Positive, neutral or negative)	Negative	Slightly Negative
Reversibility	Partially reversible	Reversible
Irreplaceable loss of resources	Probable	Not Likely
Can impacts be mitigated	Reasonably	-
Mitigation: <ul style="list-style-type: none"> • After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows. • Protected plant species must be relocated where deemed necessary. • Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor. • Place infrastructure as far as possible on sites that have been transformed already. • Stay within demarcated temporary construction areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas. • Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr. • No fires may be lit for cooking or any other purposes. • Facilities may not be used as staff accommodation. • Topsoil (the upper 25 cm of soil) is an important natural resource; where it must be stripped, never mix it with subsoil or any other material, store and protect it separately until it can be re-applied, minimise handling of topsoil. • Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan. • After construction remove all foreign material prior to starting the rehabilitation. • Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed. 		
Cumulative Impacts: If mitigation measures are not strictly followed the following could occur: <ul style="list-style-type: none"> • Erosion of the development area with associated siltation and/or erosion of lower-lying ephemeral streams and downstream wetlands located outside of the project site. • Contamination of drainage lines, lower-lying ephemeral streams and wetlands located outside of the project site. • Contamination of groundwater which is an extremely important source of water supply for the region. • Spread and establishment of invasive species. • Alteration of occupancy by terrestrial fauna, small reduction of available habitat and food availability to terrestrial fauna. 		
Residual Impacts: <ul style="list-style-type: none"> • Altered topsoil characteristics. • Altered vegetation composition. 		

5. Activity: Transport of materials to site, movement of vehicles on site during construction and operation.		
Environmental Aspect: Compaction of soils, possible contamination by oils or fuels, possible introduction and spread of weeds and alien invasive species, temporary disturbance of terrestrial fauna.		
Environmental Impact: Loss of vegetation, increase in runoff and erosion, disturbance or possible mortality incidents of terrestrial fauna, possible contamination of soil and groundwater by oil- or fuel spillages, possible establishment and spread of undesirable weeds and alien invasive species that could further damage ecosystem functionality.		
	Without Mitigation	With Mitigation
Extent (E)	Regional(4)	Local (1)
Duration (D)	Long-term (4)	Long-term (4)
Magnitude (M)	Low (4)	Small (0)
Probability (P)	Definite (5)	Highly Probable (4)

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Significance (S=E+D+M)*P	Medium (60)	Low (20)
Status (Positive, neutral or negative)	Negative	Neutral
Reversibility	Partially reversible	Reversible
Irreplaceable loss of resources	Probable	Not Likely
Can impacts be mitigated	Reasonably	-
Mitigation: <ul style="list-style-type: none"> • Restrict all movement of vehicles and heavy machinery to permissible areas, these being designated access roads, maintenance roads, turning points and parking areas. No off-road driving beyond designated areas may be allowed. • Parking areas should be regularly inspected for oil spills and covered with an impermeable or absorbent layer (with the necessary stormwater control) if oil and fuel spillages are highly likely to occur. • Strict speed limits must be set and adhered to. • Driving between dusk and dawn should be permissible to emergency situations only. • Prevent spillage of any, oils or other chemicals, strictly prohibit other pollution. • Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed, destroy all material to prevent re-establishment. 		
Cumulative Impacts: <ul style="list-style-type: none"> • Possible pollution of surrounding areas if no mitigation is implemented. • Contamination of groundwater which is an extremely important source of water supply for the region. • Possible spread of alien invasive species beyond the site if no mitigation is implemented. 		
Residual Impacts: <ul style="list-style-type: none"> • Related to access roads and internal maintenance tracks only. 		

4.1.3 POTENTIAL OPERATIONAL PHASE IMPACTS

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON GEOGRAPHICAL AND PHYSICAL IMPACTS				
Nature of impact: Handling of general waste materials on the development site.	Activity: The presence of visitors on site will increase the likelihood of littering and the dumping of solid waste.			
Significance rating:	M	L	M	L
Cumulative impact:	-	-	-	--
Proposed Mitigation:	<ul style="list-style-type: none"> • An adequate number of scavenger proof litter bins are to be placed throughout the site; • Waste sorting and separation bins should be placed at all public facilities, to encourage visitors to dispose waste paper, glass and general waste separately; • Keep all work sites including storage areas, offices and workshops neat and tidy; • All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site (Phalaborwa Landfill site) as mentioned in the Basic Assessment Report; • Care should be taken to ensure that no waste fall of disposal vehicles on-route to the landfill. If needed, a tarpaulin can be utilised; • The burning or burying of solid waste on site is prohibited. Do not burn PVC pipes or other plastic materials, as this is regarded as hazardous waste; • Minimise waste by sorting wastes into recyclable and non-recyclable waste; and, • A bi-weekly litter patrol of the entire site shall be conducted by the designated Park Ranger. 			
Nature of impact: Traffic impacts associated with the movement of vehicles on site.	Activity: The regular movement of visitor vehicles at the Phalaborwa gate, would increase traffic flow and impede movement.			
Significance rating:	L	L	L	L
Cumulative impact:	M	M	M	M

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Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
Proposed Mitigation:	<ul style="list-style-type: none"> Day visitor vehicles may not leave the designated roads and tracks, whilst U-Turns are prohibited on all roads; Any damage to public roads is to be reported to the management authority and repaired to its original condition; and, Speed restrictions must be enforced within the park boundaries. 			

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON BIOLOGICAL ASPECTS				
Nature of impact: Infestation of the area with Alien and Invasive Species.	Activity: Implementation of the KNP Alien Species programme to control invasive alien plants.			
Significance rating:	L	L	L	L
Cumulative impact:	M	M	M	M
Proposed Mitigation:	<p>Clearing and Guiding Principles</p> <ul style="list-style-type: none"> Alien control programs are long-term management projects and should include a clearing plan which includes follow up actions for rehabilitation of the cleared area; The lighter infested areas should be cleared first to prevent seed build-up; Pre-existing dense areas should be left for last, as they probably will not increase in density or pose a greater threat than they are currently; and, All clearing actions should be monitored and documented to keep track of which are due for follow-up clearing. <p>Clearing Methods</p> <ul style="list-style-type: none"> Different species require different control methods such as manual, chemical or biological methods or a combination of the two; Care should be taken to ensure that the clearing methods used do not encourage further invasion. As such, regardless of the methods used, soil disturbance should be kept to a minimum. The vegetative stage of the plants should also be considered before clearing; Fire is not a natural phenomenon in the area and should not be used in general for alien control or vegetation management at the site. Only <i>Cylindropuntia sp</i> should be destroyed by burning after removal, since these plants can spread vegetatively as well as with seed; and, The best-practice clearing method for each species identified should be used. The preferred clearing methods for most alien species can be obtained from the Department of Water and Agricultural Affairs (DWAF) Working for Water website: http://www.dwaf.gov.za/wfw/Control/. <p>Use of Herbicides for Alien Control</p> <p>Although it is usually preferable to use manual clearing methods where possible, such methods may create additional mechanical disturbance which may stimulate alien invasion and may also be ineffective for many woody species which resprout. Where herbicides are to be used, the impact of the eradication program on the natural environment should be minimised by observing the following:</p> <ul style="list-style-type: none"> Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control; Care must be taken to prevent contamination of water bodies. This includes special care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures; Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable place; To avoid damage to indigenous or other desirable vegetation, herbicides that would have the least effect on the indigenous vegetation should be used; Droplet nozzles with a course spray pattern should be fitted to avoid drift of herbicides onto neighbouring vegetation; and, 			

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Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	<ul style="list-style-type: none"> The appropriate health and safety precautions should be followed regarding the storage, handling and disposal of herbicides. 			
Nature of impact: Road Mortality of fauna of the KNP due to increased traffic use of roads within the KNP.	Activity: Road mortalities due to vehicles speeding on the roads within the KNP.			
Significance rating:	L	L	L	L
Cumulative impact:	M	M	M	M
Proposed Mitigation:	<ul style="list-style-type: none"> Speed limits must be enforced within the KNP; Visitors only to drive on designated roads, and may not under any circumstance leave the designated roads. 			

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON SOCIO-ECONOMIC ASPECTS				
Nature of impact: Business/Tourism Opportunities	Activity: The Activity Hub will draw more tourists/visitors to the Kruger National Park.			
Significance rating:	M (+)	-	M (+)	-
Cumulative impact:	-	-	-	-
Proposed Mitigation:	N/A			
Nature of impact: Business/Tourism Opportunities	Activity: Job creation for Local Communities residing within the area.			
Significance rating:	M (+)	-	M (+)	-
Cumulative impact:	-	-	-	-
Proposed Mitigation:	N/A			

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON CULTURAL-HISTORICAL ASPECTS				
Nature of impact: Impact on the Historical Structure near the Phase 2 bird park.	Activity: Probably of greatest concern would be the impact of large numbers of visitors to the Kruger National Park area, where the furnace is present.			
Significance rating:	M	L	MH	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> If possible the furnace must be relocated to a display area where it can be used for educational purposes; Should SANParks decide not to move the furnace, it should be beacons off with chains and information boards can be placed next to it. 			

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON VISUAL				
Nature of impact: Visual Impact on the surrounding areas.	Activity: The proposed development will have a Visual Impact on surrounding tourism as the development will include permanent structures.			
Significance rating:	H	MH	H	MH
Cumulative impact:	H	H	H	H
Proposed Mitigation:	<ul style="list-style-type: none"> Lighting to face directly down to the ground in order to minimise lighting effects. 			

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Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
	<ul style="list-style-type: none"> Lights to be fitted with covers to ensure that light is directed at a specific area; Waste bins must be placed next to walk ways as well as at all public facilities to ensure that the area remains clean; Landscaping must be done to ensure that the Wildlife Activity Hub blends in with the sense of place by enhancing natural features such as trees and vegetation. Waste storage areas must be properly screened with wooden or brick walls; and, Staff to conduct a daily walk through the site to ensure that no waste is present. 			

Operational Phase	Layout Alternative 1		Layout Alternative 2	
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
POTENTIAL IMPACT ON NOISE LEVELS				
Nature of impact: Noise Impact on surrounding properties	Activity: Increased activities and visitors may contribute to noise levels within the area.			
Significance rating:	M	L	M	L
Cumulative impact:	-	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> No loud music to be permitted at the backpacker facilities or the tent camps; Shows at the amphitheatre must be planned so that it ends before 22:00; Machinery such as aircon motors need to be placed behind acoustic screens in order to minimise noise; All equipment must be well maintained in order to ensure that noise levels are kept to a minimum. 			

4.1.4 GEO-HYDROLOGICAL SPECIALIST IMPACT ASSESSMENT DURING THE OPERATIONAL PHASE

GOLF CART ROAD							
	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without Mitigation	Along study area border	Medium	Long Term	Low	Probable	Medium	High
	Four side streets	Low	Long Term	Low	Probable	Very Low	High
With Mitigation	Along study area border	Very Low	Long Term	Very Low	Probable	Very Low	High
	Four side streets	Very Low	Long Term	Very Low	Probable	Very Low	High
Degree to which impact can be reversed				Medium			
Irreplaceability of Resources				Low			
Mitigation:							
<ul style="list-style-type: none"> All golf cart routes must be inspected at regular intervals, especially after heavy rainfall to detect deterioration and schedule repairs; Special attention and examination is required at the roadbed, the road surface, cut banks, fill slopes, stream crossings and surface drainage structures; Stream crossings should be checked to insure water draining from road surfaces and ditches does not directly enter streams. Water should be diverted into stable, vegetated buffer areas that can filter sediments. Debris should be cleared from culverts, ditches, dips and other drainage structures to prevent clogging that can lead to washouts. The debris should be placed where it cannot be washed back into these structures or into open water. Road surfaces should be shaped periodically to maintain proper surface drainage. Ruts and holes should be filled in with 							

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gravel or compacted fill as soon as possible to reduce erosion potential. Berms along the edge of the road should be removed if they will trap water on the road;

- Should appropriate maintenance methods alongside appropriate stormwater channelling be implemented to restrict contamination or siltation of nearby watercourses, the associated impact may be regarded as low;
- It is suggested that the golf cart road's side street layout be altered to completely avoid any possible intersection with a mapped watercourse buffer zone. These buffers on their own are regarded as a mitigation approach. It is recommended that the golf car road intersecting River 2 be moved 300 m south of its proposed location. By implementing this mitigation the associated impact will be reduced to very low; and,
- It is recommended that the golf cart road that intersects mapped river 7 needs any alteration. This is due to river 7, although mapped as a non-perennial river, not showing any characteristics that may classify it as an ephemeral river.

FOOT PATH							
	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without Mitigation	Along study area border	High	Long Term	Medium	Highly Probable	Medium	High
	Four side streets	Low	Long Term	Low	Probable	Very Low	High
		Medium	Long Term	Medium	Probable	Low	High
With Mitigation	Along study area border	Very Low	Long Term	Very Low	Highly Probable	Very Low	High
	Four side streets	Low	Long Term	Very Low	Highly Probable	Very Low	High
		Low	Long Term	Very Low	Highly Probable	Very Low	High
Degree to which impact can be reversed				Low			
Irreplaceability of Resources				Low			

Mitigation:

- It is highly suggested that the extent of the footpath be diverted to the existing bridge, crossing River 1/Tshutshi River. By adhering to this mitigation, the associated hydrological impact intensity on River 1/Tshutshi River will be reduced to very low;
- It is recommended that the footpath intersecting River 2 be located where and already existing gravel road intersect the river. By adhering to this mitigation, the associated hydrological impact intensity on River 2 will be reduced to low; and,
- It is recommended that the footpath intersecting River 5, a total of three times, only intersect the watercourse at one location between the Specific Activities Area and the Tented Camp. By adhering to this mitigation, the associated hydrological impact intensity on River 5 will be reduced to low.

SPECIFIC ACTIVITIES AREA							
	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without Mitigation	Activities Hub	Medium	Long Term	Medium	Highly Probable	Medium	High
With Mitigation	Activities Hub	Very Low	Long Term	Very Low	Highly Probable	Very Low	High
Degree to which the impact can be reversed				Medium			
Irreplaceability of resource				Low			

Mitigation:

- Should the specific activities area be located within the centre of the watercourse, an appropriate stormwater plan to divert increased surface water flow will be needed. At this stage this was not motivated to be the intention at the activities area. It is therefore highly recommended that the activities area be moved 120 m to the south of its suggested location. This will significantly lower the associated hydrological impact intensity to very low.

BACKPACKERS & TENTED CAMP							
	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence

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Without Mitigation	Tented Camp	Medium	Long Term	Medium	Highly Probable	Medium	Medium
	Backpackers	Medium	Long Term	Medium	Probable	Medium	Medium
With Mitigation	Tented Camp	Low	Long Term	Very Low	Highly Probable	Low	High
	Backpackers	Low	Long Term	Very Low	Highly Probable	Low	High
Degree to which the impact can be reversed				Medium			
Irreplaceability of resource				Low			
Mitigation:							
<ul style="list-style-type: none"> It is highly recommended that the watercourse buffers be adhered to during the construction of these two camps. These buffers on their own are regarded as a mitigation approach. The backpackers' camp is recommended to be moved 50 m south east of its suggested location. Should the construction of these two sites adhere to proposed mitigation sites the associated by hydrological impact intensity is estimated as low. Should mitigation measures not be adhered to, increased erosion such as at site D can be expected at the proposed development sites. 							

REMAINING INFRASTRUCTURE							
	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	Confidence
Without Mitigation	Remaining Infrastructure	Low	Long Term	Medium	Probable	Medium	High
	Remaining Infrastructure	Very Low	Long Term	Very Low	Highly Probable	Very Low	High
Degree to which the impact can be reversed				Medium			
Irreplaceability of resource				Low			
Mitigation:							
<ul style="list-style-type: none"> The layout and placement of the remaining infrastructure are located within preferential areas. It is recommended that appropriate construction and operational maintenance procedures be followed to minimise hydrological risks. These mitigations include: <ul style="list-style-type: none"> ➤ The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids, silt or chemical pollutants. Vehicles used for transport materials and sand must be fitted with tarpaulins to prevent the release of such material which may cause watercourse siltation and degradation; ➤ Implement dust suppression measures by watering areas to be cleared as well as already exposed surfaces with damaged soil particles, particularly during dry, windy periods. Ensure by doing so that mentioned watering does not enter prescribed watercourse buffers; ➤ Hazardous substances, including but not limited to fuel and oil, must be stored in spill containment facilities at least 30 m away from the buffer area surrounding any water bodies on site to avoid pollution; ➤ Fuel and chemical storage should be placed within a designated area only, which is properly bund and able to contain 110% of the capacity of fuel or chemicals stored within; ➤ All spillages must be cleaned up immediately after they have occurred; ➤ Construction should preferably commence during the low rainfall season (May to September); ➤ Spillage of petrochemical products must be avoided. In the case of accidental spillage, contaminated soil must be removed for bio-remediation or disposed of at a facility for the substance concerned; ➤ No uncontrolled discharges from the site or working area to depressions may be permitted; ➤ The discharge of any pollutants such as cement, concrete, lime, chemicals etc. into the natural environment and stormwater system is strictly prohibited; ➤ All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site. ➤ The installation of the stormwater system must take place as soon as possible after commencement of the construction activities, to attenuate stormwater from construction as well as the operational phase; ➤ Topsoil stockpiles are to be placed on a levelled area and measures must be implemented to safeguard the piles from being washed away in the event of heavy rain/stormwater; ➤ Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated; ➤ Blasting and earthmoving may be required during construction, excavations will expose the soil to wind and water erosion. Appropriate stormwater structures and monitoring should be in place to prevent siltation of nearby watercourses; ➤ Contractors must ensure that all construction personnel, labourers and equipment remain within the demarcated 							

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- construction borders at all times;
- Do not locate any ablution facilities, sanitary convenience, septic tank or French drain within a horizontal distance of 100 m of a watercourse or drainage line;
 - Topsoil stockpiles should be kept outside of recommended watercourse buffer zones to restrict downstream watercourse siltation;
 - Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil;
 - Increased surface to Groundwater infiltration may occur at geological intrusion contact boundaries. These zones/lineaments identified in geological map are not recommended for use of stockpiling; and,
 - No water courses may be used to clean equipment or for bathing.

Should these procedures be followed, a very low hydrological impact intensity is estimated for the construction of the remaining infrastructure.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

4.2 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.

4.2.1 Construction Phase Impacts

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS			
Proposed development of the Phalaborwa Wildlife Activity Hub	Haphazard placement of infrastructure on the environment	L	L
	Topsoil Removal and Soil Erosion	M	M
	Contamination of surface and groundwater	L	L
	Handling of general waste materials	L	L
	Increased risk of veld fires	L	L
	Traffic impacts associated with the movement of construction vehicles	L	L
	Traffic impacts associated with the movement of construction vehicles	L	L
ACTIVITY	IMPACT SUMMARY	PREFERRED	ALTERNATIVE 2

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		ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS			
Proposed development of the Phalaborwa Wildlife Activity Hub	Direct impact on vegetation	MH	MH
	Dust nuisance generated	L	L
	Fauna will be directly impacted upon	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS:			
The proposed development of the Phalaborwa Wildlife Activity Hub	Presence of construction workers in the area	L	L
	The creation of job opportunities	L (+)	L (+)

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Damage and destruction of vertebrate fossils.	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON VISUAL:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Impact on the Sense of place	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON NOISE ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Noise nuisance generated	L	L

4.2.2 Potential Impacts during the Operational Phase

ACTIVITY	IMPACT SUMMARY	PREFERRED	ALTERNATIVE 2
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		ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Handling of general waste materials	L	L
	Traffic impacts associated	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Infestation of the area with Alien and Invasive Species	L	L
	Road Mortality of fauna	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Business/Tourism Opportunities	M (+)	M (+)
	Business/Tourism Opportunities	M (+)	M (+)

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Impact on the Historical Structure	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Impact on the Historical Structure	L	L

ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
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POTENTIAL IMPACTS ON VISUAL:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Visual Impact on surrounding areas	MH	MH
ACTIVITY	IMPACT SUMMARY	PREFERRED ALTERNATIVE SIGNIFICANCE (AFTER MITIGATION)	ALTERNATIVE 2 SIGNIFICANCE (AFTER MITIGATION)
POTENTIAL IMPACTS ON Noise Levels:			
Proposed development of the Phalaborwa Wildlife Activity Hub	Noise Impact on surrounding properties	L	L

4.3 GAPS IN KNOWLEDGE

The EIA process is being undertaken prior to the availing of certain information which would be derived from the project design and feasibility studies. As such, technical aspects included herein derive from a range of sources including pre-feasibility engineering and through personal communication with the design team. Given that the EIA process is one of several investigations being done, milestones and key outputs for each of these may not always be available for interrogation into the EIA process. As such, the Department of Environmental Affairs and other commenting and decision-making authorities are required to generate their decision based on the information available to the study at the time, whilst measures can be adopted to manage any changes as conditions within decisions made.

Enviroworks is an independent environmental consulting firm and as such, all processes and attributes of the EIA are addressed in a fair and unbiased fashion. It is believed that through the running of a transparent and participatory process, risk associated with assumptions, uncertainties and gaps in knowledge can be, and where, minimised.

4.4 ASSUMPTIONS

The following assumptions can be made:

- All information provided by the applicant to the EAP was correct and valid at the time it was provided;
- The public received a fair and recurring opportunity to participate in the EIA process, through the provision of Public Participation timeframes stipulated in the Regulations;
- The need and desirability was based on strategic national, provincial and local plans and policies which reflect the interests of both statutory and public viewpoints;
- The EIA process is a project-level framework and is limited to assessing the environmental impacts associated with the project phases of the activity being applied for only; and,
- Strategic level decision making is achieved through co-operative governance with sustainable development principles underpinning all decision-making.

4.5 UNCERTAINTIES

Given that an EIA involves prediction, uncertainty forms an integral part of the process (FAO 2010). Two types of uncertainty are associated with the EIA process, namely process-related and prediction related. The FAO (2010) cites types of uncertainty as discussed by De Jongh in Wathern. These are summarised as follow:

- **Uncertainty of prediction** is critical at the data collection phase as final certainty will only be resolved on implementation of the activity being applied for.
- **Uncertainty of values depicts** the approach assumed during the EIA process, while final certainty will be determined at the time decisions are made. Enhanced communications and widespread co-ordination can lower uncertainty; and
- **Uncertainty of related decision** relates to the decision-making aspect of the EIA process, which shall be appeased once monitoring of the project phase is undertaken.

The FAO (2010) further stresses the significance of widespread consultation towards minimising the risk of omitting significant impacts. The use of quantitative impact significance rating formulas can further limit the occurrence and scale of uncertainty.

5 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 X	
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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).

N/A

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 competent authority in respect of the application.

As per comments received the following mitigation measures need to be included:

- Induction and Environmental Awareness training must be done periodically over the duration of the project.
- All activities must be conducted where reasonable and possible during the drier months.
- A periodic photo journal must be kept in order to document the condition of the work areas over the duration of the project.
- A master plan must be kept for each site. The master plan must indicate temporary and permanent infrastructure, diversions, no-go areas, demarcated areas, sensitive areas, stockpiles, material lay down areas, rest & eat area, access, parking, offices and storerooms.
- An incident register must be kept on site and updated regularly.
- Where temporary toilets are to be provided it must be emptied regularly well in advance of filling up.
- Mitigation measures as described in the EMP must be adhered to strictly.
- No open fires will be allowed on site, and demarcated smoking areas must be set out and indicated on the site layout plan.
- No vegetation may be removed/moved without the relevant footprint.
- Vegetation clearance must be limited to the development footprint only.
- Where possible use existing access roads, should new ones need to be developed it must cross the shortest distance.
- No chemicals or hazardous substances may be stored within 100 metres of a

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watercourse.

- Drip trays to be placed beneath all stationary equipment and used during refuelling.
- No animals may be killed, should snakes be discovered a trained person must be called upon to move them.
- All activities must be conducted as stipulated in the Method Statements.

Is an EMPr attached?

YES	
X	

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

NAME OF EAP

SIGNATURE OF EAP

DATE

6 SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information