



BIODIVERSITY ASSESSMENT

**Terrestrial Biodiversity report
&
Riparian delineation report
for**

**Leeuwvallei mixed township development,
Burgersfort, Limpopo Province**

Compiled for

**ANGLORAND Pty (Ltd)
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Executive Summary

The applicant has applied to the authorities to develop several portions of the farm Leeuwvallei 297KT, Burgersfort for residential and business purposes. As part of the Scoping and EIA process, a biodiversity impact assessment was recommended by the Environmental Consultants. The terms set for this report is understood as follows:

- 1) Vegetation and fauna assessment;
- 2) Riparian & Wetland Delineation according to DWAF requirements;

The environment on most of the affected portions on the valley plain has been transformed for agricultural purposes and no natural vegetation remains intact on this area. However, the vegetation on the slopes of the Morole Mountain has remained largely intact although historic mining activities are present. Illegal wood harvesting is having a negative impact on this area. A narrow band of riparian trees is present on the banks of the Steelpoort and Spekboom Rivers.

According to Mucina & Rutherford (2006), *Sekhukhune Plains Bushveld* and *Sekhukhune Mountain Bushveld* and their associated topographic features as well as fauna are not well conserved (2% conserved, 25% transformed and 0.4% conserved, respectively). Due to present impacts *Sekhukhune Plains Bushveld* is rated as *Vulnerable* by Mucina & Rutherford (2006). In contrast, *Sekhukhune Mountain Bushveld* is rated as *Least Threatened*, mainly due to the inaccessible mountainous terrain associated therewith. The Mpumalanga Department of Agriculture and Land Administration's Intrinsic Biodiversity Value (MBC-plan) gives the following ratings to the area based on specific ecological, faunal and floral and other biophysical criteria (Lötter, 2007). The MBC-plan projection indicates that the area varies from "Least concern" to "Highly significant".

Furthermore, the property is located within the *Sekhukhune Centre of Plant Endemism*. This centre contains unique characteristics and offers habitat to several endemic species of flora that is not found elsewhere (Van Wyk & Smith, 2001). This botanical phenomenon is discussed and the important species that were recorded are listed and discussed.

The vegetation communities encountered on the affected areas are described and are illustrated. The riparian areas were delineated and projected on an aerial photograph. No wetlands are present on the study site. A review of Red Data lists projected on the locality and results of field searches indicates that several RDL species may be present in the natural habitats. By using biophysical features of available habitats and using the results of field searches the possibility of these species of occurring on site is investigated. Several important species were recorded.

The fauna survey indicates that all natural habitats will be utilized by the fauna expected to occur on this property. However, it is not anticipated that these species will be negatively affected if given the necessary protection and habitat conservation. The mobility of most fauna will ensure that they can adapt or relocate if disturbed by the activities.

The sensitivity ratings (based upon floral integrity, fauna potential and ecological functions) for the different communities were delineated and are summarized as follows:

Vegetation Community	Sensitivity Rating
Degraded woodland	Low
Closed woodland	High
Riparian zone	High
Drainage line thickets	High
Disturbed land and old lands	Low

It is important that the communities with *High* sensitivity ratings are not significantly disturbed or damaged by construction and that they are well managed during the operational phase.

Due to the fragments of *Highly* significant habitats remaining it will be important for the developer to bear the following in mind during the planning phase:

- Development areas must be planned to make use of already disturbed areas with a *Low* sensitivity rating;
- Roads and stream crossings must be planned on existing passages and disturbed areas within the riparian areas and over watercourses;
- Development areas that are planned within natural communities with a *High* sensitivity rating have to be mitigated in order not to significantly affect the natural integrity of these areas.

The biodiversity assessment concludes that most of the site is transformed to such an extent as to be of *Low* biodiversity concern. However, significant fragments of important natural communities remain intact - it is recommended that these natural areas should be conserved to ensure that the present biodiversity is not affected and that the layout plan be altered to conserve these areas. However, the following mitigation measures and recommendations should be adhered to:

General recommendations

The layout must be planned to accommodate the following:

- Conserve natural communities with a *High* sensitivity significance and minimize loss of individuals and diversity;
- Conserve important species and individuals (i.e. Red Data List and legally protected spp.);
- Conserve large solitary indigenous trees in orchards, dry lands, non-arable and resort / homestead areas;

Additionally, the following measures must be included with the management plan:

- Use only indigenous flora for landscaping;
- Implement an alien invader plant control program;

Township and Industrial development

- Development areas must be confined to already disturbed areas with a *Low* sensitivity rating;
- The recommended development areas consist of the transformed and degraded land and include:
 - i) Degraded woodland
 - ii) Disturbed land and old lands
- General recommendations for development are given in the previous section;
- It is recommended that the disturbed area consisting of the historic mining sites be used to as a relocation site for important vegetation.

Recommendations for development activities and the management of natural communities are given under the following headings:

Riparian zone

- This zone must be improved by planting suitable trees annually, in order to achieve a closed vegetation community alongside the rivers that will serve as an ecological corridor;
- The streambanks must be cleared of alien vegetation, in order to improve the ecological integrity of the community and to prevent the spreading of seeds.

Closed woodland and drainage line thickets

- These areas are of *High* sensitivity rating and no activities are recommended within their boundaries;
- Illegal vegetation removal must be checked;

Due to both (negative) ecological as well as (positive) socio-economic impacts that the development will create, it is important that the potential impacts are objectively evaluated according to the findings of the sensitivity analyses. Potential impacts on the natural environment and their magnitude and significance, as well as mitigation measures are given in impact assessment table:

Impact assessment table and mitigation measures.

Nature of site impacts	Duration	Intensity	Probability	Significance before mitigation	Mitigation measures	Significance after mitigation
Loss of plants and habitats locally and regionally	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. 	Low
Loss of important (legally protected) flora species	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> As above. Conserve important species and individuals. 	Low
Increased levels of alien invasive plants due to disturbance	Long term	High	Definite	Medium	<ul style="list-style-type: none"> Implement weed control program in natural and developed areas. 	Low
Changes to and fragmentation of habitats	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Follow all above measures. Use only indigenous flora for landscaping. Use only existing passages through riparian areas. Ensure that adequate passage for water is allowed for at water course crossings. Construction methods must be respectful of the environment. 	Low
Loss of terrestrial fauna	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. 	Low
Impacts on avifauna	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. Improve riparian zone by annual planting of riparian trees. Use only indigenous flora for landscaping. 	Low
Negative impacts on wetlands	Long term	Medium	Low	Medium	<ul style="list-style-type: none"> Conserve the wetlands. Maintain a suitable buffer. 	Low
Negative impacts on riparian areas	Long term	Medium	Low	Medium	<ul style="list-style-type: none"> Conserve and improve the riparian areas. Maintain a suitable buffer. 	Low

CONTENTS

Executive Summary

1. Introduction and objectives

2. Methods and reporting

2.1 Flora assessment

2.2 Wetland and riparian delineation

2.1.1 Wetland delineation

2.1.2 Riparian delineation

2.3 Fauna potential

2.4 Biodiversity value, ecological importance and sensitivity rating

3. Background Information

3.1 Study area description and land uses

3.2 Veld types

3.3 Conservation value

3.4 Floral endemism of the study area

4. Flora and riparian/wetland delineation report

4.1 Vegetation Communities and Delineation

4.2 Occurrence of important flora species

5. Terrestrial Fauna Report - Vertebrates

5.1 Amphibians

5.2 Reptiles

5.3 Birds

5.4 Mammals

5.5 Invertebrates

5.6 Pollinators

5.7 Limitations to Vertebrate Faunal Report

6. Discussion and Impact Assessment

6.1 Sensitivity rating

6.2 Impact Assessment

7. Conclusions and Recommendations

8. References

Appendices

1. Introduction and objectives

The applicant has applied to the authorities to develop several portions of the farm Leeuwvallei 297KT, Burgersfort for residential and business purposes. As part of the Scoping and EIA process, a biodiversity impact assessment was recommended by the Environmental Consultants. The terms set for this report is understood as follows:

- 3) Vegetation and fauna assessment with the following objectives:
 - Important communities and habitats;
 - Important- and indicator species and their relevance;
 - Ecological mapping and sensitivity zoning of relevant areas;
 - Invasive/Exotic species and weeds;
 - Impact assessment, recommendations and mitigation measures;
 - Red Data potential and actual species found;
- 4) Riparian & Wetland Delineation according to DWAF requirements using the following criteria:
 - Vegetation indicator species and their relevance;
 - Soil form and wetness indicators;

For the purposes of this report, the site was surveyed on 2009-02-04/05/06.

2. Methods and Reporting

2.1 Flora assessment

Aerial photographs and site surveys were used to determine the different features and vegetation communities present on the farm. Floral diversity was determined by assessing survey transects and sites along all the different vegetation communities identified on the affected areas. In order to attain scientifically reliable results, obviously distinct vegetation communities were surveyed by selecting representative sites in each homogenous unit (Mathews *et al.* 1992). Communities are named according to the recommendations for a standardized South African syntaxonomic nomenclature system as explained by Deal *et al.* (1989). By combining the available literature with the survey results, stratification of vegetation communities was possible.

The survey transects and sites in the affected areas were also intensively searched for important species and the potential for Red Data Listed (RDL) and other important species were established. The aim was to identify distinct vegetation types and to establish their integrity and representation in the study area. The veld types are described on a local level, with the aid of site surveys in section 4 of this report. Vegetation checklists are given in Appendix 1.

2.2 Wetland and riparian delineation

The delineation is conducted according to “*A practical field procedure for identification and delineation of wetlands and riparian areas*” as amended and published by the

Department of Water Affairs and Forestry (2005); (Henceforth referred to as DWAF Guidelines (2005).

Aerial photographs and land surveys were used to determine the different features and potential wetland and riparian areas of the study area. Vegetation diversity and assemblages was determined by completing survey transects along all the different vegetation communities identified in the riparian areas.

2.2.1 Wetland delineation

No wetlands were identified on the development land.

2.2.2 Riparian delineation

Riparian areas are protected by the National Water Act which defines a riparian habitat as follows:

“Riparian habitat includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.”

Riparian areas include plant communities adjacent to and affected by surface and subsurface hydrologic features, such as rivers, streams, lakes, or drainage ways. Due to water availability and rich alluvial soils, riparian areas are usually very productive. Tree growth rate is high and the vegetation is lush and includes a diverse assemblage of species. The delineation process requires that the following be taken into account:

- Topography associated with the watercourse;
- Vegetation;
- Alluvial soils and deposited material.

A typical riparian area according to the DWAF Guidelines (2005) is projected in Fig. 2.

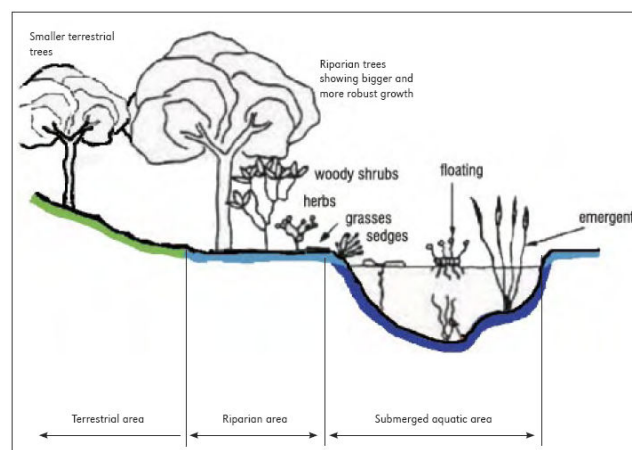


Fig. 1 Cross section of a typical riparian area DWAF Guidelines (2005)

In addition to the DWAF Guidelines (2005), the unpublished notes: *Draft riparian delineation methods prepared for the Department of Water Affairs and Forestry, Version 1* (Mackenzie & Roundtree, 2007) were used for classifying riparian zones encountered on the property according to the occurrence of nominated riparian vegetation species.

The delineated areas are projected as an overlay on the available layout and contour map. To attain universal terms and references for this report, all components of the delineation reports refer to the floral communities/habitats that were identified by the flora component of this report.

2.3 Fauna potential

The fauna investigation was based on an intensive desktop study verified by cross reference with available habitats on or near the site. All fauna that were observed during field trips and floral surveys were also recorded. However, the survey sites were well searched for fauna and habitats during the flora surveys so as to be included in the establishing the faunal potential of the site. By process of elimination (based on available habitats and the taxon's biology and known distribution), lists of faunal representation for the affected area was assembled. The affected areas' potential was investigated for:

- Important invertebrates;
- Butterflies;
- Reptiles – in order not to destroy or damage natural rocky areas and termite mounds the reptile search were limited to visual encounters as well as investigating smaller cover objects which could be replaced in its natural position;
- The mammal investigation was based on visual encounters and physical signs (e.g. tracks and droppings);
- The avifaunal investigation is presented in section 6.6 of this report.

So as to attain universal terms and references for this report, all reports refer to the floral communities/habitats that were identified, as basis.

2.4 Biodiversity value, ecological importance and sensitivity rating

By considering the results of all the above investigations, the authors allocate a qualitative sensitivity rating to each component of the survey, based upon its ecological importance and biodiversity value. A qualitative method was chosen instead of a quantitative method in order simplify the procedure and the interpretation of this specialist report (Table 1). This method of assessment is modified from the methods used by DWAF for *river ecoclassification* (Kleynhans *et al.*, 2009) and *a technique for assessing wetland health* (Macfarlane *et al.*, 2005). In order to simplify the decision making process, a scale from *Low*, *Medium* and *High* is used, based upon biodiversity value, ecological functions and wetland functions (where applicable):

Table 1 Qualitative sensitivity rating of natural habitats and wetlands

Ecological Importance/Biodiversity Value		Sensitivity Rating
Terrestrial and Riparian Communities	Wetland Communities	
Natural communities that are regarded as ecologically important and sensitive and important for the maintenance of biodiversity. It may be linked to other important communities and provide an important refuge/corridor for biodiversity (fauna and flora). This rating can also be allocated due one or more unique qualities (e.g. occurrence of RDL, Endemic and/or Protected species). The presence of unnatural impacts is low and can be managed. Any external impacts will have a significant negative effect on its status.	A wetland community that has a high biodiversity value and ecological function. The integrity of the wetland is sensitive to any impacts that will modify its flow and habitat quality. The wetland provides an important function in the maintenance of water quality and quantity for nearby streams and downstream rivers.	<i>High</i>
Natural communities that has a limited ecological function and a limited function for maintaining biodiversity. This may be due to homogenous habitat conditions and/or the negative effects of external impacts. External impacts can be managed and mitigated to reduce the significance of their magnitude.	A wetland community that has a limited ecological function and a limited biodiversity value. The integrity of the wetland is not overly sensitive to impacts that will modify its flow and habitat quality. The wetland provides a limited wetland function.	<i>Medium</i>
Communities that have been significantly modified or transformed with the result that little or no natural flora and habitats remain intact. Ecological importance and biodiversity value is low. External impacts will not have a significant impact on its status.	A wetland that is not ecologically important and has a low biodiversity value. The habitat is homogenous and not sensitive to flow modifications. The wetland provides a small or insignificant wetland function.	<i>Low</i>

It should be noted that the above method is used only at this (first) level for the sensitivity rating of wetlands in this report. A wetland functions and integrity assessment is based on quantitative variables and is not covered under the the terms and scope of work for this report.

3. Background Information

3.1 Study area description and land uses

Topography and climate

The general topography of the affected area consists of flat plains that have been transformed to irrigation and dry land crop production. Prominent features on the site are the Morole Mountain on the western boundary and the Steelpoort River on northern boundary. Altitude varies between 700m (valley plain) and 1400m (Morole Mountain). Mountainous areas are adjacent to the west. The annual rainfall average is about 450mm, occurring in summer. Temperatures range from -5°C to 40°C, with an average of 21°C.

Geology

The soil is mostly coarse, sandy and shallow, with sandy-clay soil in the bottomland along the Steelpoort River. The plains consist of sandy alluvial soils whilst the higher lying areas are rocky and have shallow soils.

Environment and Land use

The environment on most of the affected portions on the valley plain has been transformed for agricultural purposes and no natural vegetation remains intact on this area. However, the vegetation on the slopes of the Morole Mountain has remained largely intact although historic mining activities are present. Illegal wood harvesting is having a negative impact on this area. A narrow riparian of riparian trees is present on the banks of the Steelpoort River.

3.2 Veld types

On a national scale the study area is classified as Mixed Bushveld (A18), according to Acocks (1988) and Mixed Bushveld according to Low & Rebelo (1998) and Schmidt *et al.* (2002). Regionally, it is classified as Arid Northern Dry Bushveld (Siebert *et al.* 2002). Classified on a local scale and according to a more detailed system (Mucina & Rutherford, 2006) these areas are classified as *Sekhukhune Plains Bushveld* (SVcb27) and *Sekhukhune Mountain Bushveld* (SVcb 28) as projected in Fig. 3. The structure of these bushveld veld types are determined mainly by fire and grazing (Low and Rebelo (1998).

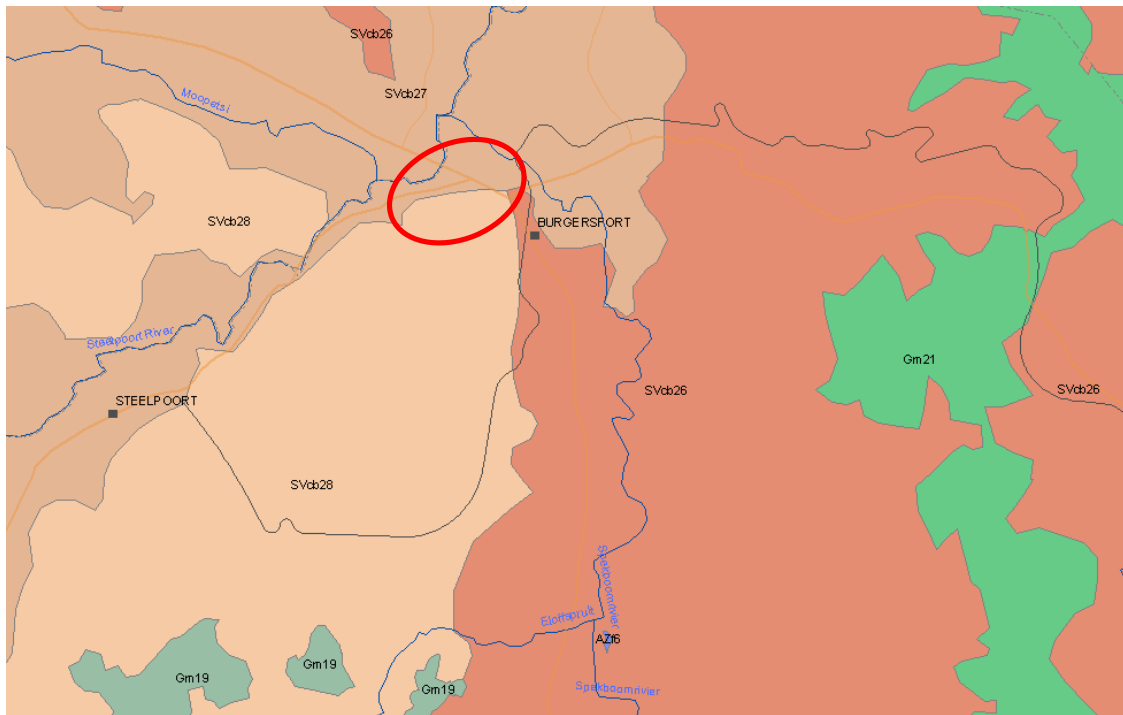


Fig. 2 Veld types of the study area

3.3 Conservation value

According to Mucina & Rutherford (2006), *Sekhukhune Plains Bushveld* and *Sekhukhune Mountain Bushveld* and their associated topographic features as well as fauna are not well conserved (2% conserved, 25% transformed and 0.4% conserved, respectively). Locally, these veld types are mainly conserved in a natural state due to game- and cattle farms as well as large mining properties. However, these veld types are becoming increasingly under threat due to extensive mining developments and degrading land-use activities by the local population.

Due to these impacts *Sekhukhune Plains Bushveld* is rated as *Vulnerable* by Mucina & Rutherford (2006). In contrast, *Sekhukhune Mountain Bushveld* is rated as *Least Threatened*, mainly due to the inaccessible mountainous terrain associated therewith. The Mpumalanga Department of Agriculture and Land Administration's Intrinsic Biodiversity Value (MBC-plan) gives the following ratings to the area based on specific ecological, faunal and floral and other biophysical criteria (Fig. 4); (Lötter, 2007). The MBC-plan projection (Fig. 4) indicates that the area varies from "*Least concern*" to "*Highly significant*".

Furthermore, the property is located within the *Sekhukhune Centre of Plant Endemism*. This centre contains unique characteristics and offers habitat to several endemic species of flora that is not found elsewhere (Van Wyk & Smith, 2001). This botanical phenomenon is discussed in the following section.

3.4 Floral endemism of the study area

The geology of the study area is complex and consists of mafic and ultramafic intrusive rocks that contain high concentrations of heavy metals. These geological characteristics are the main contributing factor for the high occurrence of plant endemism in the study area – known as the *Steelpoort Sub Centre* of the *Sekhukhune Centre of Plant Endemism* (SCE); (Van Wyk & Smith, 2001).

This centre of endemism is made up of several distinct vegetation types as described in Mucina & Rutherford (2006) and Van Wyk & Smith (2001). The main vegetation types of this centre are described in Table 1. Species of concern for the present investigation includes only *Sekhukhune Plains Bushveld* (SVcb27).

The SCE hosts a large amount of Near Endemic and Endemic plants, several of which are Red Data Listed (RDL) due to their vulnerability and rarity. The results of an intensive literature study of the important plants of the SCE are included in Table 2. The potential of the important species that are included in Table 2 to occur in the affected area is discussed in section 4.2 of the report.

Table 2.1 Vegetation types of the *Sekhukhune Centre of Plant Endemism*

Vegetation Type	Conservation	Short Description
Sekhukhune Montane Grassland (Gm 19)	Vulnerable; No formal conservation.	Continuous undulating norite hills in Roosenekal region, from Stoffberg in the south, northwards through Mapochsgronde to Schurinksberg and the Steelpoort River to the West. Comprises the <i>Roosenekal Subcentre</i> of the SCE. 1300-1960m.
Leolo Summit Sourveld (Gm 20)	Vulnerable; No formal conservation.	Discontinuous summits on the Leolo Mountain range. Restricted to 1700-1920m altitude. Comprises the <i>Leolo Subcentre</i> of the SCE.
Sekhukhune Plains Bushveld (SVcb 27)	Vulnerable; 2% conserved.	Lowland area from Burgersfort and the lower basin of the Steelpoort River in the south, northwards through the plains to the Strydpoort Mountain and the basin of the Olifants River. 700-1100m.
Sekhukhune Mountain Bushveld (SVcb 28)	Least Threatened; 0.4% conserved.	Mountains and undulating hills above type SVcb 27, including the slopes of Leolo Mountain, Dwars River Mountain, Thaba Sekhukhune up to the Klip River near Roosenekal. Comprises the <i>Steelpoort Subcentre</i> of the SCE. 900-1600m.

Table 2.2 Important flora species of the *Sekhukhune Centre of Plant Endemism*. Only species affiliated with SVcb 27 and SVcb 28 are relevant to the study site. Bold font indicates species that were recorded during the investigation.

Species	Endemism	Red Data Status		Vegetation type affiliation	Likelihood of occurrence on site	Motivation and notes
		National	MPB			
<i>Acacia ormocarpoides</i>	Endemic			SVcb 28		
<i>Acacia sekhukhuniensis</i> <i>P.J.H.Hurter</i>	Endemic	CR		SVcb 28		
<i>Adenia fruticosa</i> ssp <i>fruticosa</i>	Endemic	NT		SVcb 27; SVcb 28	Likely; Recorded	Prefers rocky slopes;
<i>Agapanthus inapertus</i> <i>P.Beauv. subsp. intermedius</i> <i>F.M.Leight.</i>	Near Endemic	LC		Gm 19; Gm 20		
<i>Aloe burgersfortensis</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Recorded	Sandy soils of study area;
<i>Aloe castanea</i>	Near endemic			Gm 19; SVcb 27; SVcb 28	Likely; Recorded	Diverse distribution and tolerancy;
<i>Aloe cryptopoda</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Recorded	Diverse distribution and tolerant; Taxonomy=<i>A. wiickensii</i>?
<i>Aloe fosteri</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Diverse distribution and tolerancy;
<i>Aloe immaculata</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Diverse distribution and tolerancy;
<i>Aloe mutans</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Taxonomy?
<i>Aloe reitzii</i> var. <i>reitzii</i>	Endemic		VU	Gm 19		

Biodiversity Report – Leeuwalley, Burgersfort

<i>Aloe wickensii</i> var. <i>lutea</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Diverse and tolerancy; Taxonomy=A. <i>cryptopoda</i> ?
<i>Aloe wickensii</i> var. <i>wickensii</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Diverse and tolerancy; Taxonomy=A. <i>cryptopoda</i> ?
<i>Aneilema longirrhzum</i>	Endemic			SVcb 27	Likely; Not recorded	Bushveld habitat of study area;
<i>Argyrolobium wilmsii</i>	Near endemic			Gm 19		
<i>Asparagus fouriei</i>	Near endemic			SVcb 27	Likely; Not recorded	Bushveld habitat of study area;
<i>Asparagus intricatus</i>	Near endemic	LC		Gm 19; Gm 20		
<i>Asparagus sekhukuniensis</i>	Endemic	EN		Gm 20; SVcb 27; SVcb 28	Likely; Not recorded	Widespread in study area;
<i>Berkheya densifolia</i>	Near endemic			Gm 19; Gm 20		
<i>Catha edulis</i> (Vahl) Forssk. ex Endl.		LC				
<i>Chlorophytum cyperaceum</i>	Endemic	LC	Listed, no rating	SVcb 27; SVcb 28	Unlikely; Not recorded	Damp, shady areas;
<i>Combretum petrophilum</i>	Near Endemic	Rare		Restricted to river gorges;		
<i>Cyanotis pachyrrhiza</i>	Near Endemic			Gm 19; Gm 20		
<i>Cyphia transvaalensis</i>	Near Endemic			Gm 20		
<i>Delosperma annulare</i> L.Bolus		DD		Gm 19; Gm 20		
<i>Delosperma deilanthoides</i>	Endemic			Gm 19; Gm 20		
<i>Delosperma rileyi</i> L.Bolus		DD		Gm 19; Gm 20		
<i>Dicliptera fruticosa</i> K.Balkwill		LC		Gm 19; Gm 20		
<i>Dioscorea dregeana</i> (Kunth) T.Durand & Schinz		LC		SVcb 27; SVcb 28	Not recorded	Woodland; forest margins
<i>Dombeya autumnalis</i> I.Verd.	Near Endemic	LC		SVcb 28		
<i>Drimia altissima</i> (L.f.) Ker Gawl.=Urg SVcb 27; SVcb 28 <i>28inea altissima</i>		Declining		Gm 19; SVcb 27; SVcb 28		
<i>Dyschoriste perrottetii</i>	Endemic			Gm 19		
<i>Elaeodendron transvaalense</i> (Burt Davy) R.H.Archer		NT		SVcb 28; SVcb 27	Not recorded	Bushveld
<i>Elephantorrhiza praetermissa</i>	Endemic		NT	Gm 19; SVcb 28		
<i>Euclea sekhukuniensis</i>	Endemic			Gm 19; SVcb 27; SVcb 28	Likely; recorded	Widespread in study area;
<i>Eulophia speciosa</i> (R.Br. ex Lindl.) Bolus		Declining		Gm 19; SVcb 27; SVcb 28	Not recorded	
<i>Euphorbia enormis</i>	Endemic	NT		Gm 19; Gm 20; SVcb 27; SVcb 28	Likely; Not recorded	Variety of habitats in study area;
<i>Euphorbia maleolens</i>	Near endemic			SVcb 27	Likely; Not recorded	Sandy soils in mixed bushveld;
<i>Euphorbia sekhukuniensis</i>	Endemic	Rare		SVcb 28		
<i>Gladiolus sekhukuniensis</i>	Near endemic	VU		Gm 19; Gm 20		
<i>Gnidia caffra</i> (form)	Endemic			Gm 19; Gm 20		
<i>Graderia linearifolia</i>	Near endemic			Gm 19		
<i>Grewia vernicosa</i>	Near endemic			Gm 19; Gm 20; SVcb 28		
<i>Gymnosporia</i> sp. nov.	Endemic		VU	SVcb 27		
<i>Helichrysum uninervium</i>	Near endemic			Gm 19; Gm 20		
<i>Helichrysum rudolfii</i>	Near endemic	LC		Gm 20		
<i>Hibiscus barnardii</i>	Endemic		Listed, no rating	Gm 20; SVcb 27	Likely; Not recorded	?
<i>Huernia insigniflora</i>	Near endemic			Gm 19		

Biodiversity Report – Leeuvallei, Burgersfort

<i>Hypoxis hemerocallidea</i> Fisch., C.A.Mey. & Avé-Lall.		Declining		Gm 19; SVcb 27; SVcb 28	Not recorded	Widespread
<i>Ilex mitis</i> (L.) Radlk. var. <i>mitis</i>		Declining		Gm 19; Gm 20		Forest & Riparian forest
<i>Indigofera lydenburgensis</i>	Near endemic			SVcb 28		
<i>Ipomoea bathycolpos</i>	Near endemic			Gm 19		
<i>Jamesbritennia macrantha</i>	Endemic		Listed, no rating	Gm 19		
<i>Jasminum quinatum</i>	Near endemic			Gm 19		
<i>Jatropha latifolia</i> var. <i>angustata</i>	Near endemic	LC		Gm 19; SVcb 28		
<i>Kleinia stapeliiformis</i>	Near endemic			Gm 19; SVcb 27	Likely; Recorded	Arid bushveld and thornveld;
<i>Lydenburgia cassinoides</i>	Endemic	NT		Gm 19; SVcb 27; SVcb 28	Unlikely; Not recorded	Outcrops and riparian zones;
<i>Melhania randii</i>	Near endemic		Listed, no rating	Gm 19; Gm 20		
<i>Nemesia zimbabwensis</i> Rendle	Endemic	EN		Gm 20		High altitude Leolo mountains
<i>Ocimum tubiforme</i>	Endemic	CR		Gm 19; Gm 20		
<i>Orthisiphon fruticosus</i>	Near Endemic	LC		SVcb 27	Unlikely; Not recorded	Rocky areas of study area;
<i>Ozora</i> sp.	Near endemic			SVcb 28		
<i>Petalidium oblongifolium</i>	Near Endemic			SVcb 27; SVcb 28	Likely; Not recorded	Bushveld of study area;
<i>Piранthus atosanguineus</i>	Near Endemic			SVcb 27	Likely; Not recorded	
<i>Plectranthus porcatus</i>	Endemic			SVcb 28		
<i>Polygala</i> sp. nov.	Endemic			Gm 19; Gm 20		
<i>Protasparagus sekhukuniensis</i>	Endemic			SVcb 27	Likely; Not recorded	Bushveld of study area;
<i>Reznova</i> sp. 'megaphylla'	Endemic			Gm 19		
<i>Rhoicissus sekhukuniensis</i>	Endemic			Gm 19; Gm 20; SVcb 28		
<i>Rhus batophylla</i>	Endemic	NT	VU	SVcb 27; SVcb 28	Likely; Not recorded	Bushveld of study area;
<i>Rhus keetii</i>	Endemic			SVcb 28		
<i>Rhus sekhukuniensis</i>	Endemic	LC	Listed, no rating	Gm 19; SVcb 28	Likely; Recorded	Bushveld of study area;
<i>Rhus wilmsii</i>	Endemic		Listed, no rating	SVcb 27; SVcb 28	Likely; Not recorded	Rocky areas of study area;
<i>Rhyncosia rudolfi</i>	Near endemic			Gm 19		
<i>Searsia batophylla</i> (Codd) Moffett		VU				Unsure
<i>Searsia sekhukuniensis</i> (Moffett) Moffett		Rare				Unsure
<i>Tetraselago wilmsii</i>	Near endemic			Gm 19		
<i>Triaspis glaucophylla</i>	Near endemic			Gm 19	Likely; Recorded	Shrub found of closed woodland
<i>Vitex obovata</i> subsp. <i>wilmsii</i>	Near endemic			Gm 19; Gm 20		
<i>Zantedeschia jucunda</i>	Endemic	VU		Gm 19		Roosenekal subcentre
<i>Zantedeschia pentlandii</i>	Near Endemic		VU	Gm 19		Roosenekal subcentre

4. Flora and riparian/wetland delineation report

4.1 Vegetation Communities and Delineation

The vegetation communities encountered on the affected areas are described in the following sections and are delineated in Fig. 5 and illustrated in Appendix 1. The vegetation checklist is given in Appendix 2. No wetlands were identified on the development land.

1) Degraded woodland

This community is found in the first section of all three alternatives. It can be described as a tall shrubland dominated by several species of *Acacia*. The following species were recorded frequently: *Acacia grandicornuta*, *A. galpinii* and the differential species is *Euphorbia tirucalli*. Other commonly found species are *Terminalia prunioides*, *Bolusanthus speciosa* and *Dichrostachys cinerea*. Less frequent species are *Boscia foetida*, *Ehretia rigida* and *Rhus sekhukhuniensis*. Smaller shrubs are represented by *Grewia bicolor*, *Croton gratissimus*, *Gymnosporia heterophylla*, *Euclea crispa*, *Euclea linearis*, *Flueggia virosa* and *Triaspis glaucophylla*. The wild flower component is not well developed but forbs such as *Petalidium oblongifolium*, *Commelina africana*, *Cyanotis speciosa*, *Asparagus intricatus*, *Euphorbia schinzii* as well as the aloes, *Aloe marlothii*, *Aloe castanea*, *Aloe cryptopoda* and *Aloe cf. burgersfortensis* are present.

It has a *Low* sensitivity rating due to the historic impacts. However, Red Data Listed and important Endemic species will have to be searched for and relocated or conserved before development activities commence.

2) Closed woodland

This community is located on the slopes of the Morole Mountain and consists of a closed woodland community. It can be described as medium tall closed woodland characterized by several species of *Commiphora*, *Commiphora tenuipetiolata* being the most abundant. Large specimens of *Kirkia wilmsii* are scattered throughout. Medium sized trees and large shrubs include *Ehretia rigida*, *Dichrostachys cinerea*, *Boscia foetida*, *Commiphora schimperi* and *Commiphora pyracanthoides*. Forbs and wild flowers include *Petalidium oblongifolium*, *Aloe cryptopoda*, *Aloe burgerfortensis*, *Euphorbia schinzi*, *Euphorbia ingens*, *Lantana rugosa*, *Solanum panduriforme* and *Kleinia stapeliiformis*. Of exceptional conservation importance is the frequent occurrence of *Adenia fruticosa*, *Eulophia petersii* and *Urginea latissima*.

This community has a *High* sensitivity rating attributed by the large number of important species recorded as well as the tall structure of this community and should be avoided from development plans.

3) Riparian zone

The riparian zone varies greatly along the Steelpoort River in the study area. At certain localities it is dominated by *Phragmites mauritianum* and *Cyperus* sp. – no trees are present. However, exceptionally large trees have remained intact along most of the river bank. These include large specimens of *Combretum erythrophyllum*

and *Acacia galpinii* as well as the alien invaders *Morus alba*, *Sesbania punicea* and *Melia azedarach*. *Phragmites mauritianum* and *Cyperus* sp are also present within the aquatic zone.

Although the flora diversity is *Low*, the ecological importance and sensitivity rating is *High* due to the important functions of this community. It is anticipated that impacts will not significantly affect the structure of this community.

4) Disturbed land and old lands

The general region around Steelpoort is regarded as high potential agriculture producing areas due to the climate and availability of water as well as a high potential for mining due to the heavy metal deposits. For these reasons some areas have been transformed to establish irrigation lands as well as dry lands. Some of these lands have been abandoned and are derelict. Land has also been transformed due to mining activities where all natural vegetation has been destroyed, but some areas have naturalized again to some extent. Natural vegetation is establishing itself again in the form of *Acacia spp.* and *Dichrostachys cinerea*. However, these areas remain low in species diversity and all of these areas' sensitivity rating is *Low*.

4.2 Occurrence of important flora species

Important naturally occurring species can be categorized according to specific features that are important, usually due to rarity, habitat specificity, medicinal value, ecological value, endemism, over-exploitation, economic value or a combination of these. Usually, important species of concern are categorized as Red Data Listed species, according to specific scientifically researched criteria and published by the South African National Biodiversity Institute. Applicable legislation that protect such species in South Africa are the National Environmental Management Biodiversity Act of 2004 (NEMBA) and the National Forestry Act of 1998 (NFA).

A review of Red Data lists projected on the locality and results of field searches indicates that several RDL species may be present in the natural habitats. By using biophysical features of available habitats and using the results of field searches the possibility of these species of occurring on site is given in Table 2.2. Several important species listed in Table 2.2 were recorded and additional protected species that were recorded is listed below:

Species	Endemism	Status		Vegetation communities/
		National Red Data	Protected	
<i>Adenia fruticosa ssp fruticosa</i>	Endemic	NT	Protected	Footslope woodland
<i>Aloe burgersfortensis</i>	Near Endemic		Protected	Plains woodland Footslope woodland
<i>Aloe castanea</i>	Near endemic		Protected	Plains woodland Footslope woodland
<i>Aloe cryptopoda</i>	Near Endemic		Protected	Plains woodland Footslope woodland
<i>Aloe marlothii</i>			Protected	Plains woodland Footslope woodland
<i>Euclea sekhukuniensis</i>	Endemic			Plains woodland
<i>Kleinia stapeliiformis</i>	Near endemic			Footslope woodland
<i>Rhus sekhukuniensis</i>	Endemic	LC		Plains woodland
<i>Balanites maughamii</i> subsp.			Protected	Footslope woodland

<i>maughamii</i>				
<i>Boscia foetida</i> subsp. <i>rehmanniana</i>			Protected	Plains woodland
<i>Eulophia streptopetala</i>		LC	Protected	Footslope woodland
<i>Eulophia petersii</i>			Protected	Footslope woodland
<i>Urginea latissima</i>				Footslope woodland
<i>Jatropha latifolia</i>	Near endemic			Plains woodland
<i>Triaspis glaucophylla</i>	Near endemic			Footslope woodland
<i>Euclea linearis</i>	Near endemic			Footslope woodland
<i>Sclerocarya birrea</i> ssp. <i>caffra</i>			Protected	Footslope woodland

Also of conservation importance is the occurrence of alien species and weeds. Such species are listed in the Conservation of Agricultural Resources Act of 1983 (CARA). The control by landowners of the presence and spreading of such species are regulated by these Acts. Most of the natural habitats are rather devoid of alien vegetation. Frequently found alien species identified includes *Agave americana* and *Opuntia sp.*, these were identified in all the plains bushveld vegetation communities. *Morus alba*, *Sesbania punicea* and *Melia azedarach* were frequently recorded in the riparian zone of the Steelpoort River.

5. Terrestrial Fauna Report – Vertebrates

5.1 Amphibians

Frogs will utilize all the terrestrial habitats for several reasons, excluding breeding purposes. No sensitive habitats essential for the survival of frogs are will be affected. Nineteen frog species' range of distribution includes the study area – none of these have Red Data status (Appendix 3, Table 1). Two species, the Rattling frog (*Semnodactylus wealii*) and the Bronze caco (*Cacosternum nanum*) is regarded as endemic. However, they are found widespread and are not considered rare or threatened. These taxa will be able to adapt to the changes and move away from disturbed areas and will most probably utilize the affected area again after the impacts have stabilized.

5.2 Reptiles

The terrestrial and arboreal habitats present will provide habitat for a diverse group of reptiles (Appendix 3, Table 2). The reptile study indicates that all the natural habitats are of high importance to reptiles. No Red Data species are expected but nineteen Near Endemic and Endemic species can use the available habitats, none of which are locally endemic and none of these are of critical concern at present. Furthermore, it is not anticipated that these taxa will be significantly affected by the proposed activities. Although a marginal loss of habitat will occur in the natural areas, these taxa will be able to adapt to the changes and move away from disturbed areas and will most probably utilize the affected area again after the impacts have stabilized.

5.3 Birds

5.3.1 Background

The following literature, data bases and other methods were used in order to cover as many as possible aspects for the avifauna assessment:

- Expected bird distribution for the study area as compiled by Roberts' Multimedia Birds of Southern Africa (1997-2003);
- Bird distribution data of the Southern African Bird Atlas Project (SABAP) – Harrison *et al.* (1997);
- The Important Bird Areas of Southern Africa (IBA) data (Barnes, 1998) to determine if any IBA sites/regions are located nearby;
- The Eskom Red Data book of birds of South Africa, Lesotho and Swaziland (Barnes, 2000) to determine the Red Data Listed (RDL) species that has the highest probability to be affected;
- The vegetation types and habitats important to birds were determined by literature studies as described elsewhere in this report and actual site investigations were conducted to determine the on-site conditions and integrity of habitats as well as important-bird surveys;
- By method of deduction (using all the abovementioned data) the study area were assessed to determine the magnitude of possible impacts on birds;

The literature review indicates that a diverse group of birds may utilize the area. More than 400 species' range of distribution falls within the study area. Due to the topography and habitat types present in the study area, the expected birds can be limited to savannah and mixed bushveld specific species. There are no IBA sites within- or nearby the study area.

The study area falls in the savanna biome and consists mainly of mixed bushveld and shrubland as described in section 4 of this report. This implies that a wide range of bushveld birds can be expected in the area. Nearby mountainous terrain and natural areas will ensure that the whole ecological spectrum of birds may be present permanently or as visitors and will use the area for one purpose or another. No dams or wetlands are present at site level. However, a perennial river, the Steelpoort River, is present and these riparian and aquatic habitats are an important corridor for birds and other fauna. However, these will not be affected by the development activities.

Importantly, several old agriculture lands are located in the study area. These lands provide habitat to Black- and Yellow billed storks during their annual migration to the study area and is not used as breeding habitats.

5.3.2 Red Data Bird species

Red Data Listed (RDL) species that are expected in the study area are listed in Table 3.

Table 3 Red Data and Endemic birds that may be present in the study area. National Red Data listed birds according to Barnes (2000).

Scientific name	Common name	Endemic Status (p Roberts)	National status	Notes
<i>Alcedo semitorquata</i>	Half collared kingfisher	(p173)	NT	
<i>Botaurus stellaris</i>	Bittern	(p602)	CR	
<i>Buphagus erythrorhynchus</i>	Redbilled oxpecker	(p973)	NT	
<i>Buteo rufofuscus</i>	Jackal Buzzard	Sthrn A (p526)		

Terrestrial Biodiversity and Riparian & Wetland Report

<i>Ciconia nigra</i>	Black stork	(p626)	NT	
<i>Circus maurus</i>	Black harrier	(p502)	NT	
<i>Circus ranivorus</i>	African marsh harrier	(p505)	VU	
<i>Crex crex</i>	Common crane	(p325)	VU	
<i>Eupodotis barrowii</i>	Whitebellied korhaan	Sthrn A (p304)	VU	
<i>Eupodotis caerulescens</i>	Blue Korhaan	SA (p302)	NT	
<i>Falco biarmicus</i>	Lanner Falcon	(p556)	NT	
<i>Falco naumanni</i>	Lesser Kestrel	(p545)	VU	
<i>Falco peregrinus</i>	Peregrine Falcon	(p557)	NT	
<i>Gyps coprotheres</i>	Cape Vulture	(p489)	VU	
<i>Hieraaetus ayresii</i>	Ayre's eagle	(p534)	NT	
<i>Laniarius ferrugineus</i>	Southern Boubou	Sthrn A (p697)		
<i>Leptoptilos crumeniferus</i>	Marabou stork	(p626)	NT	
<i>Mycteria ibis</i>	Yellow billed stork	(p617)	NT	
<i>Neotis denhami</i>	Stanley's Bustard	SA (p291)	VU	
<i>Nettapus auritus</i>	Pygmy Goose	(p99)	NT	
<i>Oenanthe bifasciata</i>	Buff-streaked Chat	(p947)		
<i>Ploceus capensis</i>	Cape weaver	SA (p1012)		
<i>Pododica senegalensis</i>	African finfoot	(p314)	VU	
<i>Polemaetus bellicosus</i>	Martial Eagle	(p538)	VU	
<i>Rostratula benghalensis</i>	Painted snipe	(p380)	NT	
<i>Sagittarius serpentarius</i>	Secretary bird	(p542)	NT	
<i>Sarothrura affinis</i>	Striped flufftail	(p319)	VU	
<i>Sigelus silens</i>	Fiscal Flycatcher	Sthrn A (p917)		
<i>Spreo bicolor</i>	Pied Starling	Sthrn A (p968)		
<i>Zosterops pallidus</i>	Cape White-eye	Sthrn A (p822)		

Abbreviations as follows: CR=critically endangered; EN=endangered; VU=vulnerable; T=threatened; NT=near threatened; LC=least concern; DD=data deficient. Endemic status (SA = South Africa; Sthrn A = Southern Africa)

Of the RDL listed species potentially to utilize habitats within the wider study area are the Stanley's Bustard, Cape Vulture, all raptors, Secretary Bird and the Storks are the most likely candidates to be negatively affected. The Storks are known to visit the old lands as well as naturally vegetated areas of the study area but are not permanent residents.

However, it is not anticipated that RDL or commonly found birds will be significantly affected by the proposed activities. Although a marginal loss of habitat will occur in the natural areas, these taxa will be able to adapt to the changes and move away from disturbed areas and will most probably utilize the affected area again after the impacts have stabilized.

5.4 Mammals

A diverse group of small to medium sized mammals will utilize the natural habitats on the property (Appendix 3, Table 4). However, the locality of the site and nearby human activities will definitely have a negative effect on the actual presence of mammals on site. In this instance the lack of policing would encourage poaching to a degree that is not sustainable and resulting in the loss of species on site. The location of the affected area nearby to human settlements makes it unsuited for conservation purposes for larger mammals and most species present will be smaller mammals and nocturnal species as human activities during daytime will limit their normal habits. Mammals of conservation importance as well as Red Data listed mammals which' distribution range falls within the site locality are given in Table 4. The mobility of most mammals will ensure that they can adapt or relocate if disturbed by the proposed activities.

Terrestrial Biodiversity and Riparian & Wetland Report

Table 4 Red Data listed mammals of the study area (Friedman & Daly, 2004)

Classification	Habitat	Status	Likelihood of occurrence
Order: Insectivora			
Family: Soricidae			
Swamp musk shrew (<i>Crocidura mariquensis</i>)	Moist habitats, thick grass along riverbanks, in reedbeds and in swamp.	Data Deficient	Adequate Habitat
Reddish-grey musk shrew (<i>Crocidura cyanea</i>)	Dry terrain: Among rocks, in dense scrub and grass. Grassland and thick shrub bordering streams. Wet vleis with good grass cover.	Data Deficient	Adequate Habitat
Peter's musk shrew (<i>Crocidura gracilipes</i>)	Coastal forest, savanna woodland, montane evergreen forest, montane communities, grassland: under trees, in old timber, under rocks and stones.	Data Deficient	Adequate Habitat
Tiny musk shrew (<i>Crocidura fuscomurina</i>)	All latitudes, wide tolerance. Terrestrial. Cover such as debris, fallen trees, wood piles or dense grass clumps.	Data Deficient	Adequate Habitat
Lesser red musk shrew (<i>Crocidura hirta</i>)	In damp situations along rivers and streams. Low bushes, dense undergrowth, piles of debris and fallen logs.	Data Deficient	Adequate Habitat
Least dwarf shrew (<i>Suncus infinitesimus</i>)	Commonly associated with termitaria. Terrestrial.	Data Deficient	Adequate habitat
Lesser dwarf shrew (<i>Suncus varilla</i>)	Broad tolerance. Reliant on termite mounds.	Data Deficient	Adequate habitat
Family: Vespertilionidae			
Schreibers' long-fingered bat (<i>Miniopterus schreibersii</i>)	Cave dweller : Caves and subterranean habitats. Wide range of vegetation association.	Near threatened	Unlikely
Temminck's hairy bat (<i>Myotis tricolor</i>)	Savannah woodland: Cave dweller-availability govern distribution.	Near threatened	Unlikely
Welwitsh's hairy bat (<i>Myotis welwitschii</i>)	Savannah, dry tropical	Near Threatened	Unlikely
Rusty bat (<i>Pipistrellus rusticus</i>)	Savanna woodland: riverine associations.	Near threatened	Adequate habitat
Family: Rhinolophidae			
Geoffroy's horseshoe bat (<i>Rhinolophus clivosus</i>)	Savannah woodland: Forest fringes. Caves, rock crevices.	Near threatened	Unlikely
Darling's horseshoe bat (<i>Rhinolophus darlingi</i>)	Savannah woodland. Caves, rock crevices. Caves.	Near threatened	Unlikely
Landers horseshoe bat (<i>Rhinolophus landeri</i>)	Savannah woodland, tropical moist areas. Forest fringes. Caves, crevices.	Near threatened	Unlikely
Order: Carnivora			
Family: Protelidae			
Aardwolf (<i>Proteles cristatus</i>)	Savannah woodland and grassland. Nocturnal, solitary. Termites.	Protected	Adequate Habitat
Family: Hyaenidae			
Brown hyaena (<i>Hyaena brunnea</i>)	Semi-desert, open scrub and open woodland savanna. Nocturnal.	Near threatened Protected	Adequate Habitat
Family: Felidae			
Serval (<i>Felis serval</i>)	Proximity to water; tall grass	Near threatened	Adequate Habitat
Leopard (<i>Panthera pardus</i>)	Adaptable to most habitats	Least Concern Protected	Adequate Habitat
Family: Canidae			
Side-striped jackal (<i>Canis adustus</i>)	Savanna and well-watered conditions; tall grass.	Near threatened	Adequate Habitat
Family: Mustelidae			
Spotted-necked otter (<i>Lutra maculicollis</i>)	Aquatic: Rivers, lakes, swamps and dams, extensive areas of open water.	Near threatened Protected	Adequate Habitat
Cape clawless otter (<i>Aonyx capensis</i>)	Aquatic: Rivers, lakes, swamps and dams. Widespread.	Protected	Adequate Habitat
African weasel / Striped weasel (<i>Poecilogale albinucha</i>)	Savannah: Moist grassland. Litters born in burrows.	Data Deficient	Adequate Habitat
Honey badger (<i>Mellivora capensis</i>)	Widespread. Not in desert. Most habitats.	Near threatened Protected	Adequate Habitat
Family: Viveridae			

Meller's mongoose (<i>Rhynchogale melleri</i>)	Montane and tall grassland areas	Data Deficient	Adequate Habitat
Order: Tubulidentata			
Family: Orycteropodidae			
Aardvark / Antbear (<i>Orycteropus afer</i>)	Widespread. Wide habitat tolerance. Open woodland, scrub and grassland.	Least Concern Protected	Adequate Habitat
Order: Pholidota			
Family: Manidae			
Pangolin (<i>Manis temminckii</i>)	Grassland, shrubland, savannah. Reliant on termites.	Vulnerable Protected	Unlikely
Order: Artiodactyla			
Family: Bovidae			
Klipspringer (<i>Oreotragus oreotragus</i>)	Rocky outcrops through all biomes	Protected	Adequate Habitat
Family: Bathyergidae			
Cape Molerat (<i>Georychus capensis</i>)	Sandy coastal dunes as well as unconsolidated soils along rivers.	Endemic	Adequate Habitat
Family: Muridae			
Water rat (<i>Dasymys incomtus</i>)	Swamps, wet vleis and reed beds along rivers.	Near threatened	Adequate Habitat
Family: Gliridae			
Rock Dormouse (<i>Graphiurus platyops</i>)	Near or on rocky outcrops. Association with dassies.	Data Deficient	Adequate Habitat

A total of 14 Red Data (including 4 Protected) mammal species' range of distribution falls in the study area of which eight can possibly utilize all the available habitats on the property of which, five (including 2 Protected) has the highest potential to be present (honey badger, serval, spotted necked otter, side striped jackal and rusty bat). The rusty bat will mainly be a visitor, using the areas along the stream to hunt for insects.

A further 4 Protected species can potentially use the habitats available (Antbear, Aardwolf, Leopard, Cape clawless otter). Antbears are of major ecological importance as several other species are dependant on the burrows created by Antbear (e.g. Aardwolf, Brown hyena, Honey badger, and more). However, no Antbear activity was observed on site (may be indicative of poaching).

10 species are listed as "Data Deficient" (DD). It should be noted that "Data Deficient" is not a category of threat. A taxon is listed in this category when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status (Friedman & Daly 2004). The DD species expected for this site consists predominantly of the Order Soricidae (Shrews). The habitats important to sustain these animals on site will be the stream banks and riparian areas, drainage lines and rocky ridgelines with associated thickets. If the lastmentioned habitats are avoided, it is not anticipated that these taxa will be significantly affected by the proposed activities. Although a loss of habitat will occur in the natural areas, these taxa will be able to adapt to the changes and move away from disturbed areas and will most probably utilize the affected area again after the impacts have stabilized.

5.5 Invertebrates

Potentially, the natural habitats on site will offer refuge to all invertebrate groups with the available habitats on site. This consists of a large number of species for which field searches are too extensive to be accommodated for the present study. Picker *et.*

Al. (2002) can be referred to so as to get an idea of the large invertebrate diversity that can be expected in the study area. Of particular importance is the potential presence of the cicada, *Pycna sylvia*, which has been thought extinct. This species have recently been collected again (2002) and the possibility exists that it is present in the study area since its host plant, *Vitex obovata*, is present. *Vitex obovata* is mostly confined to the higher slopes of the rocky outcrops in the area – therefore impacts and disturbance to areas frequented with *Vitex obovata* should be avoided so as to minimize disturbance of *Pycna sylvia*. No Red Data butterfly species are expected along any of the alternative routes. All the natural floral communities are important to the existence of the invertebrates and butterflies expected for the study area. It is not anticipated that invertebrates will be significantly affected on a local scale.

5.6 Pollinators

Pollinators provide an essential ecosystem service that result in the out-crossing and sexual reproduction of many plants. They benefit society by increasing food security in agricultural and natural ecosystem and they play an important role in conserving biological biodiversity (Eardly et al. 2006). Pollinator diversity includes an immense range of fauna, ranging from the tiniest invertebrates to relatively large vertebrates. Often, pollinators form part of a highly specific niche in pollinator-plant relationships and the ecosystem integrity as a whole. Examples of plant specific pollinators that will occur in the study area include hawk moths of the family Sphingidae. Other important pollinators expected on site include ants, beetles, butterflies, bees and flies as well as birds and mice.

The loss of a single important habitat requirement (e.g. trees, hides and cover objects, larval hosts, availability of water, etc.) for pollinators in an ecosystem could have far reaching effects, ultimately resulting in extinction. Fragmentation of habitats will undoubtedly also have a negative impact on the occurrence and of pollinators and consequently on the genetic and population integrity of ecosystems. The successful survival of pollinators is thus further motivation for the conservation of undisturbed and unimpaired, interconnected ecological corridors crossing property boundaries in local areas.

5.7 Limitations to Vertebrate Faunal Report

With the exception of the bird survey, the faunal survey was not a comprehensive specialist survey but rather an overview of the available habitats and their potential to be utilized by fauna. However, the habitats were well searched for fauna actually present as well as field signs of fauna present. No nocturnal surveys were done.

6. Discussion and Impact Assessment

6.1 Sensitivity rating

The sensitivity ratings (based upon floral integrity, fauna potential and ecological functions) for the different communities are given delineated in Fig. 5 and are summarized as follows:

Vegetation Community	Sensitivity Rating
Degraded woodland	Low
Closed woodland	High
Riparian zone	High
Drainage line thickets	High
Disturbed land and old lands	Low

It is important that the communities with *High* sensitivity ratings are not significantly disturbed or damaged by construction and that they are well managed during the operational phase. Due to the fragments of *Highly* significant habitats remaining it will be important for the developer to bear the following in mind during the planning phase:

- Development areas must be planned to make use of already disturbed areas with a *Low* sensitivity rating;
- Roads and stream crossings must be planned on existing passages and disturbed areas within the riparian areas and over watercourses;
- Development areas that are planned within natural communities with a *High* sensitivity rating have to be mitigated in order not to significantly affect the natural integrity of these areas.

6.2 Impact Assessment

This development will have both (negative) ecological as well as (positive) socio-economic impacts on the environment. It is therefore important that the potential impacts are objectively evaluated according to the findings of the sensitivity analyses. The following method of assessment was used:

- The *nature* of the impact entails a description of the cause of the impact, what will be affected and how it will be affected;
- The *extent* refers to the area where the impact will be significant e.g. on site, local area, regional, provincial, national or international;
- The *duration* refers to the lifetime of the impact:
 - Short term: 0-5 years
 - Medium term: 5-15 years
 - Long term: >15 years
 - Permanent
- The *probability* describes the likelihood of the impact occurring during the duration:
 - Improbable (Low likelihood)
 - Probable (Distinct possibility)
 - Highly Probable (Most likely)
 - Definite (Impact to occur regardless of any preventative measures)
- The *significance* is determined by analyzing the above subjects and is assessed as low, medium or high.

The single most important impact on biodiversity is the fragmentation and loss of natural habitats. This has already occurred on a large extent of the site as result of the historic transformation of land to accommodate agriculture lands and the removal of wood for energy and construction purposes. This impact leads to the loss of living space (habitat) for animals and natural vegetation alike. Furthermore, the integrity and size of the ecological corridors and support areas represented on the affected area will be negatively affected. It can be mitigated to a medium level if appropriate planning and management principles are aligned to ensure that the magnitude of related impacts is managed. Potential impacts and their magnitude and significance, as well as mitigation measures are given in Table 5 on the following page.

Terrestrial Biodiversity and Riparian & Wetland Report

Table 5 Impact assessment and mitigation measures.

Nature of site impacts	Duration	Intensity	Probability	Significance before mitigation	Mitigation measures	Significance after mitigation
Loss of plants and habitats locally and regionally	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. 	Low
Loss of important (legally protected) flora species	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> As above. Conserve important species and individuals. 	Low
Increased levels of alien invasive plants due to disturbance	Long term	High	Definite	Medium	<ul style="list-style-type: none"> Implement weed control program in natural and developed areas. 	Low
Changes to and fragmentation of habitats	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Follow all above measures. Use only indigenous flora for landscaping. Use only existing passages through riparian areas. Ensure that adequate passage for water is allowed for at water course crossings. Construction methods must be respectful of the environment. 	Low
Loss of terrestrial fauna	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. 	Low
Impacts on avifauna	Long term	Medium	Definite	Medium	<ul style="list-style-type: none"> Conserve natural communities and minimize loss of individuals and diversity. Improve riparian zone by annual planting of riparian trees. Use only indigenous flora for landscaping. 	Low
Negative impacts on wetlands	Long term	Medium	Low	Medium	<ul style="list-style-type: none"> Conserve the wetlands. Maintain a suitable buffer. 	Low
Negative impacts on riparian areas	Long term	Medium	Low	Medium	<ul style="list-style-type: none"> Conserve and improve the riparian areas. Maintain a suitable buffer. 	Low

7. Conclusions and Recommendations

The biodiversity assessment concludes that most of the site is transformed to such an extent as to be of *Low* biodiversity concern. However, significant fragments of important natural communities remain intact - it is recommended that these natural areas should be conserved to ensure that the present biodiversity is not affected and that the layout plan be altered to conserve these areas. However, the following mitigation measures and recommendations should be adhered to (Refer also to Fig. 2).

General recommendations

The layout must be planned to accommodate the following:

- Conserve natural communities with a *High* sensitivity significance and minimize loss of individuals and diversity;
- Conserve important species and individuals (i.e. Red Data List and legally protected spp.);
- Conserve large solitary indigenous trees in orchards, dry lands, non-arable and resort / homestead areas;

Additionally, the following measures must be included with the management plan:

- Use only indigenous flora for landscaping;
- Implement an alien invader plant control program;

Township and Industrial development

- Development areas must be confined to already disturbed areas with a *Low* sensitivity rating;
- The recommended development areas consist of the transformed and degraded land and include:
 - i) Degraded woodland
 - ii) Disturbed land and old lands
- General recommendations for development are given in the previous section;
- It is recommended that the disturbed area consisting of the historic mining sites be used to as a relocation site for important vegetation.

Riparian zone

- This zone must be improved by planting suitable trees annually, in order to achieve a closed vegetation community alongside the rivers that will serve as an ecological corridor;
- The streambanks must be cleared of alien vegetation, in order to improve the ecological integrity of the community and to prevent the spreading of seeds.

Closed woodland and drainage line thickets

- These areas are of *High* sensitivity rating and no activities are recommended within their boundaries;
 - Illegal vegetation removal must be checked;
-

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Appendixes

Appendix 1: Illustrations

Appendix 2: Flora Checklists

Appendix 3: Fauna Checklists

Appendix 1: Illustrations

Appendix 2: Flora Checklists

Appendix 3: Fauna Checklists

**FINAL
Environmental Impact Assessment
REPORT**

For the proposed
**RESIDENTIAL, BUSINESS AND INDUSTRIAL
DEVELOPMENT ON PORTIONS 13 & 61 AND THE
REMAINDER OF PORTIONS 5, 27, 58 & 60 OF THE
FARM LEEUWALLEI 297 KT, GREATER TUBATSE
MUNICIPALITY, BURGERSFORT**

and in support of
WATER USE LICENSE APPLICATIONS

LEDET Ref No: 12/1/9/2-GS35

March 2015

<p>Prepared by:</p> <p>Afrika Enviro & Biology PO Box 2980 White River 1240</p> <p>Tel: 072 623 1845 Fax: 086 603 8875</p>	<p>Prepared for:</p> <p>AngloRand Holdings (Ltd) PO Box 61642 Marshalltown 2107</p>
<p>E-mail: 27823022459@vodamail.co.za</p>	

EXECUTIVE SUMMARY

The developer and landowner, AngloRand Holdings Limited, appointed the Environmental Assessment Practitioner (EAP), Afrika & Biology Environmental Services to obtain authorization in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998) in order to proceed with the residential and industrial development on portions 13 & 61 and the remainder of portions 5, 27, 58 & 60 of the farm Leeuwvallei 297 KT, Greater Tubatse Municipality. An application for a Scoping and Environmental Impact Assessment, in terms of the Environmental Impact Assessment Regulations (2010) was submitted with the Limpopo Department of Economic Development, Environment and Tourism (LEDET).

The site is located to the north of Burgersfort CBD along the R37 to Polokwane and the R36 to Steelpoort (Appendix A-1). Central reference coordinates for the site are: **24°40.527”S; 30°18.477”E**. The applicant proposes to establish an industrial and residential township as well as business and municipal erven on the site. The developer envisage this as the second phase of development of the farm Leeuwvallei as the first phase has already been authorized and construction is in progress on Portions 5, 58, 60, 62 and the remainder of Portion 27 of the farm Leeuwvallei 297KT (Burgersfort X30; X31; X45; X46; X47). The new development areas are seen as the logical extensions of the existing town and are ideally located within the Spatial Development Framework of Burgersfort. The proposed planning for these new extensions of Burgersfort consists of the following land uses:

"Residential 1" (350m ² erven):	182
"Residential 1" (375m ² erven):	439
"Residential 1" (600m ² erven):	581
"Residential 1" (1 ha erven):	21
"Residential 1" (Existing dwelling):	1
"Residential 2" (@44 units/ha):	3
"Commercial/Business":	16
"Resort":	1
"Commercial/Industrial":	9
"Municipal":	11
"Special" (Private Street):	1
"Special"2	2
"Private Open Space"	8

The project aspects will inevitably result in environmental impacts (positive and negative). The aim of this report is to identify these project related impacts and to evaluate and assess the consequences thereof. The proposal also entails activities that are regulated by Section 21 of the National Water Act (1998) for which the applicant has applied or intend to apply.

All relevant Authorities as well as the general public and surrounding landowners - was notified and invited to participate in the EIA process. Issues and concerns were identified through a process of consultation with the proponent and with relevant authorities and interested & affected parties and stakeholders. Specialist investigations are included and form an integral part of the EIA in order to identify potential impacts but also to determine the best alternatives for the project.

During the EIA process all potential environmental impacts have been identified and assessed. Alternatives related to technological and site conditions were considered upon review of the specialist reports and the impact assessment. The EAP did not find any detrimental environmental impacts that cannot be adequately controlled or mitigated to reduce their magnitude to acceptable levels and all issues have been adequately addressed and resolved. The EAP therefore recommends a positive final decision on authorization of the activity. Conditions that should be considered by the competent authority and may be required for authorization are given in the environmental impact statement as well as the Environmental Management Programme.

CONTENT

EXECUTIVE SUMMARY	02
1. INTRODUCTION	05
2. THE ENVIRONMENTAL PRACTITIONER (EAP)	05
3. PROJECT DESCRIPTION	06
3.1 Particulars of Proponent	06
3.2 Description of proposed Activity	09
3.3 Project phases	10
4. SITE AND LOCAL ENVIRONMENTAL CONDITIONS	10
4.1 Description of the property	10
4.2 Description of the environment	10
4.2.1 Topography and present site conditions	10
4.2.2 Climate and biology	10
4.2.3 Geology and soils	10
4.2.4 Water resources and flood lines	11
4.2.5 Availability of services and waste management	11
4.2.6 Cultural and heritage importance	12
4.2.6 Socio-economic environment	12
5. THE EIA PROCESS AND RELEVANT LEGISLATION	13
5.1 Chronology of the EIA process	13
5.2 Relevant Legislation	14
5.3 Authorities Consultation	14
6. PUBLIC PARTICIPATION PROCESS	15
6.1 Identification and notification of Interested & Affected Parties	15
6.2 Comments & Issues	15
6.3 Comments received from Authorities	15
7. NEED & DESIRABILITY	17
8. ALTERNATIVES	19
9. SUMMARY OF SPECIALIST REPORTS AND RECOMMENDATIONS	20
10. IMPACT ASSESSMENT	32
10.1 Methodology	32
10.2 Assessment of potential environmental impacts	33
10.3 Impact assessment table	39
11. STATEMENTS	40
10.1 Assumptions and uncertainties	40
10.2 Professional opinion	40
10.3 Environmental impact statement	40
12. REFERENCES	41

APPENDIXES

APPENDIX A: MAPS AND SITE PLANS

APPENDIX B: SITE PHOTOGRAPHS

APPENDIX C: FACILITY ILLUSTRATIONS

APPENDIX D: PUBLIC PARTICIPATION REPORT

APPENDIX D-1: LEDET DOCUMENTATION

APPENDIX D-2: NOTIFICATIONS

APPENDIX D-3: NOTIFICATION REGISTER & RECORDS

APPENDIX D-4: CORRESPONDENCE

APPENDIX D-5: COMMENTS

APPENDIX E: SPECIALIST REPORTS

APPENDIX E-1: SERVICES ENGINEERING REPORT

APPENDIX E-2: GEOTECHNICAL REPORT

APPENDIX E-3: GEOHYDROLOGICAL REPORT

APPENDIX E-4: TRAFFIC IMPACT ASSESSMENT

APPENDIX E-5: BIODIVERSITY ASSESSMENT

APPENDIX E-6: HERITAGE IMPACT ASSESSMENT

APPENDIX E-7: SOCIAL & ECONOMIC ASSESSMENT

APPENDIX F: SUPPORTING DOCUMENTATION

APPENDIX G: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

1. INTRODUCTION

The developer and landowner, AngloRand Holdings Limited, appointed the Environmental Assessment Practitioner (EAP), *Afrika & Biology Environmental Services* to obtain authorization in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998) in order to proceed with the residential and industrial development on portions 13 & 61 and the remainder of portions 5, 27, 58 & 60 of the farm Leeuwvallei 297 KT, Greater Tubatse Municipality. An application for a Scoping and Environmental Impact Assessment, in terms of the Environmental Impact Assessment Regulations (2010) was submitted with the Limpopo Department of Economic Development, Environment and Tourism (LEDET).

This application replaces application 12/1/9/2-GS3 which has been withdrawn as subject to EIA Regulation 67. LEDET acknowledged the application and allocated the EIA reference number (12/1/9/2-GS35) for this project (Appendix D). Furthermore, LEDET granted exemption from conducting a new Scoping Process but has agreed that the previous Scoping Process will also be used for the present application (Appendix D). For this reason, sections of the Public Participation Process (PPP) still refer to the previous application. However, it must be understood that the Scope of the present application remains similar and no deviations have been made. In addition to the EIA application this EIA and Public Participation Process (PPP) is also followed to support Water Use License Applications which are in progress or will be applied for at a later stage.

This document presents the results of the Final Environmental Impact Assessment process as required by the EIA regulations. The document also outlines the methodology and results of the tasks performed by the consultant in order to prepare the Draft Environmental Impact Assessment Report (EIAR). The Final EIAR aims to provide information to stakeholders regarding the environmental issues and potential impacts identified related to the proposed development. Furthermore, this document also serves as information to stakeholders concerned with Water Use Applications (WULA) that forms an important part of this project.

2. THE ENVIRONMENTAL PRACTITIONER (EAP)

Afrika Enviro & Biology (Environmental and biodiversity consultants) is the appointed EAP and conducted the EIA process for this project. This company has been practicing in environmental services since 2005 and the leading agent allocated to this project has the following expertise: Danie van der Walt: M.Sc. Natural Sciences and has successfully completed EIA and SHEQ accredited courses as well as several accredited ecological, wetland and biodiversity orientated courses. The contact details of the EAP are as follows: PO Box 2980, White River, 1240;
Tel: 072 623 1845; Fax: 086 603 8875; Email:27823022459@vodamail.co.za

3. PROJECT DESCRIPTION

3.1 Particulars of Proponent

Name	AngloRand Holdings (Ltd)
Address	P.O. Box 61642, Marshalltown, JHB, 2107
Contact Person	Buks van der Wal
Tel/Fax	013 238 0029
Cellular	082 259 0204

3.2 Description of proposed activity

The site is located to the north of Burgersfort CBD along the R37 to Polokwane and the R36 to Steelpoort (Appendix A-1). Central reference coordinates for the site are: **24°40.527"S; 30°18.477"E**. The applicant proposes to establish an industrial and residential township as well as business and municipal erven on the site. The developer envisage this as the second phase of development of the farm Leeuwvallei as the first phase has already been authorized and construction is in progress on Portions 5, 58, 60, 62 and the remainder of Portion 27 of the farm Leeuwvallei 297KT (Burgersfort X30; X31; X45; X46; X47). The new development areas are seen as the logical extensions of the existing town and are ideally located within the Spatial Development Framework as a development zone of Burgersfort. The proposed planning for these new extensions of Burgersfort is motivated in Appendix F and consists of the following land uses:

"Residential 1" (350m ² erven):	182
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"Resort":	1
"Commercial/Industrial":	9
"Municipal":	11
"Special" (Private Street):	1
"Special"2	2
"Private Open Space"	8

However, the proposal has to be authorized by the competent Environmental Impact Management Authority (in this case LEDET) as it entails activities that are listed in the EIA Regulations (2010):

Listing Notices 1 & 2 (R.544 & R.545, 18 June 2010):

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description:
R. 544, 18 June 2010	9(a)(b)	The storm water and sewage infrastructure of the proposed township will consist of pipes with an internal diameter >0.36m and will have a peak throughput of 120L/s or more and will exceed a length of 1000m. The exact sizes of the pipes and flow rates will only be available with the completion of the services engineering report. This infrastructure will be installed within the road reserves of the township.
R. 544, 18 June 2010	11(vi) (x) (xi)	Construction and installation of infrastructure within 32m of the edge of a watercourse. The outer boundary of the main development area will be located within 32m of the outer edge of the 1:100 year flood lines of the Steelpoort and Spekboom Rivers. The following activities will also be established within this zone: <ol style="list-style-type: none"> 1) Bulk storm water outlets, 2) Waste water disposal outlets 3) Establishment of wetlands for waste water treatment and storm water attenuation 4) Water extraction pump stations 5) Sewage pump station/s 6) The construction of sport fields for recreational purposes >50m² 7) The construction of a taxi rank >50m² 8) The construction of earthen and gabion walls in order to protect the abovementioned structures from erosion and flooding
R. 545, 18 June 2010	15	Development of vacant land where the total area to be transformed is more than 20ha. The combined properties are 170 ha in size and the project will entail development areas for the following activities: <ol style="list-style-type: none"> 1) Business 2) Residential 3) Municipal 4) Industrial 5) Resort 6) Services infrastructure and roads A conceptual layout plan is included with appendix 1. Take note that the final layout and number and types of erven will only be finalized once all consultations and recommendations of stakeholders and specialist studies have been evaluated and considered.
R. 544, 18 June 2010	18(i)	<ol style="list-style-type: none"> 1) In order to protect the banks of the Steelpoort and Spekboom Rivers from erosion and to address present erosion, infilling and earthmoving will be necessary to rehabilitate erosion within the 1:100 years flood lines.
R. 544, 18 June 2010	22(i) (ii)	The present zoning of the proposed township is agriculture. The proposed road network in the township will: <ol style="list-style-type: none"> 1) Have a reserve wider than 13.5m and 2) Will be wider than 8m where no reserve exists The planned roads will include 13m, 16m, 20m and 40m reserves.

Listing Notice 3 (R.546, 18 June 2010):

Activity No (s) (in the notice):	No. of Geographical Area and Description as per project	Describe each listed activity as per project description:
6	(a)(ii) Proposed tourist facility within 100m of the edge of the Steelpoort River.	The applicant proposes to construct a tourist orientated facility that will sleep more than 15 people within 100m of the edge of the Steelpoort River on the remainder of portion 60 of the Farm Leeuwallei 297KT.
14	(a)(i) The clearance of >5ha of indigenous vegetation on the remainder of portions 58 and 60 of the Farm Leeuwallei 297KT.	The proposed township establishment will result in the clearance of >5ha of indigenous vegetation on the remainder of portions 58 and 60 of the Farm Leeuwallei 297KT.

Due to the ideal location of the site within the Burgersfort Municipal boundaries and being adjacent to existing residential and industrial activities, the site is ideally suited for such development (Appendix A-1). The conceptual layout (Appendix A-2) has been planned to accommodate the recommendations of specialist studies and the results of consultations with stakeholders and authorities. The operational phase will consist of residences, shops, small factories and workshops which will be built to the specifications of the Burgersfort Municipality and the South African National Building Regulations. The sizes of the houses, factories and workshops have not been finalized yet but will be of an acceptable and approved design. As this is a relatively large development, it will be divided into several phases, however the time span and structuring of the phases have not been finalized yet.

The project aspects will inevitably result in environmental impacts (positive and negative). The aim of this report is to identify these project related impacts and to evaluate and assess the consequences thereof. The proposal also entails activities that are regulated by Section 21 of the National Water Act (1998). Therefore the applicant has applied for the following Water Use Licenses:

Section 21(a): taking water from a water resource:

The water demand for the proposed development is in the order of 4,750 Kl/d. The north flowing and perennial Steelpoort River forms a natural boundary to the development in the west and to the north, the Spekboom River. The water demand of 4,750Kl/d will be satisfied by three production wells located in the Spekboom River alluvial system. The water will be pumped to a bulk storage reservoir site capable to hold water with a 24 hour storage capacity with additional storage as specified by the fire risk consultant. This reservoir has already been constructed on a property previously authorized by LEDET. Any additional water required will be obtained from the De Hoop scheme that will be in operation in 2014.

Section 21(c): impeding or diverting the flow of water in a watercourse:

Water abstraction points will necessitate construction and establishment of pumps and pipeline infrastructure within the water courses. The applicant is also investigating the

possibility to construct a taxi rank and/or sports facilities on an area located within the 1:100 year floodplain. Earthen berms will be constructed to divert the 1:100 year flood line to in order to protect infrastructure that are established in this zone.

Section 21(f): discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit:

The responsibility for the provision of bulk sewer services in terms of treatment capacity will be the responsibility of the developer as the Municipality cannot provide the required capacity in the existing treatment plant at this stage. The development of the various extensions will contribute a sewer flow of a magnitude that warrants the introduction of a private waste water treatment facility. The development therefore requires capacity in the Sewerage Treatment Works of 2,600 Kl/day (Average wet weather flow). Potential additional inflow from the Municipal sewer system as well as the development of Extension 30,31,45,46 and 47 could increase the capacity to 5 MI/Day (5,000Kl/Day). The outfall sewer from the development will be constructed to accommodate a peak wet weather flow of 6.7 MI/day. This relates to a design peak flow of 78l/s.

A nutrient removal, activated sludge process which will be able to produce *Special Standard* effluent biologically will be ideal for this project. Environmental Authorization for such a system was obtained subject to NEMA under the 2006 EIA regulations (Appendix F) during the phase 1 application and has been constructed and is in operation. The General Authorization for this water use has been approved (Appendix F).

Section 21(i): altering the bed, banks, course or characteristics of a watercourse:

The outer boundary of the main development area will be located within 32m of the outer edge of the Steelpoort and Spekboom Rivers. Activities and construction may take place within the 1:100 year flood lines. The following activities will also be established within this zone:

- 1) Bulk storm water outlets;
- 2) Waste water disposal outlets;
- 3) Establishment of wetlands for waste water treatment and storm water attenuation;
- 4) Water abstraction pump stations and pipe lines;
- 5) Sewage pump station/s;
- 6) The construction of earthen and gabion walls in order to protect the abovementioned structures from erosion and flooding.

3.3 Project phases

As this is a relatively large and expensive development the project will be implemented in phases on an *ad hoc basis*. This means that the different "townships" (extensions) will be developed as phases as agreements with investors/developers and the Local Municipality are finalized.

4. SITE AND LOCAL ENVIRONMENTAL CONDITIONS

4.1 Description of the property

The properties consist of Portions 13 & 61 and the remainder of Portions 5, 27, 58 & 60 of the farm Leeuwvallei 297 KT. This development land is located to the north of Burgersfort CBD along the R37 to Polokwane and the R36 to Steelpoort (Appendix A-1). Central reference coordinates for the site are: **24°40.527"S; 30°18.477"E**. The combined properties are approximately 260ha in size and are situated on the northwestern outskirts of Burgersfort on both sides of the National Road R37 (Appendix A-2). Presently, the affected area is in a neglected state and consists mainly of unused agricultural lands as well as several dwellings and naturally vegetated areas (Appendix B). The site is flanked by recent commercial developments such as The Tubatse Shopping Mall and Platinum Petroleum to the south as well as the recently completed Casino to the west. With the exception of 3 dwelling houses and old farm sheds, there are no existing developments present on the proposed development land.

4.2 Description of the environment

4.2.1 Topography and present site conditions

The topography of the property is predominantly flat with a slight slope towards the Steelpoort and Spekboom Rivers to the north and east. The site is surrounded by land development areas to the north, west and east and is transected by the R37 National Road. Burgersfort is located on the eastern boundary and informal settlements are located across the Steelpoort River. The topography of the southern section is mountainous land, sloping to an open valley to the north and east. It is largely in a disturbed state due to transformed agriculture lands (Appendix B). The area to the south of the R37 is located on the lower slopes of Morole Mountain and still has natural vegetation present. However, it is evident that most of the large and valuable species of trees has been removed due to illegal wood- and traditional medicine collecting. Other disturbances on this portion include historic mining activities, shallow borrow pits and illegal dumping.

4.2.2 Climate and biology

The climate is characterized by hot summers and mild winters with the majority of the rainfall occurring during the summer. The average annual rainfall is 560mm and area has a high evaporation rate of 1705mm. This is an indication that the area has a water stressed climate. The site falls in the Mixed Bushveld Biome (Low & Rebelo, 2002); this veld type is regionally conserved in the Ohrigstad and Khumula Nature Reserves. Although the affected development land is mostly disturbed/transformed a biodiversity assessment has been conducted to determine the integrity of biodiversity and ecological functions of the land (Appendix E-5).

4.2.3 Geology and soils

The basic geology of the region consists of alluvium on the valley plains to various horizons of the Bushveld Igneous Complex and underlying Transvaal sequence. The

geological composition of the site was be defined by a specialist investigation (Appendix E-2).

4.2.4 Water resources and flood lines

The Steelpoort and Spekboom Rivers respectively forms the northern and eastern boundaries of the property. Water abstracted from the Spekboom River will be used as partial supply to the development. An integrated Water Use License Application (IWULA) has been submitted with DWA, including the abstraction of surface water from the Spekboom River (Appendix F). Several boreholes are present on the farm portions. Water will be abstracted from these boreholes to partially supply the development with water. The Geohydrological indicate that adequate water is available from these resources to provide for the development (Appendix E-3). The abstraction of water is presently authorized for agriculture use and the transfer to domestic use forms part of the IWULA.

The flood line calculation for the Steelpoort River that was included with the draft EIAR was done previously by an engineering company appointed by the Greater Tubatse Municipality. However, their calculations were not actually based on physical field surveys. ENDECON has revisited the flood line and conducted field surveys in order to obtain very accurate results and a new alignment was calculated. The development infrastructure falls outside of the 1:100 flood line.

4.2.5 Availability of services and waste management

Provision of services infrastructure and capacity are essential aspects for any township development. Without the procurement of services such a development will not be viable as it will result in significant negative environmental and social impacts. The responsibility of services provision for this development is allocated as follows:

- Electricity supply will be procured from ESKOM.
- Water will be supplied by the applicant until such time that water can be procured form the Municipality. Existing boreholes on site and surface water allocations from the Spekboom River will be used for water supply. An important on site meeting and consultation with several DWA officials as well as the developer's consultants and advisors was held on 2011-02-16. An attendance register is included with Appendix F. During this consultation the water uses that are applicable to the development were discussed. It was concluded that an Integrated Water Use License Application (combining all the necessary water use applications) will be formulated and submitted by Maleka Environmental Consultants. The Integrated Water Use License Application (IWULA) has been prepared by Maleka and was submitted with DWA (Appendix F). The construction and integration of bulk services and water supply by the applicant has also been approved by the Sekhukhune District Municipality (Appendix F).
- Sewage treatment will be supplied by the applicant until such time that this service can be procured from the Municipality. A newly built sewage treatment plant that has been approved under NEMA will address sewage and waste water.

This plant is already constructed and successfully in operation and will be expanded in phases according to the demand. The disposal of waste water also forms part of the IWULA. The General Authorization for this water use has been approved (Appendix F).

- Solid waste disposal will be provided by the Municipality and waste will be disposed of at the new regional landfill site - subject to the services agreement with the Municipality.
- Storm water management infrastructure will be installed by the applicant;
- Roads infrastructure will be provided by the applicant;

The quantity of services needed by the proposed development is addressed in the Services and Engineering Report that specify each of the mentioned services (Appendix E-1). In addition a Traffic Impact Assessment was conducted to aid in the planning of roads infrastructure (Appendix E-4).

4.2.6 Cultural and heritage importance

Grave sites have been identified on site and the existence of other significant heritage sites on the property that may be affected by the development is addressed by the Heritage Impact Assessment (Appendix E-6).

4.2.7 Socio-economic environment

Burgersfort is experiencing large economic development and inputs, mainly due to the rapidly expanding mining activities in the region. The proposed development can be viewed as critical for the development cycle of Burgersfort as it will:

- Create sustainable jobs;
- Create infrastructure to lure investment to the region;
- Address the need created for such a development as a natural occurrence due to the expansion of Burgersfort's residential growth.

The site is ideally located near to low income areas with high unemployment figures and will be positive for improving the lives of these people. It is envisaged that the proposed development will have only positive social and economic impacts for the local area. Furthermore, one of the aims of this project is to facilitate Black Economic Empowerment at all levels. These aspects are investigated in the Social & Economic Assessment (Appendix E-7).

5. THE EIA PROCESS AND RELEVANT LEGISLATION

Section 24 of the National Environmental Management Act (1998) requires that 'activities that require authorization or permission by law which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.' The EIA process is the tool used to apply for authorization from the regulating authority for the relevant activities identified that may impact on the environment.

5.1 Chronology of the EIA process

The regulating authority for this project is the Limpopo Department of Economic Development, Environment and Tourism (LEDET), Directorate Environmental Impact Management. LEDET is commissioned to do the final decision making and authorization for this EIA application. The process is followed strictly according to the regulations as published in the Environmental Impact Assessment Regulations (2010). After the application for an EIA have been submitted, the application was acknowledged by LEDET and a reference number was allocated that is used during the whole process for administration purposes (Appendix D-1). The Scoping Process entails the pre-environmental impact screening – project description and evaluation of the project and its alternatives – and is aimed to address the following:

- Description of the project;
- Identification and description of alternatives;
- Identification of relevant legislation and authorities;
- Site and environment descriptions;
- Notification and participation of public and interested and affected parties;
- Identification and description of potential environmental issues and impacts;
- Identification and need of specialist studies to evaluate potential impacts;
- Plan of study for the EIA process and tasks to be performed

The Scoping Document also outlines the methodology of the tasks to be performed by the consultant in order to prepare the Environmental Impact Assessment Report. The Scoping Document is distributed to all Interested & Affected Parties (IAPs) as well as the authorities for review and comment before commencement of the actual Environmental Impact Assessment.

The EIA process entails all the criteria of the Scoping process but importantly, also includes the assessment of impacts as well as a draft Environmental Management Plan (EMP). The EIA report aims to conclude all possible issues and to recommend the best possible alternative and activity to be authorized as well as recommending measures and activities to ensure the least impact on the environment.

A Draft EIAR is distributed to all IAPs as well as the authorities for review and comment before the Final EIAR (addressing all comments and issues received from the IAPs) is

submitted to the regulating authority for review. These issues can then be addressed and responded to in the final EIA report. The Final EIA report aims to conclude all possible issues and to recommend the best possible alternative and activity to be authorized as well as recommending measures and activities to ensure the least impact on the environment.

5.2 Relevant Legislation

Legislation and guidelines that are being considered for the Scoping process are as follows:

- Constitution of the Republic of South Africa (No 108 of 1996)
- National Environmental Management Act (No 107 of 1998)
- National Environmental Management: Waste Act (No 59 of 2008)
- National Environmental Management: Air Quality Act.
- National Environmental Management: Biodiversity Act (No 10 of 2004)
- National Environmental Management: Protected Areas Act (No 31 of 2004)
- Environmental Conservation Act (No 73 of 1989)
- National Water Act (No 36 of 1998)
- Conservation of Agricultural Resources Act (No 43 of 1983)
- National Heritage Resources Act (No 25 of 1999)
- Occupational Health and Safety Act (No 85 of 1993)
- Promotion of Access to Information Act (2000)
- National Roads Act (No. 7. 1998)
- Advertising on Roads and Ribbon Development Act (No. 21, 1940)
- EIA regulations and guidelines (2010)
- All relevant Provincial regulations and Municipal bylaws

5.3 Authorities Consultation

Consultation with DEDET has included the following process:

- Submission of an application for authorization of the activities in terms of section 24 of the National Environmental Management Act of 1998;
- A site inspection and consultations with the appointed DEDET official.
- Submission of the Scoping Report and plan of study for EIA.
- Completing tasks for compiling the EIA report and submission of the Draft EIA Report for review;
- Submission of the Final EIA Report for approval.

The following authorities and major stakeholders have also been consulted/informed of the project and provided with background information and/or the EIA report:

- Greater Tubatse Local Municipality
- Greater Sekhukhune District Municipality;
- The Town Council;
- Department of Water Affairs;
- Land Claims Commissioner.

6. PUBLIC PARTICIPATION PROCESS

A public participation process was followed in accordance of the EIA regulations (2010). This process was executed as elaborated in the following section and is recorded in Appendix D.

6.1 Identification and notification of Interested & Affected Parties

After acknowledgement and a reference number were received from LEDET (Appendix D-1) the public participation process was followed as stipulated by the relevant EIA regulations. The reference number allocated to the present application is used for all correspondence, records and documentation purposes. The public participation process was followed as stipulated by the EIA regulations and is explained in the following sections.

An EIA notice was prepared for distribution and copies were placed at strategic places on site (Appendix D-2) and adverts in the local newspaper (*Steelburger*) was also placed (March 24, 2014) so as to ensure maximum exposure to all the potential interested and affected parties (Appendix D-2). All possible Interested & Affected Parties (IAPs) was contacted and afforded an opportunity to participate and comment on the proposed development. Contact was made with adjacent property owners and key interested & affected parties (IAPs). This was done through telephone conversation, actual visits and EIA notices distributed to IAPs (Appendix D-2). Records of notification as well as a register of I&AP's and stakeholders are included with Appendix D-3.

A public meeting was not considered due to the low level of response received. All relevant Authorities - notably the Department of Water Affairs (DWA), the Local Municipality and Council as well as the Land Claims Commissioner were notified and invited to participate in the process (Appendix D-3). The final EIAR was distributed to all IAPs.

An important pre EIA on-site meeting and consultation with several DWA officials as well as the developer's consultants and advisors was held on 2011-02-16. An attendance register is included with Appendix D-4. During this consultation the water uses that are applicable to the development were discussed. It was concluded that an Integrated Water Use License Application (combining all the necessary water use applications) will be formulated and submitted by Maleka Environmental Consultants.

6.2 Issues & Concerns

Issues and concerns was identified through a process of consultation with the proponent and then with relevant authorities and interested & affected parties and stakeholders. Proven methods were used during these consultations, which included checklists, matrices, and networks and map overlays. Comments received are included with Appendix D-5. No issues or objections were raised by any of the IAP's to date with exception of a pending land claim:

A land claim was gazetted by the *Leeuwvallei Land Claimants* under direction of Mr. John Mathladi. The Land Claim Commissioner has been notified and requested to comment on the issue. The Commissioner acknowledged receipt of the documentation during the previous EIA process but no comment or objection has been made to date (Appendix D-5). Mr. Matladi (*Leeuwvallei Land Claimants*) made verbal objection during the public participation process to the proposed development subject to the land claim. Furthermore, the *Leeuwvallei Land Claimants* attempted to procure a court order to stop the development of the land. This was not granted and the claimant and the land owner (Anglorand Holdings) went through prolonged court cases regarding the development. The final decision in the Appeal Court was in favor of the land owner. As this issue cannot be resolved by the EIA process it should not be used as motivation to prolong or compromise the EIA process.

6.3 Comments received from Authorities

Comments received from Authorities on the project prior to the draft EIAR are included with Appendix D-5 - no objections or issues were raised that need addressing. Comments received from DWA (now known as Department of Water and Sanitation – DWS) are included with Appendix D-5. These are generic conditions and the applicant intends to comply with all of these conditions. Comments received from LEDET on the Draft EIAR are included with Appendix D-1 and are addressed in the following section:

Comment 1: Environmental Management Programme

1.1 "The Department recommend that a revised EMPr is compiled that will be project specific....."

1.2 "The EMPr must not provide recommendation but must indicate actual remedial activities....."

EAP Response: The Impact Statement (Table 3) and the EMPr have been revised and are now compatible with each other. Furthermore the EAP has attempted to be project specific and refers to the specialist reports where necessary.

Comment 2: Heritage Features

2.1 "The Heritage Impact Assessment report...identified graves ...but the EMPr does not mention mitigation measures....."

EAP Response: This has been amended (Refer Section 9 and Appendix G).

Comment 3: Traffic Report

3.1 "The Traffic Impact report refers to the Burgersfort Mall..."

EAP Response: A project specific report has been commissioned and is included as Appendix E-4

Comment 4: Proposed development

4.1 "The proposed development does not follow a certain type of sequence...and there are already existing developments....."

4.2 "A clear indication on how the proposed development will be implemented...and how the development will impact on the water resources and R37 and R555 roads....."

EAP Response: This has been amended (Refer Section 4 and 10).

Comment 5: Specialist report

5.1 "All specialist reports must be authenticated..."

EAP Response: This has been complied with. However, due to the lapse of time since the Geotechnical report was conducted (2003) the EAP was unable to acquire a declaration from the specialist as the specialist company no longer exists. The EAP is presently still trying to track the specialist and will submit the declaration with LEDET as soon as this is done - if LEDET can grant this exception.

7. NEED & DESIRABILITY

In order to assess the 'need and desirability' alternatives of the project the following documents relevant to these two aspects that were consulted (1): Greater Tubatse Local Municipality Spatial Development Framework (SDF), 2007, (2): Greater Tubatse Local Municipality Integrated Development Planning (IDP), 2011-2015, (3): Draft guideline on the information requirements to describe need and desirability in the EIA process (DEAT, 2008). Motivational documents are included with Appendix F and the social assessment (Appendix E-7). Upon analysis of these documents the EAP attempts to make an objective assessment of the "need and desirability" of the project and makes a recommendation based on the available information:

Historically, the land use for the local area consisted of agriculture, namely maize production on fertile land and grazing on areas of low potential. Importantly, the area to the immediate north and west of the site has been developed to allow for low cost housing in the historic past. In recent years, the Municipality has continued to develop the local area for township establishment as result of the demand for housing. This phenomenon has also been taken up in the SDF as the preferred site falls within an area zoned for housing within the foreseeable future. Services infrastructure is available and the proposed project will not require additional capacity of the municipal services. It can thus be concluded that the development will not compromise the integrity of the SDF as agreed upon by the environmental authority. The following relevant points can be made upon the following aspects with consideration of the abovementioned information:

The "**need**" for the project:

- 1) The land use (associated with the activity being applied for) is located in a developing zone of the Municipality and can be considered to be within the timeframe intended by the existing approved Spatial Development Framework (SDF).
- 2) The project is planned at a time and place in a developing sector of the town and can be considered to be a natural opportunity associated with the growth of the town.
- 3) The activity will render a service to the local community and will create employment opportunities.
- 4) All the necessary services and appropriate capacity required by the proposed activity is currently available and no additional capacity has to be created to cater for the development.
- 5) This development has already been approved by the Local Municipality and is provided for in the infrastructure planning of the municipality.

All of the abovementioned aspects are also affirmed and motivated in the Social & Economic Assessment (Appendix E-7).

The "**desirability**" of the project:

- 1) As the site is located in a "expansion zone", the approval of this application would not compromise the integrity of the existing approved IDP and SDF agreed to by the relevant environmental authority. The project has therefore also been approved by the Municipality.
- 2) The approval of this application would not compromise the integrity of the existing environmental management priorities for the area.
- 3) The location factors favour this land-use (associated with the activity applied for) as it is located in the correct zone as required by the SDF as well as the fact that the location is situated within a developing residential orientated area with much potential for growth.
- 4) The activity and the land use associated with the activity applied for will not impact on sensitive natural and cultural areas.
- 5) The operation will be designed, constructed and operated according to the required standards set by the authorities and should not impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.).
- 6) It is not anticipated that the activity will result in unacceptable opportunity costs as it will be integrated with the existing extensions in the local area.

The Social & Economic Assessment (Appendix E-7) indicates that the AngloRand Leeuwvallei development will address several of the critical issues that are in need of improvement or not available by the Local Municipality. Firstly, this development was planned to provide services for its own demand and to have the capacity to offer surplus services resources to the Local Municipality and community, notably the previously disadvantaged groups. Secondly, the development will provide much needed housing, thirdly and very importantly, the Anglorand Leeuwvallei water allocations will become available for the GTM. This development will be positive to- and in fact is needed – for the formal development of the region.

This is in stark contrast to the informal developments that are in progress immediately to the north of the Steelpoort River. Rich individuals and companies are constructing large houses and businesses in this area without regard for the SDF and without Environmental Authorization or permission from the Municipality. This is apparently to avoid paying taxes and rates to the Municipality. It can thus be concluded that there is a positive need and desirability for the development - if no undesirable or unmanageable environmental impacts are identified which suggest that the activity and the site alternatives are undesirable/unsuitable and/or pose a risk to the local environment or resident people.

8. ALTERNATIVES

The preferred site is ideally located within the Burgersfort Local Municipality Spatial Development Framework (SDF) within the urban edge - zoned for future development. Furthermore, the rezoning from agriculture to other uses has already been authorized for Portion 5; Portion 60; Portion 62 and R/27 by the Mpumalanga Development Tribunal in 2005 and development has already been authorized subject to NEMA by LEDET (2008) on the surrounding and adjacent portions: 5; 58; 60; 62 and R/27 (Section 7.1.1 and Appendix F). Therefore, the preferred site is seen as a logical growth pattern of development for this section of Burgersfort and is thus motivated as the only alternative site for the application.

As discussed in Section 7 there is already a need for such a development due to the demand for housing and business support created by the expansion of mines in the region and the need of services infrastructure. It is anticipated that the growth of Burgersfort as an economical node will have far reaching positive economic and social impacts for the region.

The no-go alternative is the option not to go ahead with the development. As it has already been indicated that there is a need and desirability for the proposed development locally, it is anticipated that this development will add to the development potential and economic growth of the region. The no-go alternative will only be considered as an alternative if it is concluded that the preferred alternative will have significant negative impacts on the environment which cannot be reduced or managed to an acceptable level.

The development will trust on both proven as well as the latest approved materials and technologies for building, services and engineering purposes. Standard designs required for environmental compliance and safety requirements will be used and specialist recommendations will also be considered to produce the best alternative final design and layout. As such no substandard materials or technologies will be considered for the proposed activities.

Additional aspect that contributed to the selection of alternatives and recommendations that were considered during the EIA process were:

- Geotechnical considerations and recommendations
- Geohydrological considerations and recommendations
- Engineering considerations and recommendations
- Heritage Impact Assessment (HIA) results and recommendations
- Traffic Impact Assessment
- Social & Economic Assessment
- Authorities conditions and guidelines
- Biodiversity & Habitat Assessment
- Aquatic Ecosystem Assessment

9. SUMMARY OF SPECIALIST REPORTS - AND RECOMMENDATIONS

Alternatives related to site conditions and technology is considered upon review of the specialist reports. The specialist reports were studied and summarized and recommendations and alternatives that are included with these reports were considered during the impact assessment. Specialist maps, drawings and designs are included with Appendix A). Specialist declarations are included with Appendix E. The specialist inputs are summarized in the sections below.

9.1 Services Engineering Report (Appendix E-1)

A Conceptual Services Report was compiled ENDECON in order overview the availability of services and calculate the needed capacity. The report indicates that there are no constraints and services infrastructure will be linked to the Municipal bulk services infrastructure. The purpose of this report is purely to provide an overview of the philosophy in the provision of water, sewer, roads and storm water infrastructure for Phase 2 of the development of the various farm portions. This report is by no means a design report and can be considered as a work document with the intention to obtain comments and possible other proposals to service delivery.

The provision of infrastructure for the said portions will be done by the developer. The development will be self-sufficient in terms of the provision of bulk water and sewer infrastructure. The abstraction of ground water as bulk water supply is a sustainable solution. The possible connection onto the bulk Municipal water services post 2015 is an option for the developer. The supply of water from abstraction boreholes in the Spekboom River alluvial system will be the norm until the availability of municipal water.

The introduction of a 1.5MI sewer treatment plant will accommodate all the sewage generated by the development of phase 1. An additional 1MI could be provided for should the Municipality require such an arrangement. The required capacity for Phase 2 is an additional 2.6MI.

Formal Roads and storm water infrastructure is to be provided for the developments according to the Guidelines for Municipal Services. Public access into the area is possible through access roads to the public road network system in the area. The proposed development is situated about 1.7km west of central Burgersfort and in its vicinity there are currently 1 National Road, 1 Provincial Road, 1 Municipal Class 3 Road and various Local Access Roads servicing the area.

The flood line calculation for the Steelpoort River that was included with the draft EIAR was done previously by an engineering company appointed by the Greater Tubatse Municipality. However, their calculations were not actually based on physical field surveys. ENDECON has revisited the flood line and conducted field surveys in order to obtain very accurate results and a new alignment was calculated. The development

infrastructure falls outside of the 1:100 flood line. No secondary storm water courses are evident on the portion of land earmarked for development.

9.2 **Geotechnical Report** (Appendix E-2)

Two geological terrains dominate the project area. The first geological setting is that of the floodplain, which consists of alluvial material overlying the rocks of the Bushveld Complex. The second geological terrain, the slope area, is characterised by scree slopes comprising rocks from the underlying shelter norite and older pyroxenites of the Rustenburg Layered Suite. The Shelter Norite is made up of fine to medium grained norites with some pyroxenite found intermittently along the base. Underlying the Shelter Norite are older medium to coarse grained pyroxenites which occur sporadically

Recommendations and alternatives:

Overall, the property is suitable for township development providing the precautionary measures recommended are implemented.

- Building foundations will not be problematic but terrace construction will have to be professionally supervised.
- The middle and upper slopes of the Morole Mountain are considered too steep for development.
- The alluvial zones along the Steelpoort and Spekboom Rivers are subject to flooding and should not be considered for residential development.
- No servicing problems are envisaged but a fully imported road prism will be required.

9.3 **Geohydrological Report** (Appendix E-3)

The Developer Anglorand Holdings Limited will be using groundwater and surface water to supply in the water demand for the proposed development. Surface water will be sourced from the Spekboom River by dedicated water abstraction wells constructed in the riverbed of the Spekboom River. The water demand for the proposed development is in the order of 2.73MI/d.

Sustainability of the groundwater regime and surface water source:

The feasibility of securing the required water supply of 2.73MI/d for the planned development to be located on Portions 5, 58, 60, 62 and the remainder of Portion 27 of the Farm Leeuwvallei 297 KT is assessed as favourable. The assessment is based on the following information:

- Twelve boreholes are available to be used as source for the proposed development.
- The two boreholes tested BH 02 and BH 05, respectively is capable of delivering 777m³/d and 907m³/d.
- A maximum groundwater volume of 264m³/d can be taken sustainably from the development portion.
- A large number of boreholes are available to be used as mechanical standby boreholes.

- Three wells established in the gravel material of the Spekboom River are available to serve as abstraction points to abstract surface water. Individually these wells will be able to deliver 1800m³/d per well.
- The alluvial river bed aquifer is not the restricting factor, but the legal volume that may be taken sets the maximum limit.
- The duty cycle of these three wells located in the Spekboom River will be set to deliver a maximum of 2 982m³/d.
- The physical surface water and groundwater catchment area that ultimately feed the aquifers of the proposed development area stretch much further to the east, west and south of the development. This enlarged catchment area consisting of the hills to the south and east and the catchment areas of both the Spekboom and Steelpoort Rivers.
- The chemical quality of water from the Spekboom River can be categorized as Class 1, good water quality, suitable for life time use, rare instances of sub-clinical effects.
- The chemical quality of water from Borehole BH 01, BH 05 and Spekboom Borehole can be categorized as above Class 2. Poor water quality, poses a risk of chronic health effects, especially in babies and elderly.
- The chemical quality of the water from the Steelpoort River, SPK 2, the Spekboom River. Upstream and Spekboom River Downstream can be categorized as Class 1, good water quality, suitable for life time use, rare instances of sub-clinical effects.
- The bacteriological quality of the water from the Steelpoort River, Spekboom River. Upstream and Spekboom River Downstream can be bacteriologically rated as above Class 2. The water from these rivers needs to be chlorinated prior to human consumption.

On Site Groundwater Contamination Risk Assessment

The study shows that the unsaturated zone of the aquifer at the proposed sanitation site will not have enough capacity during an accidental spill to provide for enough attenuation ability to ensure a low contamination risk to the groundwater regime. The following information was assessed to come to this conclusion:

- The aquifer is classed as a major aquifer region and can be described as a high yielding aquifer system of good water quality.
- A moderate tendency or likelihood does exist for contamination to reach a specific position in the groundwater system after introduction at some location above the uppermost aquifer.
- The aquifer is rated to have a high susceptibility. Susceptibility is a qualitative measure of the relative ease with which a groundwater body can be potentially contaminated by anthropogenic activities and includes both aquifer vulnerability and the relative importance of the aquifer in terms of its classification.
- The GQM index of the area is rated at 8, with a high protection level needed.
- The soil's permeability, measured in the percolation test pits for Test pit 01 is 2.5 to 3m/d.

- The hydraulic flow time will be in the order of between 3 and 4 days for water from a contamination source to reach the groundwater table.
- Special precaution needs to be taken that during the design phase a seal will be incorporated in the water treatment plant.

The following recommendations are made:

- The existing boreholes BH 02 and BH 05 can be used as production boreholes for the proposed development.
- At least two other boreholes can be tested and used as standby facilities for the development.
- Routine monitoring of water level depths in all the boreholes on site, abstraction volumes, rainfall figures and water quality is strongly recommended and should strictly be adhered to. This data will form the basis from which any changes in the groundwater regime will be recognised.
- The water quality monitoring of the production boreholes must be done on a bi-annual basis. Analysis for major cat and an-ions and bacteriological parameters must be done.
- TDS, Turbidity, Nitrate, Faecal Coliform count, Total Plate count, Coliform count, COD, and Phosphate must be analysed for, on bi-annual intervals, at the two monitoring points recommended.
- Rainfall figures must be recorded on a daily basis.
- Water abstraction figures must be noted on a monthly basis for the two abstraction boreholes.
- Flow meters must be installed at all abstraction points to be used to facilitate with the measuring of abstraction volumes.
- A monitoring report must be generated by a qualified geohydrologist on an annual basis to report on water quality and groundwater level responses.
- A Groundwater Management Plan, with relevant Groundwater Monitoring and Reporting Protocol, should be established and calibrated annually.

9.4 Traffic Impact Study (Appendix E-4)

The Burgersfort area has in recent times been subjected to rapid development and hence planners responsible for planning surrounding roads and other transport infrastructure have generally been under severe pressure to keep up with the rapid expansion and development of the area. In future, various new roads are planned in line with the municipal road linkage plan and all the Leeuwvallei developments are designed to be compatible with the existing and future road networks. A project specific Traffic Impact Study were commissioned and conducted by ENDECON consulting engineers. Based on the conclusions that were derived from this study, the following are recommended:

- 1) Considering support from the Developer, it is proposed that the north-south leg of the Western Ring Road be located further east from the Steelpoort River at the proposed location for the Ext 31 access position (approximately 375m west of the

R37/R555 intersection) and in support of the above a new intersection is proposed approximately 400m along the R555 from where it intersects with the R37 – this access location will provide the opportunity to route the Western Ring Road via Ext 47.

- 2) Considering support from the Developer and the prevalent planning of the Greater Tubatse Municipality, it is proposed that the Main Public Transport Link proposed in the Burgersfort integrated road network be implemented by relevant Road Authorities as an interim Eastern Ring Road; it should be configured with 2 lanes per direction and traffic circles (2 circulating lanes, at least 25m inside diameter) should be used for intersection control to promote steady flow and mobility along the route and allow for the enforcement of access control.
- 3) Considering the anticipated normal growth in **background traffic**, a review of the background traffic analysis (2014, 2019, 2024, assumed growth rate 3% per year) indicates the following improvements are required
 - **2014 Analysis:** Signal adjustments are sufficient with geometric adjustments (additional turn lanes) only required at the R37 intersection with the Tubatse Crossing shopping centre eastern access.
 - **2019 Analysis:** Signal adjustments are sufficient with geometric adjustments (additional turn lanes) required at the R37 intersections with the Tubatse Crossing shopping centre eastern access, Eland St and the R555 to Ohrigstad.
 - **2024 Analysis:** Apart from signal adjustments, the addition of a 3rd through-lane (both directions) is to be extended along the R37 and further geometric improvements (additional turn lanes) are required at all the relevant R37 intersections except at the R555 (to Steelpoort) intersection.
- 4) Considering the anticipated **development traffic**, a review of the development traffic analysis (2014, 2019-low growth, 2019-high growth, and 2024 as per assumed phasing) indicates the following improvements are:
 - **2014 Analysis:** The current high volumes of through-traffic along the R37 in conjunction with new development traffic implies the geometric adjustments (additional turn lanes) required at the R37 intersections with Eland St and the R555 to Ohrigstad (as proposed for the 2019 background analysis) is to be implemented earlier.
 - **2019 Analysis (Low Growth Scenario):** The anticipated growth in the high volumes of background through-traffic along the R37 in conjunction with new development traffic requires geometric adjustments (additional turn lanes) at the R37 intersections with the Tubatse Crossing shopping centre eastern access, Eland St and the R555 to Steelpoort.
 - **2019 Analysis (High Growth Scenario):** The addition of a 3rd through-lane (both directions) is to be extended along the R37 west of its intersection with the R555 (Steelpoort Rd) up to the new intersection with the future Western Ring Rd (Ext 31 access), further geometric improvements (additional

turn lanes) required at the R37 intersections with Eland St and the R555 to Steelpoort.

- **2024 Analysis:** Further geometric improvements (additional turn lanes) required at the R37 intersection with the R555 (to Steelpoort) as well as the R37 intersection with R555 (to Ohrigstad).

5) Considering the anticipated development traffic, a review of the development traffic analysis for **development internal/new** intersections (2014, 2019-low growth, 2019-high growth, and 2024 as per assumed phasing) indicates the following new intersections are required:

- **2014 Analysis:**

- The provision of the new signalised intersection approximately 375m west of the R37/R555 (Steelpoort Rd) intersection is required.
- Provisionally priority controlled intersections are sufficient to service Ext 46 and Ext 31.

- **2019 Analysis (Low Growth Scenario):**

- Additional legs are added to the access intersections to service Ext 46 and Ext 31.
- Abovementioned intersections can be priority controlled initially but will eventually require signalisation subject to traffic signal warrants being met.

- **2019 Analysis (High Growth Scenario):**

- The provision of the 4-lane (2 lanes per direction) of the Main Public Transport Link (to function as interim Eastern Ring Road) is required along with the proposed traffic circles (at least 25m internal diameter, 2 circulating lanes) at all main intersections along it to allow for improved mobility and the opportunity to enforce access control restrictions as elaborated earlier.
- Access spacing of 250m or more is within designated COTO guidelines if the Main Public Transport Link is designated as a Class 4 road. However, should it be specified as a Class 3 road the main intersections should be maintained as traffic circles on 480m with mid-block intersections to be restricted to left-in/left-out only access (traffic circles will allow safe U-turns) and the use of some sort of median divider (kerbed median or back-to-back kerbing to prevent illegal right-turns).
- In addition, further upgrading of the new signalised intersection approximately 375m west of the R37/R555 (Steelpoort Rd) intersection is required to ensure ease of access to the Main Public Transport Link.

- The access off the R555 (Steelpoort Rd) to Ext 46 & the residential section of Ext 31 is to be signalised and upgraded.
- Access to the residential developments of Ptn 61 as well as the secondary access to Ext 45 is to be priority controlled.
- A new signal intersection along the R37 is proposed to be located west of Eland St. Its spacing should be similar to existing spacing along the R37 and approximately mid-block to the next intersection (eastern entrance to Tubatse Crossing shopping centre), i.e. between 350 – 400m with consideration of property boundaries affected.
- The intersection should link the R37 with the Main Public Transport Link and its layout should allow ease of access for traffic to/from the east wishing to access the Main Public Transport Link.
- **2024 Analysis:**
 - Access to the residential developments of Ptn 5 & 13 is to be controlled by means of an all-way stop.
 - Access to the residential development of the Rem of Ptn 60 & 58 is to be controlled by means of traffic circle.
- In support of the analysis results the proposed access controls and lane requirements are depicted in the report.
- For ease of reference and understanding, a series of figures are provided under **Section 6** summarising the intersection improvements and layouts as required in terms of the 'low growth scenario' for the 2019 horizon year to accommodate developments (Ext 31, Ext 46 & Ext 47) that are confirmed with a fairly high degree of certainty to take place over the next 5 years as indicated by the Developer.
- In terms of the current proposed layout of the relevant developments, the following recommendations are made in terms of adjustment of the relevant layouts:
 - The internal road network of Ext 31 (industrial/commercial developments off R37) should allow for a connecting road through to the R555, with its intersection lined up with Ext 47 and the latter should be configured to allow for its eventual continuation as the proposed Western Ring Rd.
 - The multiple accesses to Ptn 5 & 13 can be consolidated into a single all-way stop access.
- The access to the western residential developments of Ptn 61 should be consolidated into a single combined access off the traffic circle at the intersection of Roads 1 & 5 and shared with the proposed sport fields currently indicated in the western part of Ptn 61.
- Pending the inputs from the Greater Tubatse Municipality and their engagement with the local taxi industry to ascertain the need and desirability

of such a facility, the provision of an additional satellite taxi rank (to relieve pressure on the existing rank) in the vicinity of the proposed sports fields on the western end of Ptn 61 is to be considered.

- Considering the findings and recommendations presented and pending feedback from relevant authorities concerned (Greater Tlhabatse Municipality, Roads Agency Limpopo and South African National Roads Agency Limited) it is recommended that the Burgersfort extensions planned to be located on the farm Leeuwvallei 297-KT be approved from a traffic engineering point of view.

9.5 Biodiversity Assessment (Appendix E-5)

The environment on most of the affected portions on the valley plain has been transformed for agricultural purposes and no natural vegetation remains intact on this area. However, the vegetation on the higher slopes of the Morole Mountain has remained largely intact although historic mining activities are present. Illegal wood harvesting is having a significant negative impact on this area. A narrow band of riparian trees is present on the banks of the Steelpoort and Spekboom Rivers.

According to Mucina & Rutherford (2006), *Sekhukhune Plains Bushveld* and *Sekhukhune Mountain Bushveld* and their associated topographic features as well as fauna are not well conserved (2% conserved, 25% transformed and 0.4% conserved, respectively). Due to present impacts *Sekhukhune Plains Bushveld* is rated as *Vulnerable* by Mucina & Rutherford (2006). In contrast, *Sekhukhune Mountain Bushveld* is rated as *Least Threatened*, mainly due to the inaccessible mountainous terrain associated therewith.

Furthermore, the property is located within the *Sekhukhune Centre of Plant Endemism*. This centre contains unique characteristics and offers habitat to several endemic species of flora that is not found elsewhere (Van Wyk & Smith, 2001). This botanical phenomenon is discussed and the important species that were recorded are listed and discussed.

The vegetation communities encountered on the affected areas are described and are illustrated. The riparian areas were delineated and projected on an aerial photograph. No wetlands are present on the study site. A review of Red Data lists projected on the locality and results of field searches indicates that several RDL species may be present in the natural habitats. By using biophysical features of available habitats and using the results of field searches the possibility of these species of occurring on site is investigated. Several important species were recorded.

The fauna survey indicates that all natural habitats will be utilized by the fauna expected to occur on this property. However, it is not anticipated that these species will be negatively affected if given the necessary protection and habitat conservation. The mobility of most fauna will ensure that they can adapt or relocate if disturbed by the activities.

It is important that the communities with *High* sensitivity ratings are not significantly disturbed or damaged by construction and that they are well managed during the operational phase. Due to the fragments of *Highly* significant habitats remaining it will be important for the developer to bear the following in mind during the planning phase:

- Development areas must be planned to make use of already disturbed areas and areas with a *Low* sensitivity rating;
- Roads and stream crossings must be planned on existing passages and disturbed areas within the riparian areas and over watercourses;
- Development areas that are planned within natural communities with a *High* sensitivity rating have to be mitigated in order not to significantly affect the natural integrity of these areas.

The biodiversity assessment concludes that most of the site is degraded or transformed to such an extent as to be of *Low* biodiversity concern. However, significant fragments of important natural communities remain intact - it is recommended that these natural areas on the higher slopes should be conserved to ensure that the present biodiversity is not affected and that the layout plan be altered to conserve these areas. However, the following mitigation measures and recommendations should be adhered to:

General recommendations

The layout must be planned to accommodate the following:

- Conserve natural communities with a *High* sensitivity significance and minimize loss of individuals and diversity;
- Conserve important species and individuals (i.e. Red Data List and legally protected spp.);
- Conserve large solitary indigenous trees in orchards, dry lands, non-arable and resort / homestead areas;
- Use only indigenous flora for landscaping;
- Implement an alien invader plant control program;

Township and Industrial development

- Development areas must be confined to areas with a *Low* sensitivity rating;
- The recommended development areas consist of the transformed and degraded land and include: Degraded woodland and Disturbed land and old lands.
- General recommendations for development are given in the previous section;
- It is recommended that the disturbed area (Private open space) consisting of the historic mining sites be used to as a relocation site for important vegetation.

Recommendations for development activities and the management of natural communities are given under the following headings:

Riparian zone

- This zone must be improved by planting suitable trees annually, in order to achieve a closed vegetation community alongside the rivers that will serve as an ecological corridor;
- The stream banks must be cleared of alien vegetation, in order to improve the ecological integrity of the community and to prevent the spreading of seeds.

Closed woodland and drainage line thickets

- These areas are of *High* sensitivity rating and only limited (road and pipe line crossings, abstraction points) activities are recommended within their boundaries;
- Illegal vegetation removal must be checked;

9.6 Heritage Impact Assessment (Appendix E-6)

A Heritage Impact Assessment (HIA) was conducted by ADANSONIA HERITAGE CONSULTANTS in order to identify possible sites of significance. A number of burial sites were recorded on areas 1a, 1b & 3, which fall within the phase 1 development. These sites are now protected in open spaces of the development. An HIA for areas 1a & 1b was conducted previously (February 2005) by Dr. J. Pistorius, but one burial site (in section 1b), was not detected during that study, and is now included in the current report. Recommendations are made to ensure that activities do not impact negatively on the burial sites and that measures are in place to provide access for family members of the deceased, or to relocate the graves.

The bigger parts of sections 1b, 2 & 3 were until recently used for agricultural purposes and have been extensively disturbed. Section 1b has also been extensively disturbed by modern infrastructure. Section 1a was mainly disturbed by recent settlement in the eastern section. Only section 4 is largely undisturbed although digging / mining activities took place towards the west of the property. The original site of Fort Burgers was situated on section 3.

It is concluded that the proposed residential development may continue, provided that the mitigation measures as specified in Section F are implemented. The grave sites that is included with the report forms part of the phase 1 development which has been addressed in the EIA for that particular project). The sites of significance for the present application are:

- a) LB/GY05: Burial site of Voortrekkers;
- b) LB/6: Fort Burgers;
- c) LB/9: Iron Bridge over Steelpoort River.

Sites *a* and *b* will be preserved as part of the existing dwelling area as set out in the layout plan (Appendix A-2) and will not be affected. Site *c* will be preserved as is.

9.7 Social & Economic Assessment (Appendix E-7)

The land owner and developer, Anglorand Holdings Limited is embarking on a large residential and industrial development with a total value of all phases in excess of R1,500,000,000. The development is planned on several of the northern and western portions of the farm Leeuwvallei 297 KT, Burgersfort, Greater Tubatse Municipality (GTM). A crucial aspect for the successful completion and operation of these projects (phases 1 and 2) is the authorization needed from Department of Water Affairs (DWA) for the water uses listed in the above section. The critical issues relevant to this assessment that will constrain the development of the GTM into a successful growth point can be summarized as follows:

- Water shortages due to inadequate supply and storage facilities;
- Breakdown in delivery of services due to inadequate maintenance and expansion of services;
- Pressure on existing services due to the escalation in development;
- High levels of unemployment and low skills and literacy levels of the population;
- Undefined nodal structure for industry;
- Outflow of capital due to lack of local industry and business services;
- Mining remains the largest contributor to economic growth;
- Agriculture remain the main economic resource

The Anglorand Leeuwvallei development will address several of the critical issues identified in the previous sections. Firstly, this development was planned to provide services for its own demand and to have the capacity to offer surplus services resources to the Local Municipality and community, notably the previously disadvantaged groups. Secondly, the development will provide much needed housing, thirdly and very importantly, the Anglorand Leeuwvallei water allocations will become available for the GTM.

Presently, several housing developments have been authorized around Burgersfort. However, the majority of these cater for the high income buyer and furthermore, the municipal services do not have the capacity to provide service delivery to these developments. The Anglorand Leeuwvallei development will address both these issues. Firstly, a substantial percentage of the residential erven will be aimed at the lower to middle income groups. This will ensure that the young and upcoming individuals can afford to invest in homes for their families. Secondly, this development was planned to provide services for its own demand and to have the capacity to offer surplus services resources to the Local Municipality and community.

Furthermore, the development is making provision for most of its own services. Included with the planning is electricity supply via a new ESKOM 132kV distribution line and substation to provide electricity to the development area. Surplus electricity will be available from this substation which can be distributed to other places in need.

As discussed in the document the only water allocations which will be available in the near future for the Burgersfort area are the Leeuwvallei allocations (total of 8000m³)

which is privately owned (Anglorand). These are also the allocations that are relevant to this report and the availability of these allocations will be a great relieve to address the present deficit of water needed to develop the economic and social structure of the region. Therefore, Anglorand is prepared to make these allocations available once it is transferred to domestic use and authorized.

Furthermore, the existing sewage treatment plant servicing Burgersfort does not have the capacity (1.5mL/day) to treat the actual sewage output of the town (4mL/day) and even when this plant is upgraded it will not be able to serve the future demand. Due to this issue Anglorand has applied for – and received authorization for the construction of a sewage treatment plant to service the Anglorand Leeuwvallei development as well as other developments in future.

In view of this investigation it is apparent that the Anglorand Leeuwvallei development will have major positive economic and social impacts for the local municipal area and even the region as a whole and few if any negative impacts are anticipated. This development will significantly address the following critical issues that constrain the economic and social growth of the region:

- Water demand;
- Electricity and services infrastructure;
- Sewage treatment demand;
- Employment;
- Economic and business opportunities;
- Housing.

10. IMPACT ASSESSMENT

10.1 Methodology

So as to evaluate impacts objectively and assign an order of priority for individual impacts, it is necessary to identify the following characteristics of each impact:

- The *nature* of the impact entails a description of the cause of the impact, what will be affected and how it will be affected;
- The *extent* refers to the area where the impact will be significant e.g. on site, local area, regional, provincial, national or international;
- The *duration* refers to the lifetime of the impact. The time frames used in this assessment are as follows:
 - Short term: 0-5 years
 - Medium term: 5-15 years
 - Long term: >15 years
 - Permanent
- The *probability* describes the likelihood of the impact occurring during the duration:
 - Improbable (Low likelihood)
 - Probable (Distinct possibility)
 - Highly Probable (Most likely)
 - Definite (Impact to occur regardless of any preventative measures)
- The *significance* is determined by analyzing the above subjects and is assessed as low, medium or high.
- The *status* indicates whether the impact is positive, negative or neutral.

10.2 Assessment of potential environmental impacts

During the basic EIA process the following potential environmental impacts and/or aspects were identified in a chronological order of the development phases:

Planning phase

- Land use
- Geology and Topography
- Availability of services
- Increased motorized traffic
- Heritage sites
- Water resources
- Ecology & biodiversity
- Riparian areas

Construction phase

- Generation of noise, dust and vibrations
- Generation of spoil material and waste
- Traffic and Neighborhood disruptions
- Visual impact
- Construction camp, discipline and materials stockpiles

- Pollution and spillages of hazardous substances
- Ecology & biodiversity
- Riparian areas

Operational phase

- Impact on wetlands
- Availability of services and waste management
- Increased motorized traffic
- Visual impacts
- Impacts on neighbouring land including protected areas
- Social and economic impacts for the local area

The potential impacts are discussed in a chronological order as far as possible in the following section and are also summarized in section 8.3. Overlapping impacts – or impacts present during more than one phase of the development process are indicated in the assessment tables below.

Land use

Although the site is zoned as agriculture land it is earmarked for township establishment according to the Municipal planning. Economic activities in the past include agriculture but the proposed activity will add much more value to the land. The Land Tribunal has already approved this project. Presently, no viable economic activities are engaged on the property. No negative impacts are expected in this regard.

Impact/Aspect	Extent	Duration	Probability	Significance Before	Significance After
Change of land use	Site	Long term	Definite	Low	Low

Geology and Topography

The topography of the development land is mostly flat with a decline to the north and east. The northern slopes of the prominent Morole Mountain are located on the southwestern section of the land. The Steelpoort River forms the northern boundary and the Spekboom River the eastern boundary. The steeper slopes of the Morole mountain and the alluvial terrain along the rivers are not recommended for development and will not be affected as a 40m buffer will be respected along the flood line of the rivers. No negative impacts are anticipated with regards to the geology and topography as long as the recommendations of the Geotechnical Report are followed (Appendix E-2).

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Topography	Local	Long term	Unlikely	Medium	Low
Geology	Local	Long term	Unlikely	Low	Low

Impact on municipal of services

The applicant will provide services infrastructure and the services report indicate that adequate capacity is available (Appendix E-1). No negative impacts are anticipated.

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Availability of services	Local	Operational	Unlikely	High	Low

Water resources

Pollution of water resources can occur during construction and operational phases. However, with adequate mitigation any pollution potential can be regarded as low. The abstraction of ground & surface water to supply the development will have a negative impact on water resources. This aspect was investigated by the Geohydrological Report and it was concluded that sufficient water is available to supply the development and the significance of the impact with mitigation is low.

The development will not have a direct physical impact on the Steelpoort or Spekboom Rivers. A 45m buffer zone will be respected from the edge of each watercourse and sewage pump stations and storm water discharge pumps will be constructed within this zone. Additionally berms and gabion structures will be constructed to protect this infrastructure in case of severe floods and erosion. The physical impacts will be short term (construction) and any disturbance will be fully rehabilitated. The anticipated impacts are regarded as low.

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Surface water pollution	Local Downstream	Short term	Unlikely	High	Low
Groundwater pollution	Local Downstream	Long term	Unlikely	High	Low
Abstraction of ground & surface water	Local Downstream	Long term	Definite	High	Low
Modifications to Steelpoort & Spekboom Rivers	Local Downstream	Short term	Unlikely	High	Low

Ecology and biodiversity

The development will result in the loss of natural habitat and vegetation. The habitat delineation is projected in Appendix A. However, the biodiversity report indicates that the ecosystems on the affected area of the site are degraded as result of human induced impacts. Habitats of high significance will not be affected and will be proclaimed as open spaces (Appendix A and Appendix E-5).

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Loss of Fauna	Site	Long term	Definite	Medium	Low
Loss of Flora	Site	Long term	Definite	Medium	Low
Loss of Habitats	Site	Long term	Definite	Medium	Low

Riparian areas

Several activities are planned in the riparian areas and within the 1:100 year flood lines of the Steelpoort and Spekboom Rivers as well as secondary ephemeral drainage lines. The Biodiversity Assessment delineated the riparian areas and recommends that the proposed activities can proceed on condition that the mitigation measures are strictly adhered to (Appendix A and Appendix E-5). The following activities are planned in the riparian and 1:100 year flood lines:

- 1) Bulk storm water outlets;
- 2) Waste water disposal outlets;
- 4) Water abstraction pump stations and pipe lines;
- 5) Sewage pump station/s;
- 6) The construction of earthen and gabion walls in order to protect the abovementioned structures from erosion and flooding.

Specific mitigation measures are included with the EMP (Appendix G) in order to ensure that the riparian areas are not significantly affected. A 45m buffer zone has been implemented to protect the riparian zone from significant impacts that may encroach as result of the township development. With mitigation the significance of these impacts are assessed as follows:

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Loss of riparian area	Site	Long term	Definite	High	Low
Diverting and impeding flow	Site	Long term	Definite	High	Low
Changes to river banks and bed	Site	Long term	Definite	High	Low

Heritage sites

Several heritage sites were identified on site and the recommendations of the HIA will be adhered to in the management of these sites (Appendix E-6). Management of these sites is prescribed in the EMP (Appendix G).

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Heritage sites	Site	Long term	Probable	Medium	Low

Construction camp, workforce discipline and materials stockpiles

An inadequately planned construction camp and stockpiles depot may result in pollution, littering and noise. The construction camp and sanitation facilities for labor will be concentrated on a nearby existing site where infrastructure and essentials such as water, waste collection and sanitation is already available. An undisciplined and badly managed workforce will have a negative affect on the neighboring landowners. A construction management plan will be adhered to so as to prevent related impacts. These issues are addressed in the Draft EMP (Appendix G). The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Littering & pollution	Site	Short term	Probable	Medium	Low
Safety/Injury	Site	Short term	Probable	Medium	Low
Discipline	Local	Short term	Probable	Medium	Low
Waste management	Site	Short term	Probable	Medium	Low

Generation of noise, dust and vibrations during construction

Noise and dust will be generated during construction. Appropriate measures will be emplaced to minimize this impact. These issues are addressed in the Draft EMP (Appendix G). The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Noise	Site	Construction	Definite	Medium	Low
Dust	Site	Construction	Definite	Medium	Low
Vibrations	Site	Construction	Definite	Medium	Low

Topsoil and erosion

Construction activities can result in the loss of topsoil and erosion. Measures must be in place to protect soil during the construction and operational phases. These issues are addressed in the Draft EMP (Appendix G). The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Erosion	Site	Short term	Probable	Medium	Low
Pollution of soil	Site	Long term	Probable	Medium	Low
Loss of topsoil	Site	Long term	Probable	Medium	Low

Storm water management & flooding

The flood line calculation for the Steelpoort River was done previously by an engineering company appointed by the Greater Tubatse Municipality. However, their calculations were not actually based on physical field surveys. ENDECON has revisited the flood line and conducted field surveys in order to obtain very accurate results and a new alignment was calculated. The development infrastructure falls outside of the 1:100 flood line as projected in the amended final layout plan (Appendix A-2).

Inadequate storm water management can result in the loss of topsoil and erosion as well as flooding of residential areas. Measures must be in place to protect soil during the construction and operational phases. These issues are addressed in the Draft EMP (Appendix G). The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Erosion	Site	Short term	Probable	Medium	Low
Loss of topsoil	Site	Long term	Probable	Medium	Low
Flooding	Site	Long term	Probable	Medium	Low

Visual and aesthetic impacts

During construction the site may be untidy and unused items and spoil materials as well as stockpile areas may not be visually attractive. However, this will be of and temporary nature to attain the operational phase. No negative long term visual or aesthetic impacts are foreseen as the final product will be a well designed residential suburb forming an integral part of the local area. The potential significance of this impact is rated as low.

Impact	Extent	Duration/Phase	Probability	Significance Before Mitigation	Significance After Mitigation
Visual	Site	Short term	Definite	Medium	Low
Aesthetic	Site	Long term	Definite	Medium	Low

Generation of spoil material and waste during construction

Spoil material and solid waste will be generated during construction. Most of the material will be used as filling material. Disposal of domestic waste and building rubble will be done at a permitted site. The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Spoil & waste	Site	Construction	Definite	Medium	Low

Traffic and Neighborhood disruptions during construction

During construction, vehicles and detours may result in traffic disruptions. Appropriate measures will be employed to minimize this impact. The potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Traffic disruptions	Site	Construction	Definite	Medium	Low

Motorized traffic and access during operational phase

During the operational phase there will be a significant increase in traffic from the existing access roads. A new access is proposed from the R555 to the western section of the development. Access to the section east of the R37 will be from the existing access (also servicing the Tubatse Mall) as well as from an additional proposed access road. These roads are planned to be compatible with the Municipal road planning for the local area and as the development will be phased it is foreseen that the roads will be upgraded and built in order to accept the increased traffic. The applicant addresses this issue with the traffic Impact Study that was compiled in consultation with the Local Municipality (Appendix E-4). In view of this detailed planning the potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Increased traffic	Site	Operational	Definite	Medium	Low

Environmental pollution & waste management

Pollution and waste disposal may occur during the construction phase. Strict precautions must be taken to prevent sources of pollution and the generated waste and refuse will require efficient waste management. Refuse bins should be conveniently located, and effort should be made to keep paper, plastic and bio-degradable materials separate for recycling. A services agreement is in place with the Municipality and it is unlikely that these impacts will be relevant during the operational phase. With these measures in place the potential significance of this impact is rated as low.

Impact	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Environmental pollution	Site Local	Short term	Probable	Medium	Low
Waste management	Site Local	Short term	Probable	Medium	Low

Impacts on neighbouring land and existing land uses

It is not envisaged that the development will have negative impacts on neighbouring land uses. No objections from neighbouring IAPs or land owners were received to date. The development land forms part of a larger development area to the north of the present CBD as is projected on the layout plan. It is anticipated that the development will lead to increased infrastructure and road linkages that will be to the benefit of Local Municipality and local businesses and economy. However, the Municipality will have to monitor and prohibit encroaching informal settlements and large scale commercial developments on the land to the north of the Steelpoort River that is already subject to traffic issues and lack of services provision due to lack of planning and disregard of environmental planning and Municipal bylaws.

Impact/Aspect	Extent	Duration	Probability	Significance Before Mitigation	Significance After Mitigation
Neighbouring land & land uses	Local	Operational	Probable	High	Low

Social and economic impacts for the local area

It is anticipated that the development will have only positive impacts to the local society and community mostly as result of additional housing and improved services infrastructure. The use of local labor will have significant positive impact for labor in the local community.

Impact	Extent	Duration	Probability	Significance	Status
Socio-Economic	Local	Construction Operational	Definite	Medium	Positive

10.3 Impact assessment table

The impacts assessed in the previous section are summarized in Table 2.

Table 2 Impact Assessment Table for the proposed phases of development

Phase	Nature of Impact	Extent	Duration	Intensity/ Severity	Probability/ Certainty	Significance	
						Before mitigation	After mitigation
Planning	Geology & Topography	Site	Long term	Low	Unlikely	Low	Low
	Land use	Site	Long term	Low	Definite	Low	Low
	Availability of services	Local	Long term	High	Unlikely	High	Low
	Heritage sites	Site	Long term	Medium	Probable	High	Low
	Ecology & biodiversity	Site	Long term	Low	Unlikely	Low	Low
	Riparian areas	Site	Long term	High	Unlikely	Low	Low
Construction	Surface & groundwater	Site	Short term	Medium	Unlikely	Medium	Low
	Generation of noise, dust and vibrations	Site	Short term	Medium	Definite	Low	Low
	Generation of spoil material and construction waste	Site	Short term	Low	Definite	Medium	Low
	Traffic & neighborhood disruptions	Local	Short term	Low	Definite	Medium	Low
	Construction camp, discipline & materials stockpiles	Local	Short term	Low	Probable	Medium	Low
	Pollution and waste management	Site	Short term	Medium	Probable	Medium	Low
	Visual	Site	Short term	Medium	Probable	Medium	Low
	Topsoil & erosion	Site	Short term	Medium	Probable	Medium	Low
	Storm water management	Site	Short term	Medium	Probable	Medium	Low
Operational	Visual	Local	Long term	Low	Unlikely	Low	Low
	Traffic Impact	Local	Long term	Low	Unlikely	Medium	Low
	Availability of services and waste management	Local	Long term	High	Unlikely	High	Low
	Management of wetlands	Local	Long term	High	Probable	High	Low
	Impact on neighbouring land use	Local	Long term	High	Probable	Medium	Low
	Social & Economic Impacts	Local	Short term	Medium	Definite	Status positive	High
	Impact on municipal services	Local	Long term	High	Unlikely	High	Low

11. STATEMENTS

11.1 Assumptions and uncertainties

No uncertainties or assumptions were made during the assessment. However, the EAP trusted on the integrity and professional opinions of the specialists, officials and public that was consulted during the process.

11.2 Professional opinion

The EIA process indicates that the proposed land-use will not result in unacceptable cumulative impacts. Furthermore, no undesirable or unmanageable environmental impacts were identified which suggest that the activity and the site alternatives are undesirable/unsuitable and/or pose a risk to the local environment or resident people.

The EAP therefore recommends a positive final decision on authorization of the activity. Conditions that should be considered by the competent authority and may be required for authorization are given in the following section as well as the draft Environmental Management Programme (Appendix G).

11.3 Environmental impact statement

The assessment exercise, input from specialists, comments from relevant authorities and interested parties concludes that the site can be used for the proposed purpose, with the necessary mitigation measures in place, and provided the management recommendations outlined in this report are implemented.

An environmental impact statement is included as Table 3 and presents a summary of the key findings and a comparative assessment of positive and negative implications of the proposed activity as well as alternatives and relevant mitigation measures where appropriate. The EIA also serves as the basis of the Environmental Management Programme (EMP) which is formulated to manage and mitigate the magnitude of environmental impacts (Appendix G).

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Table 3 Environmental Impact Statement and Impact Mitigation Table for the proposed activities

EMPR Table	Impact	Mitigation	Significance	
			Before	After mitigation
PLANNING PHASE				
Table 1	Failure to comply with legal requirements	<ul style="list-style-type: none"> ▪ The applicant must comply with all conditions of the Environmental Authorization. ▪ The applicant and future owners must comply with all relevant requirements of environmental legislation. 	High	Low
Table 2	Provision of services & Traffic planning	<ul style="list-style-type: none"> ▪ The project aims to be self-sufficient of major services but will reach a services agreement with the Municipality. ▪ The road infrastructure must be planned and implemented according to the recommendations of the traffic impact study. ▪ The road infrastructure must be planned in line and with consultation of the municipal planning for this zone. 		
Table 3	Loss of biodiversity during construction	<ul style="list-style-type: none"> ▪ Conserve indigenous vegetation wherever possible. ▪ Re-vegetate disturbed areas with indigenous species. ▪ Conserve sensitive areas as defined in the Biodiversity Report (Appendix E-5). ▪ Apply measures as contemplated in Table 10 during construction phase 	Low	Low
Table 10				
Table 3	Impact on riparian zones	<ul style="list-style-type: none"> ▪ Demarcate the riparian areas as defined in the Biodiversity Report (Appendix E-5) and protect it from surrounding impacts. 	High	Low
Table 3	Impacts on Heritage sites	<ul style="list-style-type: none"> ▪ Protect known heritage sites and adhere to the HIA recommendations. 	Medium	Low
Table 4	Impacts related to geotechnical aspects	<ul style="list-style-type: none"> ▪ Follow the alternatives and recommendations of the geotechnical report for planning of infrastructure. 	Medium	Low
CONSTRUCTION PHASE				
Table 4	Impacts on water resources	<ul style="list-style-type: none"> ▪ Construction camp, facilities and material must be located away from water resources and courses. ▪ Pollution and wastage of water must be prevented. ▪ Hazardous materials must be handled and disposed of correctly. ▪ Monitor construction water consumption. ▪ Set up emergency response mechanisms in advent of pollution. 	Low	Low
Table 4	Impact on topsoil and soil erosion	<ul style="list-style-type: none"> ▪ Vegetation removal must be limited to construction sites only. ▪ Pollution and loss of topsoil must be prevented. ▪ Topsoil must be removed prior to construction must be stockpiled and protected for later use. ▪ Prevent and address soil erosion. ▪ Prevent silting of watercourses by use of silt traps and re-vegetation of disturbed areas. 	Low	Low
Table 5	Construction camp & labour management (litter, ablution facilities, safety etc.).	<ul style="list-style-type: none"> ▪ Construction camps must be approved by the ECO and must be provided with running water, ablution, sanitation and waste disposal facilities. ▪ Site manager to educate construction workers on pollution control and other related matters. ▪ Adequate ablution facilities are to be provided. The contractor is to ensure that chemical toilets are provided on site if necessary and are regularly maintained. ▪ Construction workers are to use protective clothing where required by regulations. 	Medium	Low
Table 6	Traffic disruptions	<ul style="list-style-type: none"> ▪ Provide clear signage on detours and other deviation routes, where necessary. ▪ Construction vehicle movement must be limited to demarcated areas. 	Medium	Low
Table 6	Land disturbance due to construction activities	<ul style="list-style-type: none"> ▪ Excavation activities to be confined to the area to be developed (footprint) as per planning and should be done to achieve desired outcome. ▪ There must be no other land excavation, besides those stipulated for construction purposes. ▪ Ensure that the site is cleaned and that rehabilitation of affected areas is undertaken. 	Low	Low
Table 6	Spillage, stockpiles and other construction related activities	<ul style="list-style-type: none"> ▪ Construction camp and stockpiling is to be confined within the existing construction camp and storage area. ▪ Concrete mixing will be done on pre-designed slabs underlined by PVC lining, on an area previously disturbed. Alternatively, maintain one mixing site and transport the concrete to the construction site. ▪ Any concrete, fuel or chemical spillage must be contained and cleaned immediately. ▪ All construction material must be sourced off-site from commercial sources. 	Medium	Low

Table 7	Inadequate waste management & disposal	<ul style="list-style-type: none"> Effective waste management and means of disposal must be in place. 	High	Low
Table 8	Generation of dust	<ul style="list-style-type: none"> Use dust-suppressing agents. Limit vehicle speed. Avoid dust generating activities during strong winds. 	Low	Low
Table 8	Noise pollution and vibrations generated by construction equipment	<ul style="list-style-type: none"> Construction activities are recommended from Mon – Friday 8hrs per day. No work is to be done on Sundays and public holidays. All equipment must be in good working order and must be serviced regularly. Any noise generating equipment used near residential areas must be encased. 	Low	Low
Table 9	Visual impacts	<ul style="list-style-type: none"> The construction sites and camps must be kept neat and tidy. Dwelling structures must visually acceptable and safe for personnel. No shacks or unsightly structures will be allowed. 		
OPERATIONAL PHASE				
Table 2	Waste management & Provision of services	<ul style="list-style-type: none"> The project aims to be self-sufficient of major services but will reach a services agreement with the Municipality. Ensure that waste management on site is properly conducted at all times. 	Medium	Low
Table 3	Storm water & Drainage	<ul style="list-style-type: none"> Maintain storm water infrastructure in good operational order. 	High	Low
Table 2	Riparian areas	<ul style="list-style-type: none"> Protect and improve the riparian areas by planting suitable riparian trees and conducting cleanup operations. 	High	Low
Table 4	Safety & Fire	<ul style="list-style-type: none"> Adhere to OHSA & Municipal standards. 	Medium	Low
Table 9	Visual & Aesthetic	<ul style="list-style-type: none"> Building designs and township management must comply with Municipal standards and bylaws. All relevant codes of practice and SABS Codes must be adhered to in the construction and operation of the activity. Final designs should consider the safety and accessibility of people, surface, slope and storm water channel should be adjusted accordingly. 	Medium	Low
Table 2	Traffic impacts	<ul style="list-style-type: none"> Ensure that the recommendations of the Traffic Impact Report are implemented. Maintain good road surfaces and ensure that traffic signs are in place and traffic rules are adhered to. 	Medium	Low
Table 3	Water and soil	<ul style="list-style-type: none"> Prevent pollution, wastage and loss of these resources. 	High	Low
	Socio-economic impact	<ul style="list-style-type: none"> This project will improve living conditions and provide housing to poor people and will improve the socio economic environment for nearby residents in informal settlements. The proposed project is likely to create employment opportunities to skilled and unskilled labour. 	N/A	N/A
REHABILITATION PHASE				
Table 11	Inadequate or no rehabilitation will result in significant environmental impacts	<ul style="list-style-type: none"> The Environmental Control Officer must ensure that all temporary structures, roads, Materials, waste and facilities used for construction activities are removed upon completion and affected areas must be rehabilitated. 	High	Low
CLOSURE				
It is foreseen that this development will proceed and be maintained into the unforeseeable future and closure is not considered to be applicable to the activities.			N/A	N/A

APPENDIXES

APPENDIX A: MAPS & LAYOUT PLANS

APPENDIX A-1: LOCALITY MAP

APPENDIX A-2: PROVISIONAL LAYOUT PLAN

APPENDIX A-3: SPECIALIST MAPS

APPENDIX B: SITE PHOTOGRAPHS

APPENDIX C: FACILITY ILLUSTRATIONS

APPENDIX D: PUBLIC PARTICIPATION REPORT

APPENDIX D-1: LEDET DOCUMENTATION

APPENDIX D-2: EIA NOTICES

APPENDIX D-3: IAP REGISTER & RECORDS

APPENDIX D-4: SITE MEETINGS & CONSULTATIONS

APPENDIX D-5: COMMENTS RECEIVED

APPENDIX E: SPECIALIST REPORTS

APPENDIX E-1: SERVICES ENGINEERING REPORT

APPENDIX E-2: GEOTECHNICAL REPORT

APPENDIX E-3: GEOHYDROLOGICAL REPORT

APPENDIX E-4: TRAFFIC IMPACT ASSESSMENT

APPENDIX E-5: BIODIVERSITY ASSESSMENT

APPENDIX E-6: HERITAGE IMPACT ASSESSMENT

APPENDIX E-7: SOCIAL & ECONOMIC ASSESSMENT

APPENDIX F: SUPPORTING DOCUMENTATION

APPENDIX G: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

APPENDIX A: MAPS & LAYOUT PLANS

APPENDIX A-1: LOCALITY MAP

**APPENDIX A-2:
PROVISIONAL LAYOUT PLAN**

APPENDIX A-3: SPECIALIST MAPS

BIODIVERSITY DELINEATION

HERITAGE SITES

APPENDIX B: SITE PHOTOGRAPHS

**APPENDIX C: FACILITY ILLUSTRATIONS
(None included)**

**APPENDIX D:
PUBLIC PARTICIPATION REPORT**

**APPENDIX D-1:
LEDET DOCUMENTATION**

APPENDIX D-2: EIA NOTICES

**APPENDIX D-3:
IAP REGISTER & RECORDS**

NOTIFICATION RECORDS

FINAL EIR NOTIFICATION RECORDS

**APPENDIX D-4:
SITE MEETINGS & CONSULTATIONS**

APPENDIX D-5: COMMENTS RECEIVED

APPENDIX E: SPECIALIST REPORTS

SPECIALIST DECLARATIONS

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SOCIAL & ECONOMIC ASSESSMENT**

**APPENDIX F:
SUPPORTING DOCUMENTATION**

MOTIVATIONAL MEMORANDUM

**DEPT AGRICULTURE &
TRIBUNAL AUTHORIZATION**

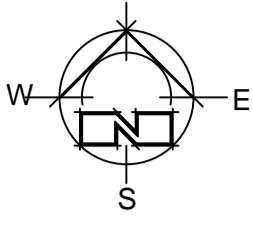
WATER USES

DISTRICT MUNICIPALITY

**APPENDIX G:
ENVIRONMENTAL MANAGEMENT
PROGRAMME**

FUTURE PROPOSAL LAYOUT PLAN 2

AAPIESDOORNDRAAI 298 KT




ANGLORAND HOLDINGS LIMITED
 PROPOSED TOWNSHIP
BURGERSFORT EXTENSIONS
 MAGISTERIAL DISTRICT LYDENBURG
 GREATER TUBATSE MUNICIPALITY
 LOCAL AUTHORITY
 GEODETIC SYSTEM W.G. 31

DESCRIPTION OF LAND: SITUATED ON PORTIONS OF PORTIONS OF THE FARM LEEUWVALLEI 297-KT

PROPOSED EXTENSION A USE TABLE

USE	NO OF ERVEN	AREA (Ha)	PROVINCIAL ERF NUMBERS	% OF TOWNSHIP	REFERENCE
COMMERCIAL/BUSINESS	16	12,546 Ha	-	43,28%	
COMMERCIAL/INDUSTRIAL	6	7,355 Ha	-	25,37%	
MUNICIPAL	2	0,993 Ha	-	3,43%	
PRIVATE OPEN SPACE	1	3,172 Ha	-	10,94%	
SPECIAL (PRIVATE STREET)	1	4,921 Ha	-	16,98%	
TOTAL	26	28,987 Ha	-	100%	

PROPOSED EXTENSION B USE TABLE

USE	NO OF ERVEN	AREA (Ha)	PROVINCIAL ERF NUMBERS	% OF TOWNSHIP	REFERENCE
RESIDENTIAL 1 (350m ² Erven)	182	7,361 Ha	-	23,02%	
RESIDENTIAL 2 (@64units/ha)	5	10,707 Ha	-	33,49%	RES 2
COMMERCIAL/INDUSTRIAL	3	2,903 Ha	-	9,08%	
MUNICIPAL	5	0,515 Ha	-	1,61%	
PRIVATE OPEN SPACE	1	1,900 Ha	-	5,94%	
SPECIAL	1	0,508 Ha	-	1,59%	
STREET	8,076 Ha	-	-	25,27%	
TOTAL	197	31,970 Ha	-	100%	

PROPOSED EXTENSION C USE TABLE

USE	NO OF ERVEN	AREA (Ha)	PROVINCIAL ERF NUMBERS	% OF TOWNSHIP	REFERENCE
RESIDENTIAL 1 (375m ² Erven)	439	17,700 Ha	-	75,90%	
MUNICIPAL	3	0,387 Ha	-	1,42%	
SPECIAL	1	0,555 Ha	-	2,03%	
STREET	8,677 Ha	-	-	20,65%	
TOTAL	443	27,319 Ha	-	100%	

PROPOSED EXTENSION D USE TABLE

USE	NO OF ERVEN	AREA (Ha)	PROVINCIAL ERF NUMBERS	% OF TOWNSHIP	REFERENCE
RESIDENTIAL 1 (600m ² Erven)	531	34,087 Ha	-	39,03%	
AGRICULTURAL (Existing Dwelling)	1	5,445 Ha	-	6,23%	
MUNICIPAL	1	6,031 Ha	-	6,91%	
PRIVATE OPEN SPACE	6	28,796 Ha	-	32,97%	
STREET	12,982 Ha	-	-	14,86%	
TOTAL	539	87,341 Ha	-	100%	

NOTES:
 1) Serviceability of erven to be confirmed by Civil/Electrical Engineer.
 2) All areas and values are approximate and awaiting final surveying and subject to approval by the Greater Tubatse Municipality.

LEGEND

- TOWNSHIP BOUNDARY
- EXISTING STRUCTURES
- EMBANKMENT/ EXCAVATIONS
- 3m ELECTRICAL CABLE SERVITUDE
- LINE OF NO ACCESS (A-N)
- LINE OF NO ACCESS (O-Z)

RECOMMENDED FOR APPROVAL:

SIGNED: _____ CAPACITY: _____

CONTOUR INTERVAL 1m
 DATE: M.H.S.L.(TRIG)
DECEMBER 2006 & JANUARY 2007
 CONTOUR SURVEY BY: MD JORDAAN SURVEY SERVICES

IT IS HEREBY CERTIFIED THAT WITH REFERENCE TO SECTION 144 OF THE NATIONAL WATER ACT (ACT NO. 36 OF 1996), THE TOWNSHIP SHOWN ON THIS PLAN IS AFFECTED BY A 1:100 YEAR RETURN PERIOD FLOODLINE. THE 1:100 YEAR FLOODLINE IS SHOWN ON THE PLAN. THE FLOODLINE WAS PROPERLY DETERMINED BY USING ACCEPTED CALCULATION PROCEDURES. THE DUTY RESTS UPON THE DEVELOPER AND THE LOCAL AUTHORITY TO MINIMISE THE RISK OF DAMAGE DUE TO STORMWATER FLOWING OVER THE LAND BY DESIGNING, CONSTRUCTING AND MAINTAINING A STORM-WATER AND FLOOD DEFENCE MANAGEMENT SYSTEM, WHERE APPLICABLE.

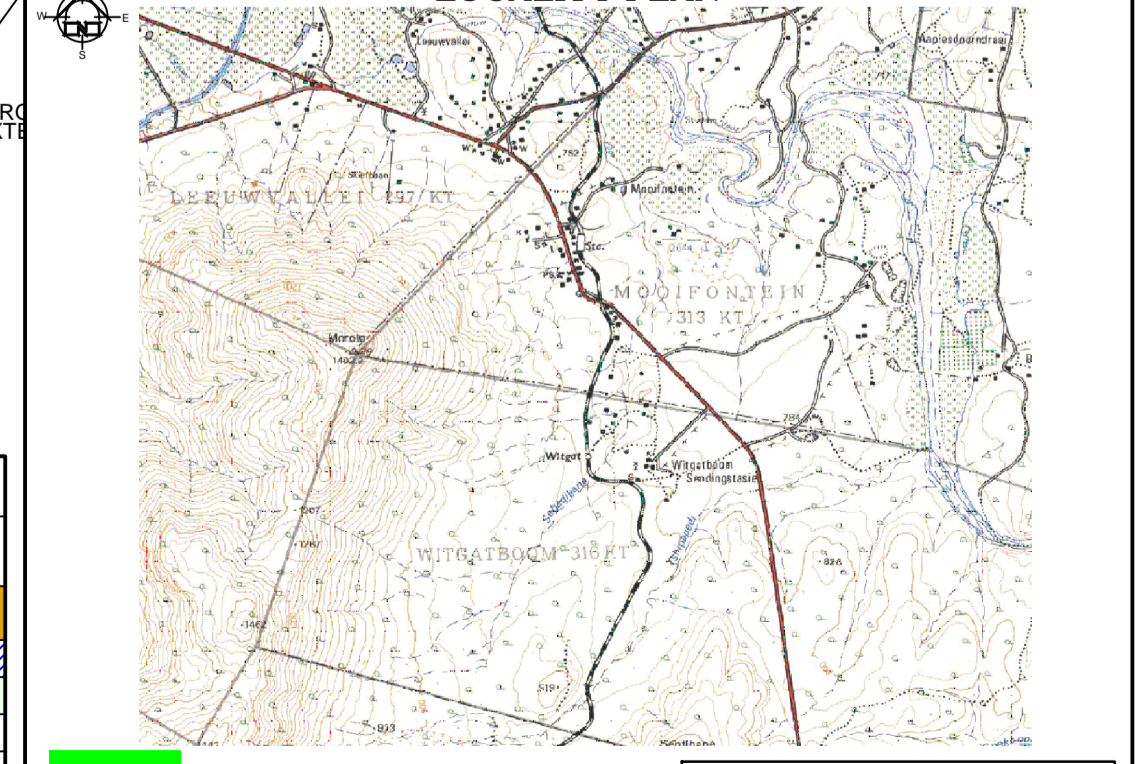
SIGNED: _____ Pr. Engineer
 Reg nr: _____

DATE	AMENDMENT	DATE	AMENDMENT
04/11/2014	FUTURE PROPOSAL PLAN/1		
17/03/2015	FUTURE PROPOSAL PLAN/2		

DESIGN BY: P.J. BUYS
 DRAWN BY: W.V.
PIETERSE & ASSOCIATES (PTY) LTD
 TOWN AND REGIONAL PLANNERS

PLAN NO: BURGERSFORT/FUTURE/2
 SCALE : 1 : 5 000

©Copyright
 The information as indicated on this map has been compiled with the required accuracy within the parameters of this project. Any decisions based on this information are however the sole responsibility of the decision maker.



SITE OF APPLICATION [SA 1:50 000 SHEET 2430CB]

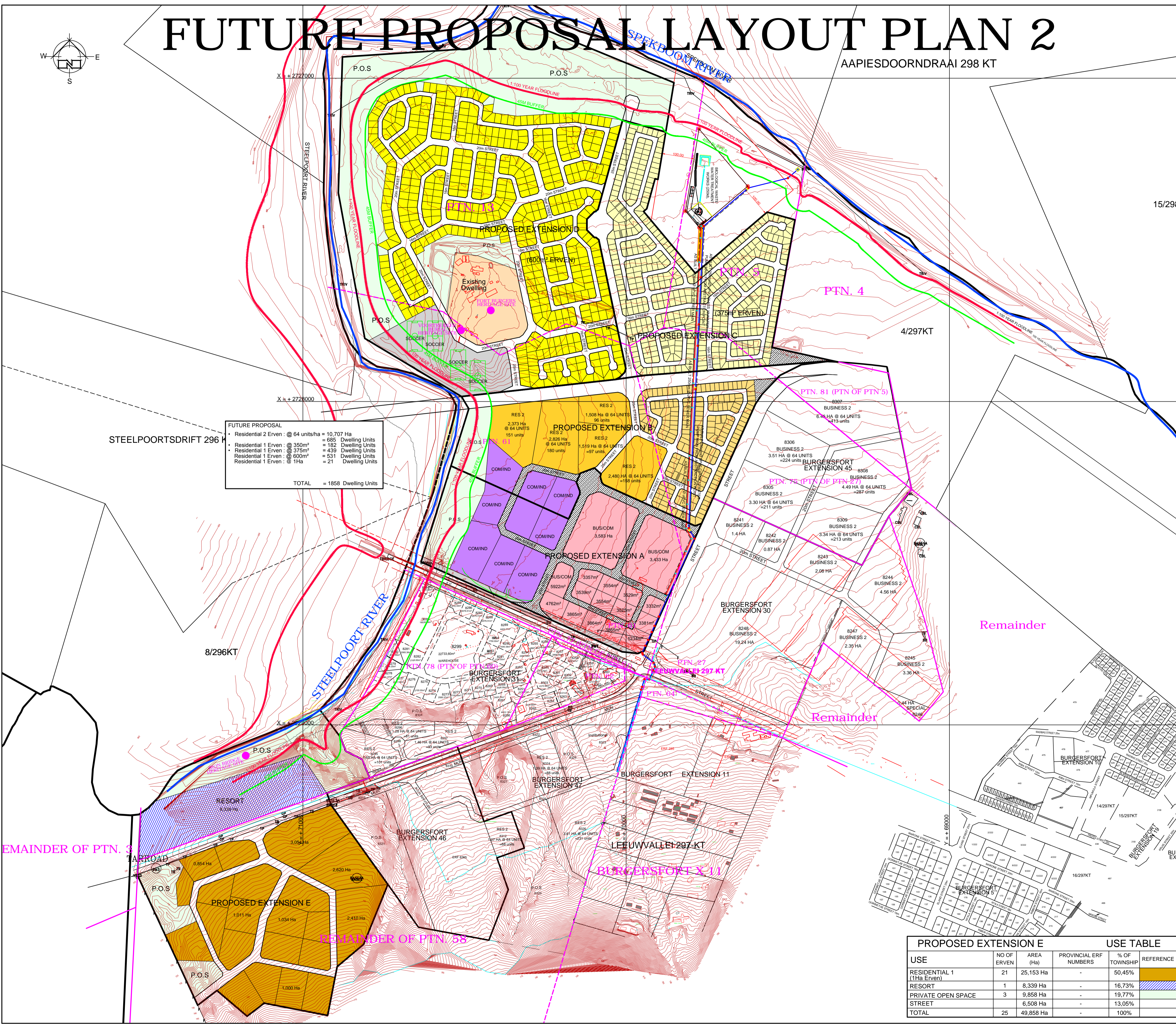
FUTURE PROPOSAL

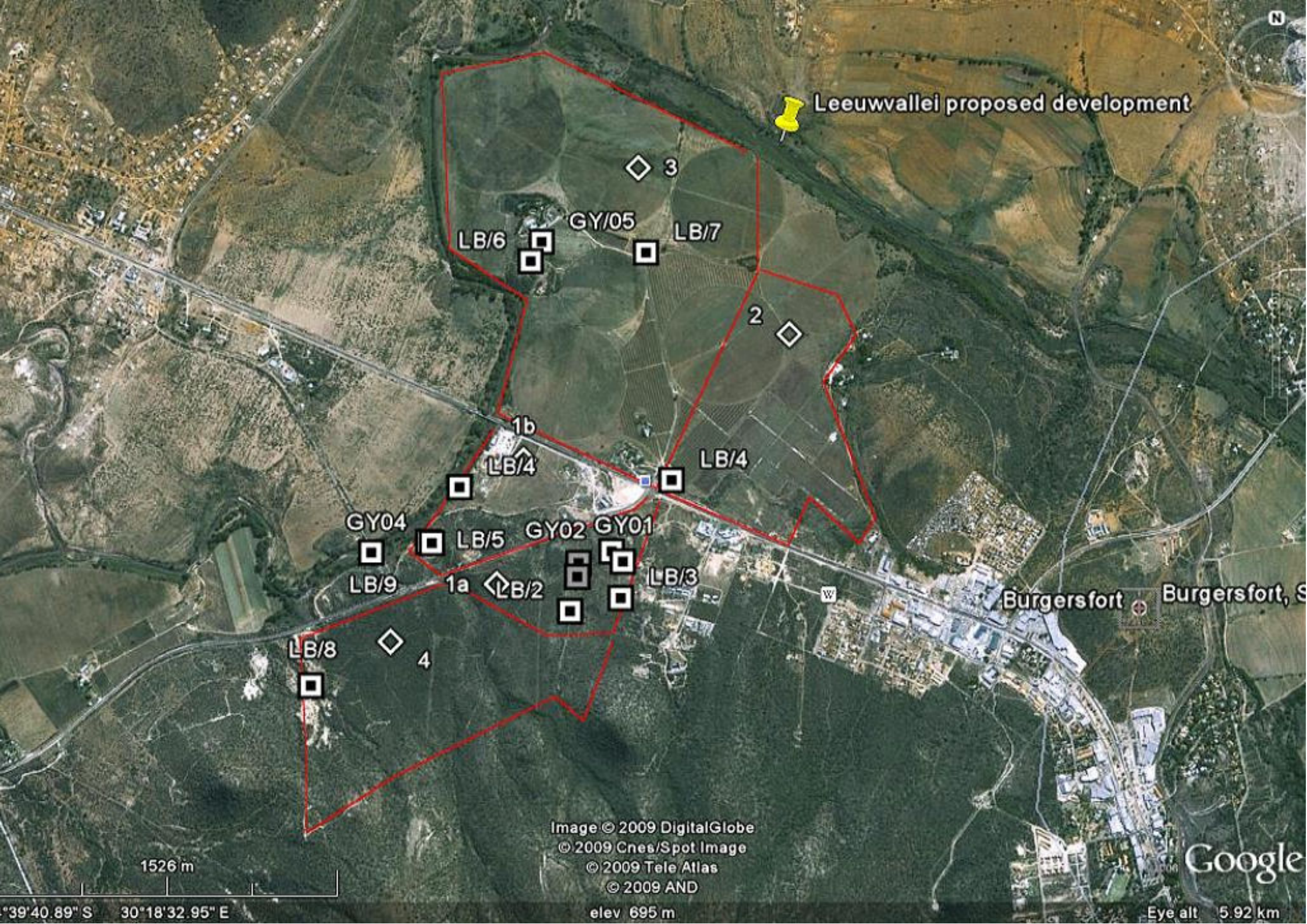
- Residential 2 Erven : @ 64 units/ha = 10,707 Ha = 625 Dwelling Units
- Residential 1 Erven : @ 350m² = 182 Dwelling Units
- Residential 1 Erven : @ 375m² = 439 Dwelling Units
- Residential 1 Erven : @ 600m² = 531 Dwelling Units
- Residential 1 Erven : @ 1Ha = 21 Dwelling Units

TOTAL = 1858 Dwelling Units

PROPOSED EXTENSION E USE TABLE

USE	NO OF ERVEN	AREA (Ha)	PROVINCIAL ERF NUMBERS	% OF TOWNSHIP	REFERENCE
RESIDENTIAL 1 (1Ha Erven)	21	25,153 Ha	-	50,45%	
RESORT	1	8,339 Ha	-	16,73%	
PRIVATE OPEN SPACE	3	9,858 Ha	-	19,77%	
STREET	6,508 Ha	-	-	13,05%	
TOTAL	25	49,858 Ha	-	100%	





Leeuwallei proposed development



3

GY/05

LB/6

LB/7

2

1b

LB/4

LB/4

GY04

LB/5

GY02

GY01

LB/9

1a

LB/2

LB/3

LB/8

4

Burgersfort

Burgersfort, S

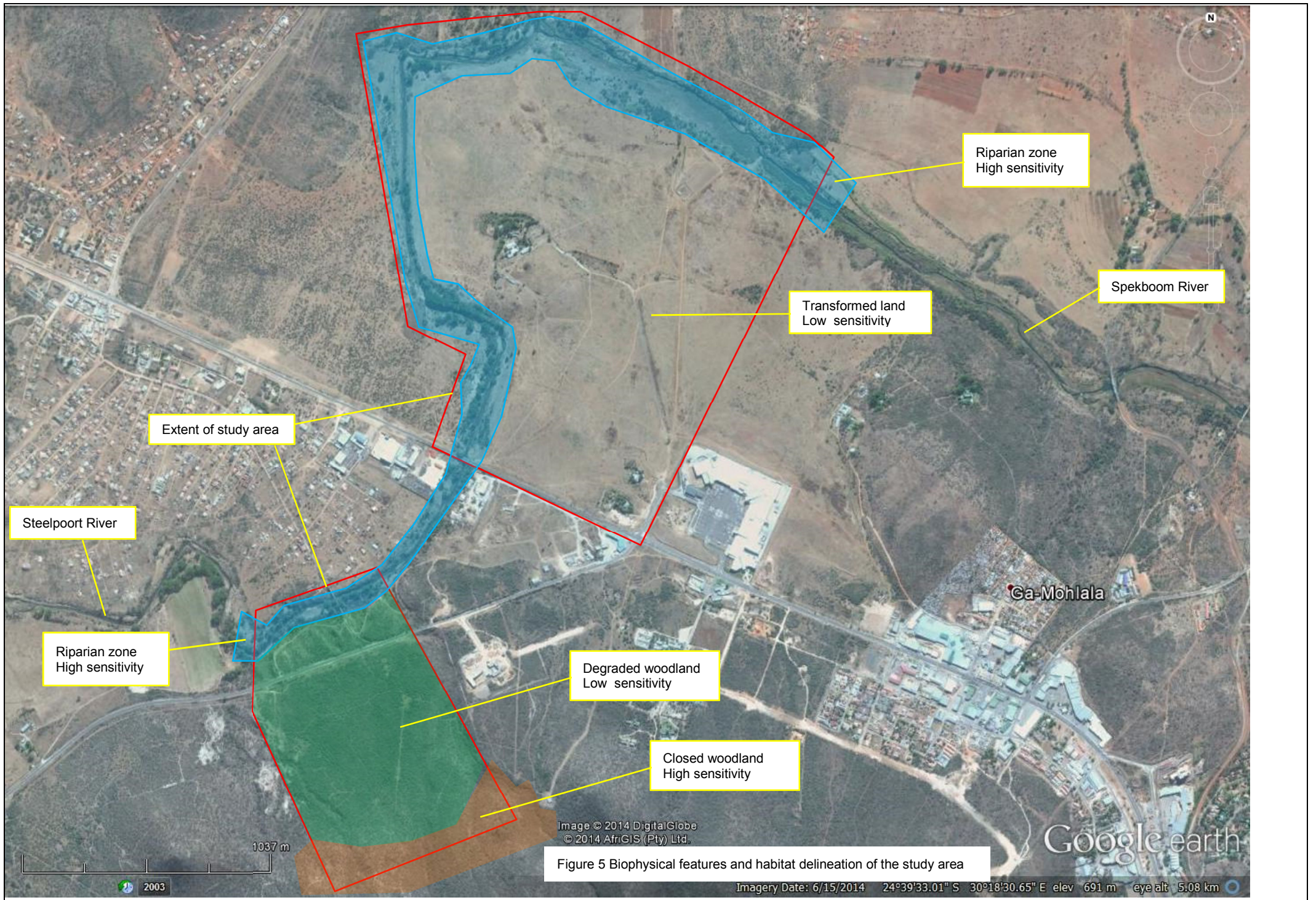
Image © 2009 DigitalGlobe
© 2009 Cnes/Spot Image
© 2009 Tele Atlas
© 2009 AND
elev 695 m

1526 m

39°40.89' S 30°18'32.95' E

Google

Eye alt 5.92 km



Degraded Woodland



The plains below the Morole mountain has been degraded, mostly due to firewood collection and old mining sites. The vegetation is dominated by thorny *Acacia* spp. and is classified as tall shrubland. This area is targeted by the project.

Closed woodland



The natural vegetation on the slopes of the Morole mountain is not affected by major impacts and the biodiversity level is high. Many endemic species are found in this community. This area will not be affected by the proposed development.

Riparian areas



Large *Acacia galpinii* trees perform important mechanical and ecological functions in the riparian zone. The riparian vegetation will not be affected and the rivers will not be impeded.

Agriculture lands



The larger extent of the development land consist of old agriculture lands which is not used presently

Neighbouring developments



A waste water treatment facility is already in operation. It will service the proposed development also.



Recently completed development projects on neighbouring land include the Tuabtse Mall and the Peermont Casino & Hotel

**APPENDIX D:
PUBLIC PARTICIPATION REPORT**

**APPENDIX D-1:
LEDET DOCUMENTATION**



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

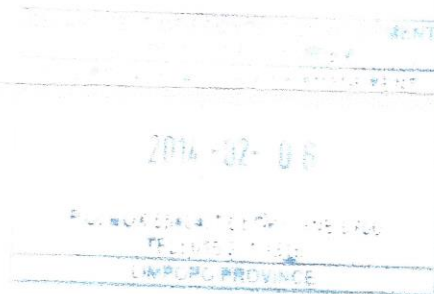
DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/2-GS35 Enq: Tsakane Tshuketana Tel: (015) 290 7162 Fax: (015) 295 5015 Email: Tshuketana.TL@ledet.gov.za
NEAS Ref No.: LIM/EIA/0000805/2014

Afrika Enviro & Biology
P. O. Box 152
WATERVAL-BOVEN
1195

Cell no: 072 603 8875
Fax no: 086 623 1845

For attention: Danie van der Walt



RE: APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 5, 27, 58 AND 60 OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF GREATER SEKHUKHUNE DISTRICT MUNICIPALITY

The Department of Economic Development, Environment and Tourism ("the Department") hereby acknowledges receipt of the application for an Environmental Authorisation (EA) for the above-mentioned development on 08 January 2014.

Your application has been allocated Reference Number: **12/1/9/2-GS35**. Kindly quote this number in all future correspondences regarding this application.

Kindly note that your request for exemption is under review and you will be informed of the decision within 30 days.

Please bring to the attention of the applicant that this development must not commence prior to the Department deciding on the application for an EA.

For any queries in this regard please contact Ms. T. L. Tshuketana on the above given contact details.

Yours faithfully,


MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 21 / 01 / 2014

Cc: Anglorand Holdings (Ltd)

For attention: Buks van der Wal

Tel/Fax: (013) 238 0029

HEAD OFFICE

20 Hans Van Rensburg Street / 19 Biccard Street, Polokwane, 0700, Private Bag X 9484, Polokwane, 0700
(Switchboard) Tel: +2715 293 8300 Website: www.ledet.gov.za

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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/2-GS35 Enq: Tsakane Tshuketana Tel: (015) 290 7162 Fax: (015) 295 5015 Email: Tshuketana.TL@ledet.gov.za
NEAS Ref No: LIM/EIA/0000805/2014

Afrika Enviro & Biology
P. O. Box 152
WATERVAL-BOVEN
1195

Cell no: 072 603 8875
Fax no: 086 623 1845

For attention: Danie van der Walt

RE: APPLICATION FOR EXEMPTION FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 5, 27, 58 AND 60 OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT MUNICIPALITY

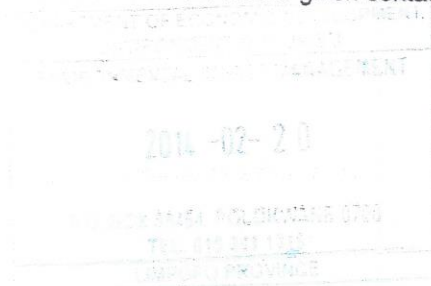
1. The Department of Economic Development, Environment and Tourism ("the Department") hereby acknowledges the receipt of the request for exemption not to undertake tasks specified in Regulations 27(e), 27(f), 27(g), 27(h) and 27(i) as part of an application for an Environmental Authorisation for the above-mentioned development on 08 January 2014.
2. The Department has accordingly decided to grant the exemption on condition that a thorough /or full Public Participation Process that meet all the requirements of Regulation 54 be carried out in the Environmental Impact Reporting phase once the Scoping Report has been accepted. The Department awaits the submission of the final Scoping Report, reflecting the correct reference number, in terms of Regulations 29 for consideration.
3. Please bring to the attention of the applicant that this development must not commence prior the Department deciding on the application for an Environmental Authorisation.

For any queries in this regard please contact Ms. Tshuketana T.L on the above given contact details.

Yours faithfully,

MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 20 / 02 / 2014



Cc: Anglorand Holdings (Ltd)

For attention: Buks van der Wal

Tel/Fax: (013) 238 0029

HEAD OFFICE

20 Hans Van Rensburg Street / 19 Biccard Street, Polokwane, 0700, Private Bag X 9484, Polokwane, 0700
(Switchboard) Tel: +2715 293 8300 Website: www.ledet.gov.za

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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/2-GS35 Enq: Tsakane Tshuketana Tel: (015) 290 7162 Fax: (015) 295 5015 Email: TshuketanaTL@ledet.gov.za
NEAS Ref No.: LIM/EIA/0000805/2014

Afrika Enviro & Biology
P. O. Box 152
WATERVAL-BOVEN
1195

Cell no: 072 603 8875
Fax no: 086 623 1845

For attention: Danie van der Walt

RE: ACKNOWLEDGEMENT OF THE FINAL SCOPING REPORT FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13 & 61 AND THE REMAINDER OF PORTIONS 5, 27, 58, AND 60, OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT MUNICIPALITY

1. The Department of Economic Development, Environment and Tourism ("the Department") hereby acknowledge receipt of the final Scoping Report (SR) for the above mentioned proposed development received on 24 March 2013.
2. Please note that the final Scoping Report is under review and the Department will inform you of the progress in 30 days.
3. Please bring to the attention of the applicant that this development must not commence prior the Department deciding on the application for an Environmental Authorisation.

For any queries in this regard please contact Ms. Tshuketana T. L. on the above given contact details.

Yours faithfully,

MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 31/03/2014

Cc: Anglorand Holdings (Ltd)

For attention: Buks van der Wal

Tel/Fax: (013) 238 0029

HEAD OFFICE

20 Hans Van Rensburg Street / 19 Biccard Street, Polokwane, 0700, Private Bag X 9484, Polokwane, 0700
(Switchboard) Tel: +2715 293 8300 Website: www.ledet.gov.za

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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/2-GS36 Enq: Ma Tsakane Tehuketana Tel: (015) 290 7182 Fax: (015) 295 6015 Email: TehuketanaTL@ledet.gov.za
NEAS Ref No: LIM/EIA/0000805/2014

Afrika Enviro & Biology
P O Box 152
WATERVAL-BOVEN
1195

Cell no: 072 603 8875
Fax no: 086 623 1845

For attention: Danie van der Walt

RE: ACCEPTANCE OF THE FINAL SCOPING REPORT FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13 & 61 AND THE REMAINDER OF PORTIONS 5, 27, 58, AND 60, OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT

1. The Scoping Report (SR) and Plan of Study for Environmental Impact Assessment (PoSEIA) for the above-mentioned proposed development dated March 2014; received by the Department on 24 March 2014 refers.
2. The Department of Economic Development, Environment and Tourism ("the Department") hereby informs you that the SR and PoSEIA for the above mentioned proposed development has been accepted. You may therefore accordingly proceed with undertaking the Environmental Impact Assessment in accordance with tasks that are outlined in the PoSEIA that complies with relevant Regulations of the Government Notice No. R. 543 of the EIA Regulations, 2010 in terms of National Environmental Management Act (Act 107 of 1998) (NEMA) as amended.
3. In addition to the above, the Department hereby requests the following to be included in the draft Environmental Impact Assessment Report:
 - 3.1 A detailed Public Participation Process (PPP) must be conducted according to Regulation 54 of the Government Notice No. R. 543 of the EIA Regulations, 2010 in terms of National Environmental Management Act (Act 107 of 1998) (NEMA) as amended.

Please bring to the attention of the applicant that this development must not commence prior the Department deciding on the application for an Environmental Authorisation.

HEAD OFFICE


20 Hans Van Rensburg Street / 19 Biccard Street, Polokwane, 0700, Private Bag X 9484, Polokwane, 0700
(Switchboard) Tel: +2715 293 8300 Website: www.ledet.gov.za

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Department of Economic Development, Environment and Tourism

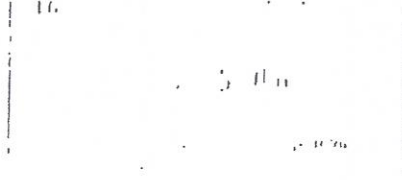
For any queries in this regard please contact Ms. Tsakane Tshuketana on the above given contact details.

Yours faithfully



MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 06/05/2014



Cc: Anglorand Holdings (Ltd)

For attention: Buks van der Wal

Tel/Fax no: (013) 238 0029



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

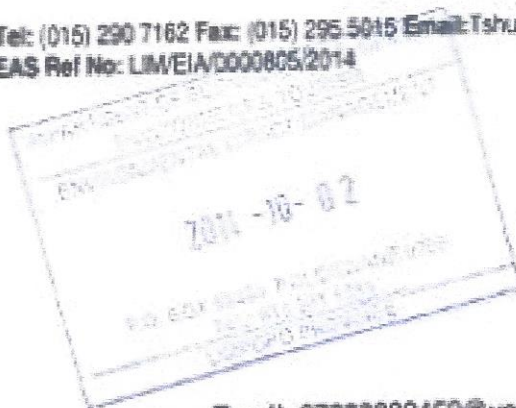
Ref: 12/19/2-GS35 Enq: Ms Tsakane Tshukutana Tel: (015) 290 7162 Fax: (015) 295 5015 Email: Tshukutana.TL@ledet.gov.za
NEAS Ref No: LIMEIA/0000805/2014

Afrika Enviro & Biology
P. O. Box 152
WATERVAL-BOVEN
1195

Cell no: 072 603 8875
Fax no: 086 623 1845

For attention: Danie van der Walt

Email: 27823022459@vodamail.co.za



COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13 & 61 AND THE REMAINDER OF PORTIONS 5, 27, 58, AND 60, OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT MUNICIPALITY

The draft Environmental Impact Assessment Report (EIAR) for the above-mentioned development received by the Department of Economic Development, Environmental and Tourism (the Department) on 20 August 2014 has reference.

The Department has reviewed the content of the draft EIAR and submits the following for consideration and to be addressed in the final EIAR:

1. Environmental Management Programme (EMPr)

- 1.1 The Department recommends that a revised EMPr be compiled that will be project specific and that will also give a clear indication on how the predicted impacts will be managed from pre-construction phase to decommissioning phase more specially on operation phase. There must be a link of the impacts on the impact assessment table on page 34 of the EIAR and the EMPr attached as Appendix G and the Biodiversity Assessment report that is included in the report.
- 1.2 The EMPr must not provide recommendation but must indicate actual remedial activities which will be implemented and binding on the applicant. Mitigation measures proposed in the report must conform to SMART principles in the sense that they must be specific, measurable, attainable, relevant/realistic and time-bound.

2. Heritage Features

- 2.1 The Heritage Impact Assessment report attached to the EIAR as appendix E-6 identified graves that are located on within the proposed site, but the EMPr does not mention how the development will impact on them and their mitigation measures.

3. Traffic report

3.1 Traffic Impact report refers to the establishment of Burgersfort Mall and according to the Departments view the mall opened last year and it's in operation. The Department requests that a revised Traffic report be compiled that will include all the developments within the proposed development area that is already in existence.

4. Proposed development

4.1 The proposed development itself does not follow a certain type of sequence and in some of the proposed development area there are already existing developments according to the proposed layout plan yet the report is quite about the impacts on the existing developments.

4.2 A clear indication on how the proposed development will be implemented must form part of the final report and also how the proposed development will impact on the water resources (Steelport River) and the R37 and R555 roads.

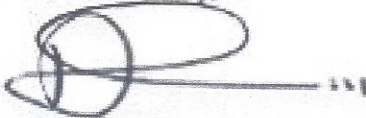
5. Specialist report

5.1 All specialists reports attached to the report must be authenticated with the original signatures (not scanned) of the authors. Reports with scanned signatures will not be accepted.

Please bring to the attention of the applicant that this development must not commence prior the Department deciding on the application for Environmental Authorisation.

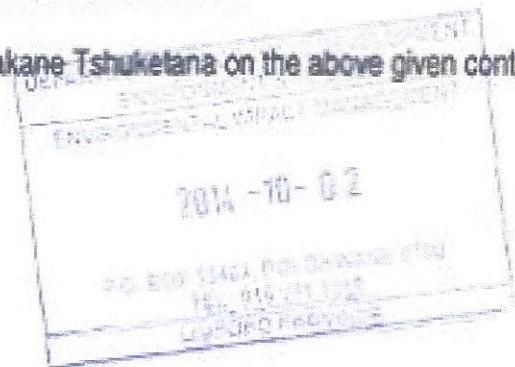
For any queries in this regard please contact Ms. Tsakane Tshuketana on the above given contact details.

Yours faithfully,



**MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT**

DATE: 02 / 10 / 2014



Cc: Anglorand Holdings (Ltd)

For attention: Buks van der Wal

Tel/Fax: (013) 238 0029

Email:vdwal@gmail.com

APPENDIX D-2: EIA NOTICES

**NOTICE OF ENVIRONMENTAL IMPACT
ASSESSMENT PROCESS**

Reference Number: 12/1/9/2-GS35

Notice is hereby given that an Environmental Scoping and Impact Assessment application has been submitted with the Provincial Department of Economic Development, Environment and Tourism for the authorization of activities as listed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations (2010). This application replaces application 12/1/9/2-GS3 which has been withdrawn as result of EIA Regulation 67.

Notice is given that exemption from a complete Scoping Process was granted by the Authority as provided by EIA Regulation 50. However, the application will be submitted to a complete public participation process as required by EIA Regulation 54.

The project details and location are as follows:

Residential, Business and Industrial development on Portions 13 & 61 and the Remainder of Portions 5, 27, 58 & 60 of the Farm Leeuwvallei 297 KT, Greater Tubatse Local Municipality, Burgersfort, Limpopo Province.

Proponent	Anglorand Holdings Limited
Address	PO Box 61642, Marshalltown, 2107

For further information contact the Environmental Consultant:

Afrika Enviro & Biology, PO Box 2980, White River, 1240	
Fax	086 603 8875
Cell No	072 623 1845
E-mail	27823022459@vodamail.co.za

In order to ensure that you are recorded as an interested and affected party, please submit your details and interest/comments in the matter, in writing, to the contact person given above within 30 days of publication of the notice.

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CP002547

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2009 Ford Fiesta 1.6 Hatchback. Excellent condition- aircon, central locking, black leather interior R85, 000.

Contact
082-377-1257
CP002546

0910 Public / Legal Notices

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Reference Number: 12/19/2-GS35
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Residential, Business and Industrial development on Portions 13 & 61 and the Remainder of Portions 5, 27, 58 & 60 of the Farm Letsewallel 297 KT, Greater Tloase Local Municipality, Burgersfort, Limpopo Province, Proponent Anglora Holdings Limited Address PO Box 61642, Marshalltown, 2107

For further information contact the Environmental Consultant: Afrika Enviro & Biology, P.O Box 2980, White River, 1240
Fax : 086-603-8875
Cell No : 072-623-1845
E-mail : 27823022459 @vodamail.co.za

In order to ensure that you are recorded as an interested and affected party, please submit your details and interest (comments in the matter, in writing, to the contact person given above within 30 days of publication of the notice.
CP002539

Vacancies

- 0803 Accounting
- 0806 Banking & Insurance
- 0809 Businesses
- 0812 Business Opportunities
- 0814 Working Holiday / Overseas
- 0815 Computers
- 0818 CVs
- 0821 Drivers & Messengers
- 0824 Employment Wanted
- 0827 General
- 0830 Hairdressing & Beauty
- 0833 Hotel & Catering
- 0836 Legal
- 0839 Management
- 0841 Medical
- 0844 Part-time / Temps
- 0847 Personnel / HR
- 0850 Professional
- 0853 Reception / Switchboard
- 0856 Sales / Marketing
- 0859 Security
- 0862 Secretaries / PAs
- 0865 Senior Citizens
- 0868 Technical

grillers, waitresses.
At least 3 years' experience required

E-mail CV's to lydenburg@dros.co.za

VACANCY
INTERNAL ACCOUNTANT REQUIRED

Accounts Clerk/Bookkeeper qualifications and experience

1. Senior certificate (std 10)
2. Diploma in financial management/bookkeeping
3. At least one (01) year proven experience

Duties

- Office accounts book keeping, Business and trust accounts
- Knowledge of pastel and lexpro programmes
- Payment of VAT, balance sheet, trial balance
- Bank reconciliation

Closing date: 26 march 2014

Email CV: daisy@mammule.co.za or chidim@gmail.com

Attention: management

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**APPENDIX D-3:
IAP REGISTER & RECORDS**

Danie van der Walt

From: Danie van der Walt <27823022459@vodamail.co.za>
Sent: 19 March 2014 12:12 PM
To: 'info@plmboerdery.co.za'; 'joba@lantic.net' (joba@lantic.net); 'mwillers@mweb.co.za' (mwillers@mweb.co.za); 'magaba@lantic.net' (magaba@lantic.net); 'Malapane Marcia Mahlatse'; 'snowyowl@pop.co.za' (snowyowl@pop.co.za); 'briano@drasa.co.za'; 'bilaal@burgersforttoyota.co.za'; 'info@khumula.co.za' (info@khumula.co.za); 'corriever@telkomsa.net' (corriever@telkomsa.net); 'tshepos73@gmail.com'; Buks Van der Wal (vdwal@lantic.net) (vdwal@lantic.net); 'lekhulc@eskom.co.za' (lekhulc@eskom.co.za); nkoanat@sekhukhune.co.za; tamaroga@tubatse.gov.za; jshongwe@tubatse.gov.za; dtmakwane@tubatse.gov.za
Subject: EIA 12/1/9/2-GS35
Attachments: EIA Notice.pdf

Tracking:

Recipient	Read
'info@plmboerdery.co.za'	
'joba@lantic.net' (joba@lantic.net)	
'mwillers@mweb.co.za' (mwillers@mweb.co.za)	Read: 2014/03/19 12:39 PM
'magaba@lantic.net' (magaba@lantic.net)	Read: 2014/03/20 09:32 AM
'Malapane Marcia Mahlatse'	
'snowyowl@pop.co.za' (snowyowl@pop.co.za)	
'briano@drasa.co.za'	
'bilaal@burgersforttoyota.co.za'	Read: 2014/03/19 12:38 PM
'info@khumula.co.za' (info@khumula.co.za)	Read: 2014/03/19 03:05 PM
'corriever@telkomsa.net' (corriever@telkomsa.net)	Read: 2014/03/19 05:51 PM
'tshepos73@gmail.com'	
Buks Van der Wal (vdwal@lantic.net) (vdwal@lantic.net)	
'lekhulc@eskom.co.za' (lekhulc@eskom.co.za)	
nkoanat@sekhukhune.co.za	
tamaroga@tubatse.gov.za	
jshongwe@tubatse.gov.za	
dtmakwane@tubatse.gov.za	

Interested & Affected Parties

Please take note of the EIA process as explained in the attached notice. Your written response will be appreciated.

Regards

Danie van der Walt (M.Sc. Biol)

AFRIKA Enviro & Biology
Specialist Environmental & Biodiversity Assessments
PO Box 2980; White River, 1240
Cell 072 623 1845; Fax 086 603 8875

 Please consider the environment before printing this e-mail

Danie van der Walt

From: Cappie Linde <envirovision@lantic.net>
Sent: 24 March 2014 09:12 AM
To: 27823022459@vodamail.co.za
Cc: 'john moolman'; 'Ben & Rene Schoeman'; 'Corrie'
Subject: EIA12/1/9/2-GS35

Dear Mr Van Der Walt

Note is taken of your E-mailed message dated 19 March 2014 in the above regard that was sent to Mr C Vermeulen on behalf of Leeuwvallei Ontwikkeling BK.

For purposes of orientation a copy of the relevant layout plan is hereby requested.

Future correspondence in the above regard may be addressed to the writer. Contact information is being provided below.

Kind regards

Cappie Linde
ICB Certified Environmental Assessment Practitioner



ENVIROVISION CONSULTING CC
ENVIRONMENTAL SPECIALISTS

PHYSICAL ADDRESS 450 Wendy Street, Waterkloof Glen, Pretoria, 0181
CELL 082 444 0367 • FAX 086 557 9447 • E-MAIL envirovision@lantic.net
MEMBER Cappie Linde M.ENV.DEV (UKN) • CK2003/050777/23



Danie van der Walt (M.Sc. Biol)
P.O. BOX 2980, White River, 1240
FAX 086 603 8875
CELL 072 623 1845
EMAIL 27823022459@vodamail.co.za



Specialist Environmental & Biodiversity Assessments

<i>Enquiries</i>	<i>Danie van der Walt</i>	<i>Our Ref:</i>	<i>EIAR</i>
<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: GTM: Town Council
Attention: Cllr. Q. Moeng

Greater Tubatse Local Municipality
PO Box 206
Burgersfort
1150

**EIA Process and Water Use License Applications:
Residential, Business and Industrial development on Portions 13 & 61 and the
Remainder of Portions 5, 27, 58 & 60 of the Farm Leeuwvallei 297 KT, Greater
Tubatse Local Municipality, Burgersfort, Limpopo Province**

Notice is hereby given that an Environmental Scoping and Impact Assessment application has been submitted with the Provincial Department of Economic Development, Environment and Tourism for the authorization of activities as listed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations (2010). This application replaces application 12/1/9/2-GS3 which has been withdrawn as result of EIA Regulation 67.

Furthermore, notice is given that exemption from a complete Scoping Process was granted by the Authority as provided by EIA Regulation 50.

A copy of the EIA report for the above project is available at the office of the Municipal Department: Planning & Technical Services (Mr. Shongwe). Please forward your response and comments to the environmental consultant within 40 calendar days. Your assistance and response will be much appreciated.

Kind regards

DANIE VAN DER WALT



Danie van der Walt (M.Sc. Biol)
P.O. BOX 2980, White River, 1240
FAX 086 603 8875
CELL 072 623 1845
EMAIL 27823022459@vodamail.co.za



Specialist Environmental & Biodiversity Assessments

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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: Dept Planning & Economic Development
Attention: Ms. Adelaide Monyepao

Greater Sekhukhune District Municipality
No 3 Wes Street
Groblersdal
0470

**EIA Process and Water Use License Applications:
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Attached is a copy of the EIA report for the above project for comment. Please forward your response and comments to the environmental consultant within 40 calendar days. Your assistance and response will be much appreciated.

Kind regards

DANIE VAN DER WALT



Danie van der Walt (M.Sc. Biol)
P.O. BOX 2980, White River, 1240
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EMAIL 27823022459@vodamail.co.za



Specialist Environmental & Biodiversity Assessments

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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: Regional Land Claims Commissioner
Attention: Mr. T.A. Maphoto

Private Bag X9552
Polokwane
0700

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The EIA report for the above project is available for comment. Please forward your response and comments to the environmental consultant within 40 calendar days. Your assistance and response will be much appreciated.

Kind regards

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EMAIL 27823022459@vodamail.co.za



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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: Interested & Affected Parties

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Attached is a condensed version of the EIA report for review and comment please. A complete copy of the report is available at the Burgersfort Library and at the office of Mr. Shongwe at the GTM offices (Technical Dept.). If you wish to register as a interested and affected party please forward your contact details and interest in the project to the environmental consultant within 30 calendar days. Your assistance and response will be much appreciated.

Kind regards

DANIE VAN DER WALT



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P.O. BOX 2980, White River, 1240
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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: GTM: Technical Services
Attention: Mr. Jabu Shongwe

Greater Tubatse Local Municipality
PO Box 206
Burgersfort
1150

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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: GTM: Municipal Manager
Attention: Mr. H.L. Phala

Greater Tubatse Local Municipality
PO Box 206
Burgersfort
1150

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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: GTM: Environmental Management & Health
Attention: Mr. Desmond Makwana

Greater Tubatse Local Municipality
PO Box 206
Burgersfort
1150

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Specialist Environmental & Biodiversity Assessments

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<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: GTM: Town Council
Attention: Cllr. Q. Moeng

Greater Tubatse Local Municipality
PO Box 206
Burgersfort
1150

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DANIE VAN DER WALT



Danie van der Walt (M.Sc. Biol)
P.O. BOX 2980, White River, 1240
FAX 086 603 8875
CELL 072 623 1845
EMAIL 27823022459@vodamail.co.za



Specialist Environmental & Biodiversity Assessments

<i>Enquiries</i>	<i>Danie van der Walt</i>	<i>Our Ref:</i>	<i>EIAR</i>
<i>Date</i>	<i>2014-05-19</i>	<i>DEA Ref:</i>	<i>12/1/9/2-GS35</i>

To: Department Water Affairs, Lydenburg Office
Attention: Ms. M. Malapane

**EIA Process and Water Use License Applications:
Residential, Business and Industrial development on Portions 13 & 61 and the
Remainder of Portions 5, 27, 58 & 60 of the Farm Leeuwvallei 297 KT, Greater
Tubatse Local Municipality, Burgersfort, Limpopo Province**

Notice is hereby given that an Environmental Scoping and Impact Assessment application has been submitted with the Provincial Department of Economic Development, Environment and Tourism for the authorization of activities as listed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations (2010). This application replaces application 12/1/9/2-GS3 which has been withdrawn as result of EIA Regulation 67.

Furthermore, notice is given that exemption from a complete Scoping Process was granted by the Authority as provided by EIA Regulation 50.

Attached is a copy of the EIA report for the above project for comment. Please forward your response and comments to the environmental consultant within 40 calendar days. Your assistance and response will be much appreciated.

Kind regards

DANIE VAN DER WALT

FINAL EIAR NOTIFICATION RECORDS



Danie van der Walt (M.Sc. Biol)
P.O. BOX 2980, White River, 1240
FAX 086 603 8875
CELL 072 623 1845
EMAIL 27823022459@yodamail.co.za



Specialist Environmental & Biodiversity Assessments

<i>Enquiries</i>	<i>Danie van der Walt</i>	<i>Our Ref:</i>	<i>Final EIAR</i>
<i>Date</i>	<i>2015-03-02</i>	<i>LEDET Ref:</i>	<i>12/1/9/2-GS35</i>

To: Interested & Affected Parties

**EIA Process and Water Use License Applications:
Residential, Business and Industrial development on Portions 13 & 61 and the
Remainder of Portions 5, 27, 58 & 60 of the Farm Leeuwallei 297 KT, Greater
Tubatse Local Municipality, Burgersfort, Limpopo Province**

Attached is a condensed version of the final EIA report for review and comment please. A complete copy of the report is available at the Burgersfort Library and at the office of Mr. Shongwe at the GTM offices (Technical Dept.). If you wish to comment on the report or any relevant issue, please submit a written response or comment with the consultant within 22 calendar days.

Kind regards

DANIE VAN DER WALT

Danie van der Walt

From: Danie van der Walt <27823022459@vodamail.co.za>
Sent: 02 March 2015 09:43 AM
To: 'info@plmboerdery.co.za'; 'joba@lantic.net' (joba@lantic.net);
'mwillers@mweb.co.za' (mwillers@mweb.co.za); 'magaba@lantic.net'
(magaba@lantic.net); 'Malapane Marcia Mahlatse'; 'snowyowl@pop.co.za'
(snowyowl@pop.co.za); 'briano@drasa.co.za'; 'bilaal@burgersforttoyota.co.za';
'info@khumula.co.za' (info@khumula.co.za); 'corriever@telkomsa.net'
(corriever@telkomsa.net); 'tshepos73@gmail.com'; 'lekhulc@eskom.co.za'
(lekhulc@eskom.co.za); 'envirovision@tlantic.net'; 'envirodel@mweb.co.za'
Subject: Final EIA Report 12/1/9/2-GS35
Attachments: Final EIAR notice IAP.pdf; EIAR Final.pdf; App A-2 Layout.pdf

Interested & Affected Parties

Find attached a condensed version of the Final EIA Report. Your written response must be submitted with the EAP within 22 calendar days.

Regards

Danie van der Walt (M.Sc. Biol)

AFRIKA Enviro & Biology

Specialist Environmental & Biodiversity Assessments

PO Box 2980; White River, 1240
Cell 072 623 1845; Fax 086 603 8875



Please consider the environment before printing this e-mail

Danie van der Walt

From: Danie van der Walt <27823022459@vodamail.co.za>
Sent: 02 March 2015 09:49 AM
To: mojamm@tubatse.gov.za; tamaroga@tubatse.gov.za; dtmakwane@tubatse.gov.za; qsmashilangoafo@tubatse.gov.za; jshongwe@tubatse.gov.za; 'nkoanat@sekhukhune.co.za'; shabangus2@dwa.gov.za; pmaepa@tubatse.gov.za; ShayiN@sekhukhune.gov.za
Subject: EIA Report 12/1/9/2-GS35
Attachments: Final EIAR notice IAP.pdf; EIAR Final.pdf; App A-2 Layout.pdf

Dear Officials

Find attached a condensed version of the EIA Report. Your written response will be appreciated within 22 calendar days.

Regards

Danie van der Walt (M.Sc. Biol)

AFRIKA Enviro & Biology

Specialist Environmental & Biodiversity Assessments

PO Box 2980; White River, 1240



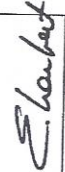





Cell 072 623 1845; Fax 086 603 8875



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**APPENDIX D-4:
SITE MEETINGS & CONSULTATIONS**

DWA CONSULTATION

Date	Name	Relevance (e.g. neighbour)	Address/e-mail	Tel Fax	Signature
16/1/11	P. VAN DER WAAL	EAP	27823022459 @ vodnamail. .co.za	0726231845	
16/2/2011	Silo Kheve	Authority DWA	khewas@dwa.gov.za	013-7597524 013-7597533	
16/2/2011	Liz Lambert	Maleka	mecl@lantic.net	013-7524231 "	
16/02/2011	Althea vd Meer	Maleka	mecl@lantic.net	0835379986	
16/02/2011	Henk Kruidener	Geo-Logic	henk@geo-logic.co.za	0828725705	
16.2.11	M. Vester	GRACON	Muntingke@endeecon.co.za	013-7557190	
16.2.11	OREX Nicosi	DWA AUTHORITY	nikosio@dwa.gov.za	0822733176 0822608702	
16/2/11	Buks vanderwal	Anglorand	vdwal@lantic.net	0822590204	

APPENDIX D-5: COMMENTS RECEIVED

Danie van der Walt

From: PLM Kantoor <info@plmboerdery.co.za>
Sent: 23 March 2014 07:00 AM
To: 'Danie van der Walt'
Subject: RE: EIA 12/1/9/2-GS35

More Danie, Kan ek moontlik die gewysigde scoping report kry?

Groete
LJ de Jager (jnr)
nms PLM Boerdery (edms) Bpk



From: Danie van der Walt [<mailto:27823022459@vodamail.co.za>]
Sent: 19 March 2014 12:12 PM
To: info@plmboerdery.co.za; joba@lantic.net; mwillers@mweb.co.za; magaba@lantic.net; 'Malapane Marcia Mahlatse'; snowyowl@pop.co.za; briano@drasa.co.za; bilaal@burgersforttoyota.co.za; info@khumula.co.za; corriever@telkomsa.net; tshepos73@gmail.com; vdwal@lantic.net; lekhulc@eskom.co.za; nkoanat@sekhukhune.co.za; tamaroga@tubatse.gov.za; jshongwe@tubatse.gov.za; dtmakwane@tubatse.gov.za
Subject: EIA 12/1/9/2-GS35

Interested & Affected Parties

Please take note of the EIA process as explained in the attached notice. Your written response will be appreciated.

Regards

Danie van der Walt (M.Sc. Biol)

AFRIKA Enviro & Biology

Specialist Environmental & Biodiversity Assessments

PO Box 2980; White River, 1240
Cell 072 623 1845; Fax 086 603 8875

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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

DETAILS OF EAP AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Name of the Environmental Assessment Practitioner (EAP): ¹	DANIE VAN DER WALT		
Company Name:	AFRIKA ENVIRO & BIOLOGY		
Physical Address:	01 TAMBOTIE STREET WHITE RIVER		
	Code	1240	
Postal address:	PO BOX 2980, WHITE RIVER		
Postal code:	1240	Cell:	0726231845
Telephone:		Fax:	0866038875
E-mail:	27823022459@vodamail.co.za		
Professional affiliation(s) (if any)	IAIA		

The Environmental Assessment Practitioner

I, DANIE VAN DER WALT declare that –

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010.



Signature of the Environmental Assessment Practitioner:

AFRIKA ENVIRO & BIOLOGY

Name of company:

2015-04-01

Date:



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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:	Services Engineering Report		
Contact person:	Muntingh Venter		
Postal address:	PO BOX 4030, NELSPRUIT		
Postal code:	1200	Cell:	082 556 6662
Telephone:	013 755 1190	Fax:	013 755 4904
E-mail:	muntingh@endecon.co.za		
Professional affiliation(s) (if any)	ECSA – 200670109		

Project Consultant:	AFRIKA ENVIRO & BIOLOGY		
Contact person:	Danie van der Walt		
Postal address:	PO Box 2980 White River		
Postal code:	1240	Cell:	0726231845
Telephone:		Fax:	0866038875
E-mail:	27823022459@vodamail.co.za		

Cnr Suid and Dorp Streets, POLOKWANE, 0700, P. O. Box 55464, POLOKWANE, 0700
Tel: 015 291 1315, Fax: 015 291 4107, website: <http://www.ledet.gov.za>

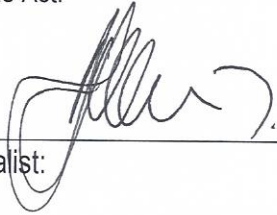
The heartland of southern Africa – development is about people!

4.2 The specialist appointed in terms of the Regulations_

I, Muntingh Venter, declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

ENDECON UBUNTU (PTY) LTD

Name of company (if applicable):

Date: 2015-02-10



Signature of the Commissioner of Oaths for project/application:

Date: 2015-02-10

Chartered Accountant of South Africa

Designation:

Official stamp (below)
RUTH MARGARET LE ROUX
COMMISSIONER OF OATHS (RSA)
CA(SA)
9 Ehmke Street, Nelspruit 1200



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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:	Hydro-Geological Assessment		
Contact person:	JHB Kruidenier		
Postal address:	25th Avenue 327		
Postal code:	0186	Cell:	082 872 5705
Telephone:	012 329 1352	Fax:	012 329 1352
E-mail:	henk@geo-logic.co.za		
Professional affiliation(s) (if any)	Pr. Sci.Nat 400106/15		

Project Consultant:	AFRIKA ENVIRO & BIOLOGY		
Contact person:	Danie van der Walt		
Postal address:	PO Box 2980 White River		
Postal code:	1240	Cell:	0726231845
Telephone:		Fax:	0866038875
E-mail:	27823022459@vodamail.co.za		

4.2 Cnr Suid and Dorp Streets, POLOKWANE, 0700, P. O. Box 55464, POLOKWANE, 0700
The specialist appointed in terms of the Regulations: <http://www.ledet.gov.za>

The heartland of southern Africa - development is about people!

I, JHB Kruidenier, declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

JHB Kruidenier

Signature of the specialist:

Geo-Logic Hydrogeological Consultants CC

Name of company (if applicable): GEO - LOGIC Hydro Geological Consultants cc

Date: 2015-

2015-03-26

Signature of the Commissioner of Oaths for project/application:

71573582
J.M. Lelake
T. Mmadaka Cst

Date: 2015- 03-26

Designation: Constable

Official stamp (below)





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PROVINCIAL GOVERNMENT

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:	Traffic Impact Assessment		
Contact person:	HDJ Shreuder		
Postal address:	PO BOX 4030, NELSPRUIT		
Postal code:	1200	Cell:	082 674 6973
Telephone:	013 755 1190	Fax:	013 755 4904
E-mail:	hugo@endecon.co.za		
Professional affiliation(s) (if any)	ECSA – 20065040 SAICE - 2009071		

Project Consultant:	AFRIKA ENVIRO & BIOLOGY		
Contact person:	Danie van der Walt		
Postal address:	PO Box 2980 White River		
Postal code:	1240	Cell:	0726231845
Telephone:		Fax:	0866038875
E-mail:	27823022459@vodamail.co.za		

Cnr Suid and Dorp Streets, POLOKWANE, 0700, P. O. Box 55464, POLOKWANE, 0700
Tel: 015 291 1315, Fax: 015 291 4107, website: <http://www.ledet.gov.za>

The heartland of southern Africa – development is about people!

4.2 The specialist appointed in terms of the Regulations_

I, HDJ Shreuder, declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

ENDECON UBUNTU (PTY) LTD

Name of company (if applicable):

Date: 2015-02-10

Signature of the Commissioner of Oaths for project/application:

Date: 2015-02-10

Chartered Accountant of South Africa

Designation:

Official stamp (below)
RUTH MARGARET LE ROUX
COMMISSIONER OF OATHS (RSA)
CA(SA)
9 Ehmke Street, Nelspruit 1200



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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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File Reference Number:	
NEAS Reference Number:	
Date Received:	

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PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:
Contact person:
Postal address:
Postal code:
Telephone:
E-mail:
Professional
affiliation(s) (if any)

Biodiversity & Ecological Report		
Danie van der Walt		
PO BOX 2980, White River		
1240	Cell:	0726231845
	Fax:	0866038875
27823022459@vodamail.co.za		

Project Consultant:
Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

AFRIKA ENVIRO & BIOLOGY		
Danie van der Walt		
PO Box 2980 White River		
1240	Cell:	0726231845
	Fax:	0866038875
27823022459@vodamail.co.za		

4.2

Cnr Suid and Dorp Streets, POLOKWANE, 0700, P. O. Box 55464, POLOKWANE, 0700
The specialist appointed in terms of the Regulations: <http://www.ledet.gov.za>

The heartland of southern Africa - development is about people!

I, Danie van der Walt, declare that --

General declaration:

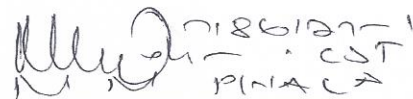
- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:



Name of company (if applicable): Afrika Enviro & Biology

Date: 2015-04-01



NI 86127-1
CST
P/NIA CA

Signature of the Commissioner of Oaths for project/application:

Date: 2015-04-01

CONSTABLE

Designation:

Official stamp (below)





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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:	Heritage Impact Assessment		
Contact person:	C. Van Wyk Rowe		
Postal address:	P.O. BOX 75, PILGRIM'S REST		
Postal code:	1290	Cell:	0828719553
Telephone:		Fax:	
E-mail:	christinevwr@gmail.com		
Professional affiliation(s) (if any)			

Project Consultant:	AFRIKA ENVIRO & BIOLOGY		
Contact person:	Danie van der Walt		
Postal address:	PO Box 2980 White River		
Postal code:	1240	Cell:	0726231845
Telephone:		Fax:	0866038875
E-mail:	27823022459@vodamail.co.za		



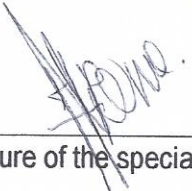
4.2 Cnr Suid and Dorp Streets, POLOKWANE, 0700, P. O. Box 55464, POLOKWANE, 0700
The specialist appointed in terms of the Regulations is: <http://www.ledet.gov.za>

The heartland of southern Africa – development is about people!

I, C. Van Wyk Rowe, declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

ADANSONIA HERITAGE CONSULTANTS

Name of company (if applicable): ADANSONIA HERITAGE CONSULTANTS

Date: 2015-02-20.



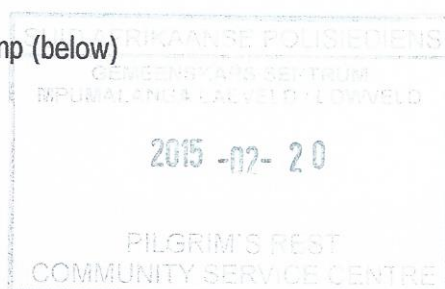
Signature of the Commissioner of Oaths for project/application:

Date: 2015-02-20



Designation:

Official stamp (below)





LIMPOPO

PROVINCIAL GOVERNMENT

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIROMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13, 61, R/5, R/27, R/58 & R/60 OF THE FARM LEEUWVALLEI 297 KT, BURGERSFORT

Specialist:	Social & Economic Report		
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The specialist appointed in terms of the Regulations: <http://www.ledet.gov.za>

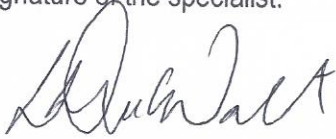
The heartland of southern Africa - development is about people!

I, Danie van der Walt, declare that --

General declaration:

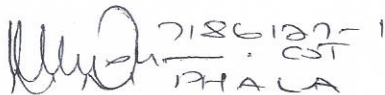
- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:



Name of company (if applicable): Afrika Enviro & Biology

Date: 2015-04-01



Signature of the Commissioner of Oaths for project/application:

Date: 2015-04-01

CONSTABLE

Designation:

Official stamp (below)



**PHASE 1 ARCHAEOLOGICAL / HERITAGE IMPACT
ASSESSMENT: SECTIONS 1a, 1b, 2, 3 & 4 OF LEEUWVALLEI
297KT, BURGERSFORT**

LIMPOPO PROVINCE

REPORT PREPARED FOR
ANGLORAND HOLDINGS LIMITED
MR. BUKS VAN DER WAL
P.O. BOX 16
OHRIGSTAD, 1122
CELL: 0822590204

AUGUST 2009

ADANSONIA HERITAGE CONSULTANTS
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EXECUTIVE SUMMARY

A phase 1 Heritage Impact Assessment (HIA) regarding archaeological and other cultural heritage resources was conducted on the proposed footprint for the residential development on the farm *Leeuwvallei 297KT*, of five sections, 1a, 1b, 2, 3 & 4, adjacent the town of Burgersfort, Limpopo Province. See *Appendix 1, Location of proposed area of development & Appendix 2, Compilation layout of residential development*. All the sections under discussion are situated on topographical map 1:50 000, 2430CB, Burgersfort,.

The aim of this report is to identify all archaeological and cultural heritage resources and / or graves which might be affected in the proposed development adjacent to the residential area of Burgersfort, and to document and assess the importance within local, provincial and the national context. Comments and recommendations are made to manage the identified features which might be impacted upon by the proposed development, and to recommend mitigation measures which need to be implemented.

A number of burial sites were recorded on areas 1a, 1b & 3, which fall within the proposed development. An HIA for areas 1a & 1b was conducted previously (February 2005) by Dr. J. Pistorius, but one burial site (in section 1b), was not detected during that study, and is now included in the current report. Recommendations are made to ensure that activities do not impact negatively on the burial sites and that measures are in place to provide access for family members of the deceased, or to relocate the graves.

The bigger parts of sections 1b, 2 & 3 were until recently used for agricultural purposes and have been extensively disturbed. Section 1b has also been extensively disturbed by modern infrastructure. Section 1a was mainly disturbed by recent black settlement in the eastern section. Only section 4 is largely undisturbed although digging / mining activities took place towards the west of the property. The original site of Fort Burgers, was situated on section 3.

It is concluded that the proposed residential development may continue, provided that the mitigation measures as specified in Section F, concerning the burial sites, (LB/GY01 – 05), and heritage features, LB/3: Late Iron Age stone wall, LB/6: Site of Fort Burgers and LB/9: Iron bridge over Steelpoort River, be implemented.

CONTENTS

EXECUTIVE SUMMARY	2
A. BACKGROUND INFORMATION ON THE PROJECT	4
B. BACKGROUND TO ARCHAEOLOGY AND HISTORY OF THE REGION:	5
• Literature review; Museum databases & previous relevant impact Assessments	5
• Stone Age	5
• Late Iron Age (LIA)	6
• European settlement	8
C. DESCRIPTION OF AREA TO BE AFFECTED BY THE DEVELOPMENT	9
• Locality	10
• Description of methodology	11
D. DESCRIPTION OF IDENTIFIED SITES	12
• Late Iron Age stone walled sites	12
• Graves	12
• European history features	13
• Discussion on footprint of the proposed residential development: Sites, location, impact by proposed development & mitigation measures	14
E. STATEMENT OF SIGNIFICANCE AND EVALUATION OF HERITAGE RESOURCES IN THE STUDY AREA	19
• Evaluation methods	19
• National Heritage Resources Act	19
• Graves: SAHRA policy on burial grounds	19
• Field rating	21
F. RECOMMENDATIONS	21
G. CONCLUSION	22
SOURCES	23
Archival sources, Government publications, Literature, Literary sources, Personal information	
APPENDIX 1: Location of proposed area of development (topographical Map provided by Mr. Van der Wal).	24
APPENDIX 2: Compilation layout of residential development.	26
APPENDIX 3: Location of heritage features & graves.	28
APPENDIX 4: Photographs	30

**PHASE 1 ARCHAEOLOGICAL / CULTURAL HERITAGE IMPACT ASSESSMENT FOR
PROPOSED RESIDENTIAL DEVELOPMENT, BURGERSFORT,
LIMPOPO PROVINCE**

A. BACKGROUND INFORMATION ON THE PROJECT

Adansonia Heritage Consultants were appointed by Anglorand Holdings Limited (Mr. B. van der Wal), to conduct a phase 1 Heritage Impact Assessment regarding archaeological and other heritage resources on the footprint for the proposed residential development adjacent to the town of Burgersfort, Limpopo Province.

This study investigates all possible archaeological and other cultural heritage resources which might be affected in the proposed area of future development, and will make recommendations in terms of the proposed footprint, should any cultural heritage resources be impacted upon. Sections 1a and 1b have previously been assessed by Dr. J. Pistorius.

- This study forms part of an EIA / scoping report;
- Type of development: Residential;
- Contact details of client: Anglorand Holdings, 32 Princess of Wales Terrace, Parktown, Johannesburg.
- Mr. B van der Wal, P.O. Box 16, Ohrigstad, 1122; Cell: 0822590204
- Terms of reference: As specified by section 38 (3) of the NHRA, the following information is provided in this report.

- a) The identification and mapping of heritage resources;
- b) Assessment of significance of the resources;
- c) Assessment of the impact of the development;
- d) Evaluation of the impact of the development;
- e) Alternatives given to affected heritage resources by development;
- f) Plans for measures of mitigation.

- Legislative requirements:

The National Heritage Resources Act, no 25 (1999)(NHRA), protects all heritage resources, which are classified as national estate. The NHRA stipulates that any person who intends to undertake a development, is subjected to the provisions of the Act, (section 38 (1)(a), subsections (7)(8) and (9). It specifies that no person may destroy, damage,

deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such sites, (section 27(18)), and that special consent of the local authority is required for any alteration or development affecting a heritage area (section 31(7)).¹

B. BACKGROUND TO ARCHAEOLOGY & HISTORY OF THE REGION

• Literature review; museum databases & previous relevant impact assessments

Research was conducted by means of collecting primary or secondary literary sources with relevant information on the prehistory and history of the area. In order to place the sites located in the study area in archaeological context, secondary sources, such as ethnographical and linguistic studies by early researchers such as Ziervogel and Van Warmelo were consulted. Other useful sources were that of Theal (pre-historic), De Jongh (ethnographic and historic information in the area), Bergh (historic), a recent publication of Delius, *Mpumalanga: History and Heritage*, and *The Military History Journal* on the Sekukuni Wars.

Dr. J. Pistorius conducted an HIA in 2005 (*A phase 1 HIA study for the proposed new Burgersfort ext 30 residential and the Burgersfort ext 31 industrial development projects near Burgersfort*), on sections 1a & 1b, adjacent the established town of Burgersfort. It was suggested that the Late Iron Age stone walls be further researched to establish the scientific value thereof.

There are no museums in Burgersfort or Steelpoort, and the closest museum with relevant information on the area is the museum in Lydenburg. This museum covers information on the general history and pre-history of the surrounding area, and focuses extensively on the Early Iron Age site of the Lydenburg Heads.

The following historic information was compiled from the sources above:

• Stone Age

The San (or Bushmen) originally roamed the entire area. Unfortunately very little research in this regard has been conducted, although several rock painting sites have been recorded in the areas of Ohrigstad / Blyderivierspoort Canyon, and rock engravings in the area of Lydenburg. In his book, *Geskiedenis Atlas van die Vier Noordelike Provinsies*, Bergh did not record any Stone Age sites in the immediate areas of Lydenburg,

¹National Heritage Resources Act, no. 25 of 1999.

Burgersfort and Steelpoort. The closest Middle- and Later Stone Age sites have been documented near Ohrigstad.²

Secondary source evidence of Iron Age sites are lacking, with only one well known site indicated, the Lydenburg Heads site. Evidence of copper mines were also recorded.³

- **Later Iron Age (LIA)**

It is believed that the areas around Lydenburg, Badfontein, Sekukuneland, Roossenekal and Steelpoort were extensively inhabited during the later stages of the Iron Age (from 1500 until historic times). This phase, known as the Late Iron Age, is characterized by large-scale circular and semi-circular stonewalled settlements.⁴ These settlement complexes may be divided into three basic features: homesteads, terraces and cattle tracks. Researchers such as Mike Evers (1975) and Collett (1982) identified three basic settlement layouts. Basically these sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre which has two opposing entrances and a number of semi-circular enclosures surrounding it. The perimeter wall of these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by track-ways referred to as cattle tracks. These tracks are made by building stone walls, which forms a walkway for cattle to the centrally located cattle byres.⁵

The Pedi is the most famous group to have inhabited the Lydenburg / Steelpoort / Burgersfort areas in historic times. The area in which these people settled is historically known as Bopedi but other groups resided here before the Pedi came onto the scene. Among the first of these were the Kwena or Mongatane, who came from the north and were probably of Sotho origin. A second tribe to settle in Bopedi before the arrival of the Pedi was the Roka, followed by the Koni.⁶

Some Koni entered the area from the east and others from the north-west. According to historians, most Koni trace their origin to Swaziland and therefore claim that they are

²J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, p. 4.

³J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, p. 8.

⁴J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

⁵J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

⁶J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

related to the Nguni. After the first Koni settled in the southern part of Bopedi, the area became known as Bokoni. Many people who were previously known as Roka also adopted the name Koni as the name “Roka” was not always held in esteem by other groups.

Historically the Pedi was a relatively small group who by various means built up a considerable empire. The Pedi are of Sotho origin. They migrated southwards from the Great Lakes in Central Africa some five centuries ago. The names of their chiefs can be traced to a maximum of fifteen generations. Historical events can be deduced reasonably well for the last two centuries, while sporadic events can be described during the preceding centuries.⁷

Some 150 years before the *Voortrekkers* entered the area, some battles took place between the Koni (Zulu under Makopole) and Swazi (under Moselekatse). At that time the MaPedi resided in the Steelpoort area. The Bakoni (Koni) were attacked and defeated by the Matabele and their chief, Makopole, was killed. The Matabele, not yet satisfied with their victory, moved further north towards the BaPedi headquarters. At Olifantspoortjie the whole BaPedi regiment was wiped out as well as the sons of Thulare, the BaPedi chief (except for Sekwati who managed to escape).⁸

After four years, Sekwati together with a few followers who had also managed to escape the Matabele, now slowly started to rise. In 1830 Sekwati invaded some of the smaller groups and eventually the Koni (under Marangrang) were ambushed and defeated. Now the empire of Maruteng (Bapedi) ruled the Koni.

At the beginning of the 19th century, groups such as the **Pedi, Roka, Koni** and **Tau** densely populated the immediate areas of Lydenburg, Steelpoort & Burgersfort.

This was confirmed by ethnographical and linguistic studies by early researchers such as D. Ziervogel and N.J. Van Warmelo.⁹

The Pedi (who had their roots in the baKgatla, near the current Pretoria) moved under Thobele (who was banished from the Kgatla) to Sekukuneland in ca 1650, where they

⁷J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

⁸J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

⁹N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*. p. 111.

settled alongside the baKoni. There was initially peace, but soon the Koni had to submit to the Pedi. In time, the Pedi also ruled over the baRoka, baTau, Matlala, baMohlala, and others. They ruled over the whole of Lydenburg, Pilgrim's Rest, Middelburg and Polokwane (Pietersburg) districts. This was understandably met with a lot of resistance.¹⁰

The Pedi of chief Sekwati (ca 1860) lived at Phiring (near Polokwane). Sekwati lived in constant fear of the Zulus. The country was unsafe and in an attempt to survive, some of the Koni turned to cannibalism.¹¹ This area was heavily under attack during the *Difaqane*. The Ndebele attacked this area in ca 1822, and Zwide (Swazi) attacked the Pedi in ca 1825.¹²

- **European settlement**

The *Voortrekkers* passed the northern boundary of the Leolo mountains (Pedi area) in 1837 when Trichardt looked for a route to Delagoa Bay (currently Maputo).¹³ Trichardt met the Pedi chief Sekwati.¹⁴ When more Europeans settled in the area from 1845, conflict was inevitable.

The *Voortrekkers* under Andries Hendrik Potgieter, settled at Ohrigstad in 1845. Soon conflicts arose between them and the Pedi leader, Sekwati. The smaller black groups also turned to Sekwati for help against the *Voortrekkers*. Sekwati moved his capital to the Leolo mountains at *Mosego hill*. Eventually they signed a treaty and it was decided that the Steelpoort or Tubatse River, would form the border between the Pedi and the *Voortrekkers*, and peace followed for a while.¹⁵

The conflict in the eastern parts of the country between white and black was of a more forceful nature than in the central areas of the country. The Kopa, Ndzundza-Ndebeles and Pedi were more able to resist European onslaught.

The stressful relationship between the Pedi and Europeans since 1850, continued throughout the 1860's and 70's which lead to war. Sekukune, who took the reign after Sekwati in 1861, played an important role in this. After the Swazi attack on Sekukune in

¹⁰M. De Jongh, *Swatini*, p. 28.

¹¹N.J. Van Warmelo, *A genealogy of the house of Sekhukhune*, p. 47.

¹²J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, pp. 10-28.

¹³J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, p. 14.

¹⁴G.M. Theal, *History of South Africa from 1873 – 1884*, p. 257.

¹⁵M. De Jongh, *Swatini*, p. 29.

1869, he moved his capital from *Thaba Mosego* to *Tshate*.¹⁶

The relationship between the Pedi and the Afrikaners stayed stressful. In 1876 the Afrikaners attacked the Pedi. A huge part of the Pedi capital was burnt down. In December 1876, the Pedi submitted to the Republic, as it was time to plant their crops and they could not afford to lose this valuable time.¹⁷

A plan had to be constructed to secure the borders of Sekukuni's country, by placing volunteer mercenaries at the Steelpoort River. A fort was built within the junction of the Steelpoort and Spekboom Rivers – Fort Burgers, named after President Burgers. The fort was manned by the Lydenburg Volunteer Corps who were placed under the command of Captain von Schlickmann.¹⁸

On 29 September 1876, Sekukuni attacked Fort Burgers with the object of recovering cattle supposedly looted from the Bapedi. They killed two of the volunteers.¹⁹

The British under Shepstone took over the Transvaal on 12 April 1877. At first Sekukuni pretended to welcome them, but soon started raiding their cattle and other domesticated animals. In November, the British, with the help of the Swazi, attacked the Pedi, and Sekukuni's son and heirs were killed. Sekukuni fled to a cave in the Leolo mountains, but was later captured and taken prisoner. He was succeeded by Mampuru (Middelburg district) and Ramoroko (Sekukuneland). Sekukuni was killed in 1882 by Mampuru, after his release.²⁰

Several forts came into being to protect the Europeans during this time. Fort Burgers was only one of these. The area around Fort Burgers, eventually became known as the town of "Burgersfort".²¹

C. DESCRIPTION OF AREA TO BE AFFECTED BY THE PROPOSED DEVELOPMENT

Five sections of the farm Leeuwvallei are proposed to be developed for residential purposes. The sections are indicated in *Appendix 1 (Location of proposed area of*

¹⁶J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, p. 31.

¹⁷M. De Jongh, *Swatini*, p. 30.

¹⁸The Sekukuni Wars, <http://samilitaryhistory.org/vol1025hk.html>, p. 3.

¹⁹Ibid., p. 3.

²⁰M. De Jongh, *Swatini*, p. 30.

²¹J.S. Bergh, *Geskiedenis Atlas van Suid-Afrika, Die Vier Noordelike Provinsies*, p. 31.

development). Section 1a directly borders the town of Burgersfort, and section 1a and 4 are situated south of the R555 road from Burgersfort to Steelpoort. Section 1b is situated on the opposite side, at the corner of the R555 and the R37 (Burgersfort to Steelpoort & Burgersfort to Pietersburg roads), with the Steelpoort River forming the western boundary. Section 3 is north of the R37, with the Steelpoort River forming the western border and the Spekboom River, the northern boundary. Section 2 is situated directly to the east of section 3, bordering the existing town of Burgersfort in the east and the Spekboomriver in the north.

A map of the layout for the proposed developments was supplied by the client, Mr. Van der Wal, (*Appendix 2: Compilation layout of residential development*) which was used as a guideline for the investigation. 2004 Google Earth images were also studied to assess current and historicly disturbed areas or infrastructure.

- **Locality**

The study area was investigated for all possible heritage related features which might fall within the demarcated sections (see GPS co-ordinates in section D). A visual layout of the location of the proposed development, is provided in *Appendix 1 & Appendix 2*.

The five areas are situated on topographical map, 1:50 000, 2430CB Burgersfort, on sections of the farm *Leeuwvallei 297 KT*. The five sections are on both sides of the main road from Burgersfort to Steelpoort (R555) and Burgersfort to Polokwane (R37), and falls within the Limpopo Province. The proposed development for the footprint is situated on the farm *Leeuwvallei*, as indicated below and in *Appendix 1*.

One historic feature, the iron bridge over the Steelpoort River, is located on the border of the farms *Leeuwvallei 297 KT*, and *Steelpoortsdrift 296 KT*.

<i>AREA / FEATURE</i>	<i>EXTENSION NUMBER</i>	<i>FARM NAME & NO.</i>
AREA 1a	Burgersfort Extension 47	LEEUVVALLEI 297 KT
AREA 1b	Burgersfort Extension 31	LEEUVVALLEI 297 KT
IRON BRIDGE OVER STEELPOORT RIVER	Burgersfort Extension 31	Border of LEEUVVALLEI 297KT & STEELPOORTSDRIFT 296KT

<i>AREA / FEATURE</i>	<i>EXTENSION NUMBER</i>	<i>FARM NAME & NO.</i>
AREA 2	Burgersfort Extension 30 & 45	LEEUVVALLEI 297 KT
AREA 3	Burgersfort Extension 30 & 45	LEEUVVALLEI 297 KT
AREA 4	Burgersfort Extension 46	LEEUVVALLEI 297 KT

- **Description of methodology**

In order to reach a comprehensive conclusion regarding the archaeological and cultural heritage resources in the vicinity of the proposed developments, the following methods were used:

- Fieldwork and survey was conducted per vehicle and per foot with a two / three person team over five days;
- Sections 1b, 2 & 3 was mostly flat and visibility excellent. Most of these three sections are on previous agricultural areas. Sections 1a and 4 are at the foot of the mountain and the vegetation was more dense.
- Research was conducted by means of collecting primary or secondary literary sources with relevant information on the prehistory and history of the area;
- Mr. Van der Wal assisted by indicating the known historical sites and burial sites, regarding the study area;
- Evaluation of the resources which might be impacted upon by the footprint, was done within the framework provided by the National Heritage Resources Act, no. 25 (1999);
- Personal communication with relevant stakeholders.
- All features in this report, were allocated with a code and number (eg. LB20 / LBGY01 – grave yard or burial site), which indicates the farm name and nearby town (Leeuvallei, Burgersfort, or if it is a burial site), and number of the sequence during the survey.

The study area was mainly covered by thorny bushveld vegetation and grass, where it is not disturbed by current infrastructure or previous agriculture. The sections south of the R555 (sections 1a and 4), were largely pristine, with thorny vegetation on the side of a hill. Section (1a) was also previously assessed by Dr. J. Pistorius.

Section 1b was extensively disturbed by previous agricultural activities and current industrial infrastructure towards the east, south and west. Small sections on the ridge were still natural thorny bushveld vegetation with minor mining disturbances. The general

visibility in this section was good. This section was also previously assessed by Dr. J. Pistorius.

Sections 2 & 3 were extensively disturbed by previous agricultural fields and citrus orchards on the entire two sections (see Google Earth image, *Appendix 3*). The soil had been ripped extensively for farming purposes and also to remove the citrus trees. Pioneer vegetation has taken over the entire section. A monument marks graves of the *Voortrekker* era, and the location of the historic site of Fort Burgers is directly towards the west (also situated on section 3). A water furrow runs in the southern sections of areas 2 & 3 almost parallel with the main road (R37). Visibility in these sections was excellent.

D. DESCRIPTION OF IDENTIFIED SITES

The aim of this report is to identify all archaeological, cultural heritage resources or graves which might be affected in the proposed residential development adjacent to Burgersfort, and to document and assess the importance within local, provincial and the national context. Comments and recommendations will be made to manage any archaeological and other cultural heritage resources or graves which might be impacted upon, and to recommend mitigation measures which need to be implemented.

The proposed residential development is earmarked for the western border of the town of Burgersfort. All comments should be studied in conjunction with the Locality plan (*Appendix 1*), and the layout of the proposed development (*Appendix 2*), which indicate the areas, and which corresponds with the discussion below. GPS co-ordinates were taken with a Garmin etrex summit model, datum WGS 84. The accuracy varied between 4-5 meters.

AREAS INDICATED IN APPENDIX 3	CO-ORDINATES	COMMENTS ON FIELD SURVEY: ARCHAEOLOGICAL / CULTURAL HERITAGE FEATURES
AREA 1a	Elev: 705m S24° 39' 55.3" E30° 18' 28.0"	LB:GY01 Burial site (site GY01 in Pistorius's report), approximately 40 graves, the majority of which consist of stone dressing. The visibility in this area was excellent. An enamel mug was found on one of the graves. According to Mr. John Matladi who lives near the grave site, several members of his family were buried in this cemetery. Only one grave in the cemetery has a tombstone with the following inscription: ²² Magdalena Lorozomba Nkosi, U Bube 1958.

²²J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, p. 20.

AREAS INDICATED IN APPENDIX 3	CO-ORDINATES	COMMENTS ON FIELD SURVEY: ARCHAEOLOGICAL / CULTURAL HERITAGE FEATURES
	Elev: 695m S24° 39' 53.0" E30° 18' 26.5"	LB:GY02 Burial site (site GY02 in Pistorius's report) consist of three graves covered with stone dressing, no headstones. According to Mr. John Matladi who lives nearby, one of the deceased was known by the surname 'Mkhondo'. ²³
	Elev: 711m S24° 39' 55.9" E30° 18' 21.1"	LB:GY03 Burial site (site GY03 in Pistorius's report) (approximately 18-20 graves, associated with the Mnisi family. The majority of graves consist of stone dressing, but two graves are fitted with concrete edges. 1) Johannes Mnisi, Waz 14-02-1895, Was 24-05-1984, Ps 23, Etle Hirhula Nkosa; 2) David Mnisi, Obel 01-09-1963, Ohlo 26-12-1990, Ps 23.
	Elev: 712m S24° 39' 57.7" E30° 18' 20.7"	LB/1: Rectangular stone, mud and lime foundations close to above the grave site, associated with recent settlement. The remains of this settlement are spread out over this entire section, but it is difficult to establish the number of houses involved. Some dwellings consisted of two or more rooms around a central verandah. ²⁴
	Elev: 721m S24° 40' 02.0" E30° 18' 20.3"	LB/2: More rectangular stone, mud and lime foundations in the close vicinity of the above burial sites. Surface material included rusted fish tins and other remains are associated with recent settlement. Some dwellings consisted of two or more rooms around a central verandah. ²⁵
	Elev: 713m S24° 39' 59.5" E30° 13' 27.5"	LB/3: Late Iron Age stone wall: The site is poorly defined and level with the surface. No surface material was observed. Very indistinct and disturbed.
AREA 1b	Elev: 694m S24° 39' 43.9" E30° 18' 03.8"	LB/4: Water furrow from the Steelpoort river: This section of the furrow has been completely destroyed by modern infrastructure (pre-concrete mix industry and extensive dumping of building rubble). It had its origin in the Steelpoort river, following through recently cultivated lands and the tarred road (R37). Sections of the water furrow are still visible on areas 2 & 3, which show that it was not lined, but a ground water furrow.
	Elev: 690m S24° 39' 51.4" E30° 17' 59.5"	LB:GY04 Burial site 14 graves and 1 illegally exhumed grave. According to Mr. Van der Wal, this action happened during Dec. 2004. ²⁶ Since then, a re-burial in the same grave took place (June 2009). Most of the graves are of stone packed grave dressing. Three graves have concrete casing with casted tombstones. The dates are not original and are scratched on the tombstones. 1) Oruti Mohlala (16-8-1958). 2) The tombstone of this grave seems not original as it was recently buried, and deeply planted in the grave. Mr van der Wal is of the opinion that it was taken from somewhere else: Inscription: Sara Molo... (16 Jul 1918).

²³J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, p. 21.

²⁴J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, p. 23.

²⁵J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, p. 23.

²⁶Personal information: B. van der Wal, Anglorand, 2009-03-28.

AREAS INDICATED IN APPENDIX 3	CO-ORDINATES	COMMENTS ON FIELD SURVEY: ARCHAEOLOGICAL / CULTURAL HERITAGE FEATURES
	Elev: 636m S24° 39' 51.0" E30° 17' 58.0"	LB/5: Part of a retaining wall built with stone, associated with minor diggings / prospecting on the side of the hill.
AREA 2	Elev: 644m S24° 39' 42.9" E30° 18' 44.3"	LB/4: Water Furrow (continuation of the above): The furrow is clearly visible in this section, parallel to the R37. It had no lining, just soil. It continued through section 3 where it crossed the road to section 1b, through to its origin in the Steelpoort (Tubatse) River.
AREA 3	Elev: 672m S24° 39' 08.3" E30° 18' 15.8"	LB:GY05 Burial site of Voortrekkers: The monument at this site commemorates the Great Trek, 1838-1938. There are imprints of ox wagon tracks in concrete. The name of "Gertruida Joubert" is also in the concrete.
	Elev: 672m S24° 39' 10.6" E30° 18' 12.3"	LB/6: Site of Fort Burgers . The location of this site is still known to some of the inhabitants (Hansie Meyer & F. Labuschagne) of the area. The fort was hexagonal.
	Elev: 699m S24° 39' 10.0" E30° 18' 32.7"	LB/7: A second water furrow is indicated on topographical map 1:50 000, 2430CB Burgersfort. This furrow originated in the Spekboomriver to feed the farm dams. There is however no visible indication of the furrow left due to recent agricultural activities, and the GPS co-ordinate is only a possible indication (as seen on the 1:50 000 map) where it ended into the dam.
AREA 4	Elev: 718m S24° 40' 11.2" E30° 17' 40.9"	LB/8: Old diggings (possibly for lime), next to border fence.
IRON BRIDGE	Elev: 632m S24° 39' 52.9" E30° 17' 48.6"	LB/9: Iron bridge over Steelpoort (Tubatse) River: Mr. Van der Wal (who is currently 50 years old) used to remember the bridge as a child. ²⁷ The bridge has no welding in its construction, and only rivets were used to keep the pieces attached. The bridge has already been vandalized and pieces have been cut with a cutting torch, to sell as scrap metal.

- **Discussion on the footprint of the proposed residential development**

A total of 14 (fourteen) sites / heritage features were documented. The characteristics of each of these sites vary greatly. Sites LB/GY01 – 05 are informal burial sites. Sites LB/1 – LB/2 are recent rectangular stone and dagga foundations. LB/3 was identified as a LIA

²⁷Personal information: B. van der Wal, Anglorand, 2009-03-28.

stone wall although it is poorly defined. LB/4 & LB/7 are water furrows associated with recent agricultural activities. A straight stone wall is possibly associated with recent prospecting activities (LB/5). The site of Fort Burgers (LB/6) is located in section 3 although there is nothing to be seen above ground, today. Prospecting and digging activities took place in the area and site LB/8, is the site of old diggings. Feature LB/9 is the old iron bridge over the Steelpoort River.

AREA 1a: Three of the burial sites are situated in this section, together with recent settlements. The LIA stone wall is also situated in the eastern section.

AREA 1b: One burial site is situated in section 1b. Modern infrastructure and light industries form part of this area, as well as recent agricultural activities. The following examples have been noted: Crane Hire, pre-concrete mix industry, vehicle repair shop, restaurant and filling station. There are two residential houses with outbuildings, squatter dwellings, large corrugated iron structures, a loading ramp and other concrete and brick structures. The central part of this section was used for agricultural purposes. Extensive dumping of building rubble and general domestic waste, currently takes place on this site.

AREA 2 & 3: Most of areas 2 & 3 had been extensively disturbed by agricultural practices and citrus plantations for many years. The extent of the disturbance may be seen in the 2004 Google Earth image of this area (*Appendix 3*). Two sites of significance are situated in this section, the site of Fort Burgers and a *Voortrekker* burial site.

AREA 4: No features of significance were identified in this area.

Sites LB/GY01, LB/GY02, LB/GY03, LB/GY04 & LB/GY05, Burial sites:

LB/GY01 Burial site (site GY01 in Pistorius's report)²⁸, approximately 40 graves, the majority of which consist of stone dressing. According to Mr. J. Matladi who lives near the graveyard, several members of his family were buried here. One grave has a tombstone with an inscription: "Magdalena Lorozimba Nkosi, U Bube 1958". (**See Fig. 1**).

LB/GY02 Burial site (site GY02 in Pistorius's report)²⁹ consists of three graves covered with stone dressing, no headstones. According to Mr. John Moloto who lives in a shack next to the graveyard one of the deceased was known by the surname "Mkhondo" (**See Fig. 2**).

²⁸ J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, pp. 20-23.

²⁹ J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, pp. 20-23.

LB/GY03 Burial site (site GY03 in Pistorius's report),³⁰ approximately 18-20 graves, associated with the Mnisi family. The majority of graves are covered with stone piles, two of which are fitted with granite slabs and edged with concrete. The two granite tomb stones have the following inscriptions:

“Johannes Mnisi, Waz 14-02-1895, Was 24-05-1984, Ps 23, Etle Hirhula Nkosa.”

“David Mnisi, Obel 01-09-1963, Ohlo 26-12-1990, Ps 23.” **(See Fig. 3).**

LB/GY04 Burial site: Fourteen (14) graves and 1 illegally exhumed grave were counted in this informal cemetery. A reburial took place recently (June 2009).³¹ According to Mr. Van der Wal, the exhumation happened during Dec. 2004.³² Most of the graves are of stone packed grave dressing. Three graves have concrete casing with casted tombstones. The dates are doubtful as they were recently scratched on the tombstones.

1) Oruti Mohlala (16-8-1958).

2) The tombstone of this grave seems not original as it was recently buried, and deeply planted, in the grave. Mr Van der Wal is of the opinion that it was taken from somewhere else: Inscription: Sara Molo... (16 Jul 1918). **(See Fig. 4).**

LB/GY05 Burial site: Informal *Voortrekker* graves. Poorly defined stones mark the outline of the grave dressings. A monument commemorates this site and the Great Trek, 1838-1938. There are imprints of ox wagon tracks in concrete, with the name of “Gertruida Joubert” also in concrete. **(See Fig. 5).**

Locations: See Appendix 3.

Impact by proposed development: All the burial sites will be negatively impacted upon by the proposed development (see *Appendix 2: Compilation layout plan of proposed development*).

Mitigation: The following options exist as mitigation measures for the burial sites: After consultation with the family members, the developer may apply for a permit from SAHRA to relocate the graves by a professional grave relocater, to a site as agreed upon by the family;

Alternatively, the developer should demarcate these areas as public open spaces, and not develop in these sections, and management guidelines should be established for the burial sites. Visitors and family members of the deceased should be allowed to visit the graves.

³⁰ J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, pp. 20-23.

³¹ Personal information: B. van der Wal, Anglorand, 2009-06-30.

³² Personal information: B. van der Wal, Anglorand, 2009-03-28.

Site LB/3:

Late Iron Age stone wall. The site is poorly defined and level with the surface. It was built with small stones, although it has collapsed, and further disturbed by the nearby settlements. No surface material was observed. Very indistinct. **(See Fig. 6).**

Location: See Appendix 3.

Impact by proposed development: The site will negatively be impacted upon by the proposed development.

Mitigation: A phase two assessment is recommended. Late Iron Age stone walls must be further researched, excavated and documented to establish the scientific value thereof. Application for a destruction permit from SAHRA, is essential.

Sites LB/1, LB/2:

Square stone, mud and lime foundations, associated with recent settlement. These foundations are constructed with limestone and mud. They are rectangular with two or more rooms around a central verandah and is dated to the recent past.

Location: See Appendix 3.

Impact by proposed development: The area will be impacted upon by the proposed development, but does not have historical or cultural significance.

Mitigation: None

Sites LB/4, LB/7:

Water furrows for irrigation purposes. Sections of these furrows have already been completely destroyed by agricultural activities as well as modern infrastructure. **(See Fig. 9).**

Location: See Appendix 3.

Impact by proposed development: None

Mitigation: None

Site LB/5:

Part of a retaining wall, associated with minor diggings / prospecting on the side of the hill. This wall has no cultural significance. **(See Fig. 7).**

Location: See Appendix 3.

Impact by proposed development: None

Mitigation: None

Site LB/6:

Site of Fort Burgers. The site was pointed out by the farm manager Mr. D. Viljoen, as there is currently nothing above surface to indicate the site. **(See Fig. 8).**

Location: See Appendix 3.

Impact by proposed development: This area will be negatively impacted upon by the proposed development.

Mitigation: A second phase scientific investigation is recommended, which include, locating the exact site, excavation and further research in an effort to understand the extent of the fort, and various activity areas within the fort complex. A management plan should be drafted for the fort, in order to secure its future existence

Site LB/8:

Old diggings, (possibly for lime), next to border fence. This area has no historic or cultural significance. **(See Fig. 10).**

Location: See Appendix 3.

Impact by proposed development: None

Mitigation: None

Site LB/9:

Iron Bridge over Steelpoort (Tubatse) River. Mr. Van der Wal (who is currently 50 years old) used to remember the bridge as a child.³³ The bridge has no welding in its construction, and only rivets were used to keep the pieces attached. The bridge has already been vandalized and pieces have illegally been cut, with a cutting torch, to sell as scrap metal. The bridge is at least 60 years old and protected under the NHRA. Mr. van der Wal indicated that there is a possibility to utilize this bridge as a commercial feature, in which case mitigation measures will be necessary.³⁴ **(See Fig. 11).**

Location: See Appendix 3.

Impact by proposed development: If the bridge will be used for commercial purposes, then it will be impacted upon.

Mitigation: If the bridge will be used for commercial purposes, mitigation measures are needed. A full documentation report on the bridge, will be needed. The client should submit a business proposal for the future plans for the construction, and then apply for a permit from SAHRA to utilize this feature. A stability report from a registered engineering company will be recommended.

³³Personal information: B. van der Wal, Anglorand, 2009-03-28.

³⁴ Personal information: B. van der Wal, Anglorand, 2009-03-28.

E. STATEMENT OF SIGNIFICANCE AND EVALUATION OF HERITAGE RESOURCES IN THE STUDY AREA

Section 38 of the National Heritage resources act (25 of 1999), rates all heritage resources into National, Provincial or Local significance, and proposals in terms of the above is made for all identified heritage features.

• Evaluation methods

Site significance is important to establish the measure of mitigation and / or management of the resources. Sites are evaluated as *HIGH (National importance)*, *MEDIUM (Provincial importance or LOW, (local importance)*, as specified in the NHRA. It is explained as follows:

• National Heritage Resources Act

The National Heritage Resources Act no. 25, 1999 (NHRA) aims to promote good management of the national estate, and to enable and encourage communities to conserve their legacy so that it may be bequeathed to future generations. Heritage is unique and it cannot be renewed, and contributes to redressing past inequities.³⁵ It promotes previously neglected research areas of which the study area is in crucial need of.

All archaeological and other cultural heritage resources are evaluated according to the NHRA, section 3(3). A place or object is considered to be part of the national estate if it has cultural significance or other special value in terms of:

- (a) its importance in the community, or pattern of South Africa's history;
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;³⁶

• Graves

SAHRA Policy on burial grounds

The policy is that graves and cemeteries should be left undisturbed, no matter how inaccessible and difficult they are to maintain. It is our obligation to empower civil society

³⁵National Heritage Resources Act, no. 25 of 1999. p. 2.

³⁶National Heritage Resources Act, no. 25 of 1999. pp. 12-14

to nurture and conserve our heritage. It is only when essential developments threaten a place of burial, that human remains should be disinterred to another cemetery or burial ground.

From a historical point of view and for research purposes, it is vital that burial sites are not disturbed. The location and marking of an individual's grave tells a life story, where he / she died defending (or attacking) a particular place or situation and makes it easier to understand the circumstances of his / her death.³⁷

The significance and evaluation of the archaeological and cultural heritage features can be summarised as follows:

Site no	Cultural Heritage features	Significance	Measures of mitigation
LB/GY01, LB/GY02, LB/GY03, LB/GY04 & LB/GY05, burial sites	Graves	High	Mitigation needed – permit for relocation; OR no development in these areas, leave as public open spaces
LB/3	LIA stone wall	Low	Mitigation needed to establish scientific value
LB/1, LB/2	Foundations of dwellings from the recent past	None	None
LB/4, LB/7	Ground water furrows for irrigation purposes	None	None
LB/5	Retaining wall	None	None
LB/6	Fort Burgers – historically significant	Medium	Second phase mitigation needed with management plan
LB/8	Old lime diggings	None	None
LB/9	Iron bridge over Steelpoort river	Low	If bridge is planned to utilize as a commercial feature, mitigation measures are recommended

³⁷SAHRA, Burial sites, <http://www.sahra.org.za/burial.htm>, Access, 2008-10-16.

- **Field rating:**

The graves are rated as High and are of outstanding significance as specified by the NHRA. Mitigation measures are therefore necessary to contact the relevant communities and come to an agreement regarding relocation or visitation rights.

The LIA cultural heritage feature, as discussed in the section above, is rated as Low and therefore of local significance. Dr. J. Pistorius indicated that this feature has been extensively disturbed, and does not qualify as a significant site.³⁸ Mitigation measures include further research, recording and excavation to establish its scientific value. The client may then apply for a destruction permit from SAHRA.

The site of Fort Burgers is rated as Medium and of provincial value, which forms part the historic conflict between Sekukune (Pedi) and their European neighbors in the 1870's. A phase two investigation is recommended to establish the exact location, to excavate and to further research the fort in an effort to understand the extent, and various activity areas within the fort complex. A management plan is also recommended to ensure its future protection.

The iron bridge over the Steelpoort (Tubatse) River is rated as a historic feature of local significance and protected under the NHRA. If any commercial activities are planned for this bridge (as indicated by Mr. Van Der Wal), then a full documentation report is recommended.

None of the other features which were observed, have any historic or cultural significance.

F. RECOMMENDATIONS

The following mitigation measures are recommended:

- **The burial sites, LB/GY01, LB/GY02, LB/GY03, LB/GY04 & LB/GY05**, are rated as High and are of outstanding significance as specified by the NHRA. After consultation with the family members, the developer may apply for a permit from SAHRA to relocate the graves by a professional grave relocater, to a site as agreed upon by the family; or **alternatively**, the developer should demarcate these areas as public open spaces, and not develop in these sections. Management guidelines

³⁸ J.C.C. Pistorius, *Phase 1 HIA for the proposed New Burgersfort Development*, p. 25.

should be established for the burial sites. Visitors and family members of the deceased should be allowed to visit the burial sites.

- **Site LB/3**, the LIA stone wall is rated as Low and therefore of local significance. Mitigation measures include the further research, recording and excavation to establish its scientific value. The client may then apply for a destruction permit from SAHRA.
- **Site LB/6**: The site of Fort Burgers is rated as Medium and of provincial value. A phase two investigation is recommended to establish the exact location, to excavate and further research the fort in an effort to understand the extent, and various activity areas within the fort complex. A management plan is also recommended to ensure its future protection.
- **Site LB/9**: The iron bridge over the Steelpoort (Tubatse) River, is rated as a historic feature of local significance and protected under the NHRA. If any commercial activities are planned for this bridge (as indicated by Mr. Van Der Wal), then a full documentation report is recommended. If the bridge will be used for commercial purposes, mitigation measures are needed. The client should also submit a business proposal for the future plans for the construction, and then apply for a permit from SAHRA to utilize this feature. A stability report from a registered engineering company is recommended.

It is recommended that if the mitigation measures as specified above, are adhered to, the developer may continue with the development of the five portions on *Leeuwvallei 297KT*.

G. CONCLUSION

Archaeological material or graves are not always visible during a field survey and therefore some significant material may only be revealed during construction activities. It is therefore recommended that the developers be made aware of this possibility, and when human remains, clay or ceramic pottery etc. are observed, a qualified archaeologist must be notified and an assessment be done. Further research might be necessary in this regard for which the developer is responsible.

Adansonia Heritage Consultants cannot be held responsible for any archaeological material or graves which were not located during the survey.

SOURCES

• ARCHIVAL SOURCES

- PRMA: Information file 9/2. *Prehistory & Archaeology*.
- PRMA: Information file 10/1. *Ethnology & Anthropology*.

GOVERNMENT PUBLICATIONS:

• National Legislation

- Republic of South Africa, *National Heritage Resources Act*, (Act No. 25 of 1999).

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- Pistorius, J.C.C., *A Phase 1 HIA study for the proposed New Burgersfort ext 30 residential and the Burgersfort ext 31 industrial development projects near Burgersfort*, February 2005.

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- SAHRA, Burial sites, <http://www.sahra.org.za/burial.htm>, Access, 2008-10-16.
- The Sekukuni Wars, <http://samilitaryhistory.org/vol1025hk.html>, 2009-06-25.

PERSONAL INFORMATION

- Personal information: Mr. B. Van der Wal, Cell 0822590204, 2009-03-28.
- Personal information: J.P. Celliers, 'HIA, Lydenburg Townlands, reply', jcelliers@thabachweu.org.za 2009-06-18.

APPENDIX 1: Location of proposed area of development (topographical Map provided by Mr. Van Der Wal).

APPENDIX 2: Compilation layout of residential development (Map provided by Mr. Van Der Wal).

APPENDIX 3: Location of heritage features & graves
(Google image).

APPENDIX 4: PHOTOGRAPHS (C. Rowe):

APPENDIX F: SUPPORTING DOCUMENTS

MOTIVATIONAL MEMORANDUM

**PROPOSED TOWNSHIPS ON PORTIONS OF
PORTIONS OF THE FARM LEEUWVALLEI
297 K.T.**

**BURGERSFORT EXTENSIONS
- LEEUWVALLEI**

PREPARED BY:

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TABLE OF CONTENT

<u>1.</u>	<u>BACKGROUND</u>	<u>1</u>
<u>2.</u>	<u>THE APPLICATION.....</u>	<u>1</u>
2.1.	"AUTHORIZED" LOCAL AUTHORITY AND LAND USE CONTROL	1
2.2.	APPLICATION IN TERMS OF CHAPTER III OF THE TOWN PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986).....	1
<u>3.</u>	<u>THE PROPOSED DEVELOPMENT</u>	<u>2</u>
3.1.	LAND USES	2
<u>4.</u>	<u>NEED - DETERMINANTS OF DEMAND</u>	<u>2</u>
4.1.	DEMAND FOR ADDITIONAL HOUSING OPPORTUNITIES.....	2
4.2.	NEED FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT	3
4.3.	DESIRABILITY	3
4.3.1.	Engineering Service Provision	3
4.3.2.	Job creation and local economic development.....	3

MOTIVATIONAL MEMORANDUM

BURGERSFORT TOWNSHIPS - LEEUWVALLEI

TOWNSHIP ESTABLISHMENT ON PORTIONS OF PORTIONS OF THE FARM LEEUWVALLEI 297 KT

1. BACKGROUND

Vast development in Burgersfort has resulted from the expansion of the mining activities related to the "Platinum Group Minerals" on the eastern limb of the Bushveld Igneous Complex.

The proposed development will provide for the increasing need for business development and opportunities as well as for residential properties in Burgersfort as a result of the large amount of people moving to Burgersfort due to the expansion of mining activities in the area.

2. THE APPLICATION

2.1. "AUTHORIZED" LOCAL AUTHORITY AND LAND USE CONTROL

The Greater Tubatse Municipality is an "authorized" local authority in terms of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986), and may approve an application lodged in terms of Section Chapter III of the said Ordinance.

2.2. APPLICATION IN TERMS OF CHAPTER III OF THE TOWN PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

An application will be lodged in terms of, Chapter III, Section 96 (1) (a) of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986), for the establishment of a township on portions of Portions of the Farm Leeuwvallei 297 K.T. consisting of the following: -

"Residential 1" (350m² erven):	182
"Residential 1" (375m² erven):	439
"Residential 1" (600m² erven):	531
"Agricultural" (Existing dwelling):	1
"Residential 2" (@64 units/ha):	5
"Commercial/Business":	16
"Commercial/Industrial":	9
"Municipal":	11
"Special" (Private Street):	1
"Special"	2
"Private Open Space"	8

3. THE PROPOSED DEVELOPMENT

3.1. LAND USES

The proposed Layout Plan for the proposed Burgersfort Leeuwvallei Extensions consists of the following land uses:

- ±182 (one hundred and eighty two) "Residential 1" zoned properties with an average size of 350m²;
- ±439 (four hundred and thirty nine) "Residential 1" zoned properties with an average size of 375m²;
- ±531 (five hundred and thirty one) "Residential 1" zoned properties with an average size of 600m²;
- 1 (one) "Agricultural" zoned property with an existing dwelling;
- 5 (five) "Residential 2" zoned properties with a density of 64 units per hectare;
- 16 (sixteen) "Commercial/Business" zoned properties;
- 9 (nine) "Commercial/Industrial" zoned properties;
- 11 (eleven) "Municipal" zoned properties;
- 1 (one) "Special" zoned property for the purpose of a "private street";
- 2 (two) "Special" zoned properties; and
- 8 (eight) "Private Open Space" zoned properties.

4. NEED – DETERMINANTS OF DEMAND

4.1. DEMAND FOR ADDITIONAL HOUSING OPPORTUNITIES

It is a well known fact that in the past few years there was a substantial amount of growth in Burgersfort due to the accelerated development of Platinum Group Minerals of the eastern limb of the Bushveld Igneous Complex.

Burgersfort has been identified as a provincial growth point and regional service centre that accommodates higher order services associated with new PGM's mining developments. The vast majority of residentially related developments in Burgersfort are primarily necessitated by the expansion of the mining activities.

The residential development within the proposed Leeuwvallei Extensions caters particularly for the middle/high income category and provide for a variety of residential opportunities including single residential and sectional title development.

In recent years privacy is not necessarily associated with the size of an erf, but with skillful planning for example the arrangement of buildings, borders and foliage. In view of these changed requirements the demand for medium and smaller sized erven increased. Exclusive, secure and private developments are favoured and the numerous successful developments in Lydenburg and in other cities clearly indicate the popularity of such developments.

The demand for smaller erven and higher density sectional title developments should also be considered in view of social changes in the community such as changing economic circumstances, family-sizes and declining need for large exterior space. People tend to opt for higher density developments and smaller erven, smaller houses and less maintenance time and costs. Ultimately it is a matter of economics. People want more rest; more play and travel, rather than maintaining immaculate lawns in extensive gardens. The increased need for security also lead people to opt for sectional title developments and security villages as improved security could be established in these residential developments.

4.2. NEED FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT

Burgersfort has been identified as a provincial growth point and regional service centre that accommodates higher order services associated with new PGM's mining developments.

In addition, a substantial number of "downstream" job opportunities will be created because of service industries related to mining activities as well as increased levels of economic activity.

The vast growth in the mining industry in Burgersfort created a vacuum for enterprises such as building materials supplies, new motor manufacturing outlets, small manufacturing firms, and warehousing, engineering concerns and the normal home improvement and leisure outlets. Transport companies require service centres and mining supplies are looking for dual capacity outlets.

4.3. DESIRABILITY

4.3.1. Engineering Service Provision

The proposed development can be provided with all the required bulk and internal engineering service infrastructure, i.e. water, sewerage, electricity and roads.

4.3.2. Job creation and local economic development

The proposed development will create a large amount of new job opportunities in close proximity to residential areas.

The industrial development provides for a substantial number of new employment opportunities for skilled and un-skilled workers.

**DEPT AGRICULTURE &
TRIBUNAL AUTHORIZATION**



SEKHUKHUNE
District Municipality

Private Bag X8611 Groblersdal 0470, 3 West Street Groblersdal 0470
Tel : (013) 262 7300, Fax: (013) 262 3688
E-Mail : sekinfo@sekhukhune.co.za

~~Approved by the Planning Committee on 20/03/2012~~

Anglorand Holdings Limited
Burgersfort Development
1st Floor
Broll Place
Sunny side Office Park
Parktown
2193
Cell: 082 259 0204
Tell: 013 238 0029

RE: Authorization for Anglorand Holdings Limited to implement the design plan for Domestic and Non- Domestic Water Consumption to Burgersfort Ext 30/31/45/46 & 47- Regional Mall and the Peermont Tubatse Casino (Thaba Moshate).

Attention: Project Coordinator: Buks van der Wal

- This serves to notify Anglorand Holdings Limited of the decision taken by SDM Infrastructure and Water Services allowing implementation of their proposed Engineering Technical Planning report to construct the water supply system with the capacity of 2700 kl/d.
- Design plans must provide an integration for future link with the DWA RBIG pipeline to Burgersfort.
- Material selected for the design should be that which meets SANS 1200 and able to manage pressure designs for the DWA RBIG pipeline to Burgersfort.
- Transfer of the system to Operation and Maintenance department should be coordinated in a manner that allows proper and adequate training to manage the system.
- You are advised to seek from DWA, abstraction license from the Spekboom river and provide SDM with documents to verify and for archive, note that construction works can proceed only after such documents are in place.
- Plans to handle waste water generated from the property must be integrated within that of SDM- Upgrading of Burgersfort WWTW project scope.
- A possible design option that will treat future waste water should be discussed by your Engineer Representative and SDM appointed consultant.
- We therefore trust that we will jointly invest into this WWTW project in order to advance the speedy financial and proper implementation plan.
- Hoping that you find the above in order.

Kind regards;


MNTSHUDISANE
ACTING- MUNICIPAL MANAGER

30/03/2012
DATE

**APPLICATION FOR THE ESTABLISHMENT OF A LAND DEVELOPMENT AREA:
PORTION 5 AND THE REMAINDER OF PORTION 27 OF THE FARM**

22-FEB-2006 13:56 FROM r

TO #00124600479

P.01

Mpumalanga Provincial Government

**Building 6
Riverside Government
Complex
Nelspruit
1200
Republic of South Africa**



**Private Bag X 11304
Nelspruit
1200
TEL (013) 766 6270
FAX (013) 766 8247**

Mpumalanga Development Tribunals Office of the Registrar

MEMORANDUM

**TO : MR. M. TALJAARD
DESIGNATED OFFICER**

**FROM : MR. A. VAN NIEKERK
TRIBUNAL REGISTRAR**

DATE : 22 FEBRUARY 2005

**SUBJECT : APPLICATION FOR THE ESTABLISHMENT OF A LAND
DEVELOPMENT AREA: PORTION 5 AND THE REMAINDER
OF PORTION 27 OF THE FARM LEEUWVALLEI 297 KT
(BURGERSFORT EXTENSION 30)**

The Mpumalanga Development Tribunal, during its hearing held on the 9th of February 2005, at Gethale Lodge, Burgersfort on Case No. MDT 26/07/04/02/BURGERSFORT/EXT30, decided as follows:

That the Tribunal approves the application for the establishment of a land development area subject to the following conditions:

- (i) The amended layout plan be approved.
- (ii) The Conditions of Establishment and land use conditions be amended to reflect the approved layout plan.
- (iii) The conditions stated in the Geotechnical report be adhered to.
- (iv) Conditions and mitigation measures stated in the EIA report be adhered to.
- (v) Conditions from other Government Departments be adhered to.
- (vi) Permit from DWAF for the conversion of water rights from Agriculture to Domestic purposes.
- (vii) The Service Agreement be submitted for approval to the Tribunal.

a

**APPLICATION FOR THE ESTABLISHMENT OF A LAND DEVELOPMENT AREA:
PORTION 5 AND THE REMAINDER OF PORTION 27 OF THE FARM
LEEUVALLEI 297 KT (BURGERSFORT EXTENSION 30)**

- (viii) The amended layout plan be approved by the Department of Agriculture & Land Administration (Land Administration Directorate)
- (ix) Should the developer intent to develop any industrial 1 erven a separate application to obtain environmental authorisation should be submitted.

Yours faithfully



**MR. A. VAN NIEKERK
TRIBUNAL REGISTRAR
MPUMALANGA DEVELOPMENT TRIBUNALS**

22/02/2005
DATE

Mpumalanga Provincial Government

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Mpumalanga Development Tribunals *Office of the Registrar*

MEMORANDUM

TO : MR. M. TALJAARD
DESIGNATED OFFICER

FROM : MR. A. VAN NIEKERK
TRIBUNAL REGISTRAR

DATE : 22 FEBRUARY 2005

SUBJECT : APPLICATION FOR THE ESTABLISHMENT OF A LAND
DEVELOPMENT AREA: PORTION 60 AND PORTION 62 OF
THE FARM LEEUWVALLEI 297 KT (BURGERSFORT
EXTENSION 31)

The Mpumalanga Development Tribunal, during its hearing held on the 9th of February 2005, at Gethale Lodge, Burgersfort on Case No. MDT 26/07/04/02/BURGERSFORT/EXT31, decided as follows:

That the Tribunal approves the application for the establishment of a land development area subject to the following conditions:

- (i) The layout plan be approved
- (ii) The Conditions of Establishment and Land use Conditions as amended be approved.
- (iii) The conditions stated in the Geotechnical report be adhered to.
- (iv) Conditions and mitigation measures stated in the EIA report be adhered to.
- (v) Conditions from other Government Departments be adhered to.
- (vi) Permit from DWAF for the conversion of water rights from Agriculture to Domestic purposes.

A

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22-FEB-2005 13:57 FROM r

TO *00124600479

P.04

**APPLICATION FOR THE ESTABLISHMENT OF A LAND DEVELOPMENT AREA:
PORTION 60 AND PORTION 62 OF THE FARM LEEUWVALLEI 297 KT
(BURGERSFORT EXTENSION 31)**

- (vii) The Service Agreement be submitted for approval to the Tribunal.
- (viii) Should the developer intent to develop any industrial 1 even a separate application to obtain environmental authorisation should be submitted.

Yours faithfully



**MR. A. VAN NIEKERK
TRIBUNAL REGISTRAR
MPUMALANGA DEVELOPMENT TRIBUNALS**

22/02/2005
DATE

**APPLICATION FOR THE ESTABLISHMENT OF A LAND DEVELOPMENT AREA:
PORTION 5 AND THE REMAINDER OF PORTION 27 OF THE FARM**

Mpumalanga Provincial Government

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**Mpumalanga Development Tribunals
Office of the Registrar**

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**APPLICATION FOR THE ESTABLISHMENT OF A LAND DEVELOPMENT AREA:
PORTION 5 AND THE REMAINDER OF PORTION 27 OF THE FARM
LEEUVALLEI 297 KT (BURGERSFORT EXTENSION 30)**

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- (ix) Should the developer intent to develop any industrial 1 erven a separate application to obtain environmental authorisation should be submitted.

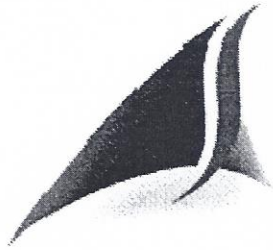
Yours faithfully



**MR. A. VAN NIEKERK
TRIBUNAL REGISTRAR
MPUMALANGA DEVELOPMENT TRIBUNALS**

22/02/2005
DATE

LAND OWNER CONSENT



Anglorand Holdings Limited

LETTER OF CONSENT

The landowner,

Anglorand Holdings Limited hereby acknowledges the intention of developing the underwritten properties and gives consent to subcontractors to perform all necessary processes to obtain authorisation for the residential, bussiness and industrial development on the following properties:

Portions 13 & 61 and the remainder of Portions 5, 27, 58 & 60 of the farm Leeuwvallei 297 KT - Greater Tubatse Municipality

Signed on behalf of Anglorand Holdings Limited:

Date: 2010.11.11

Witness: 

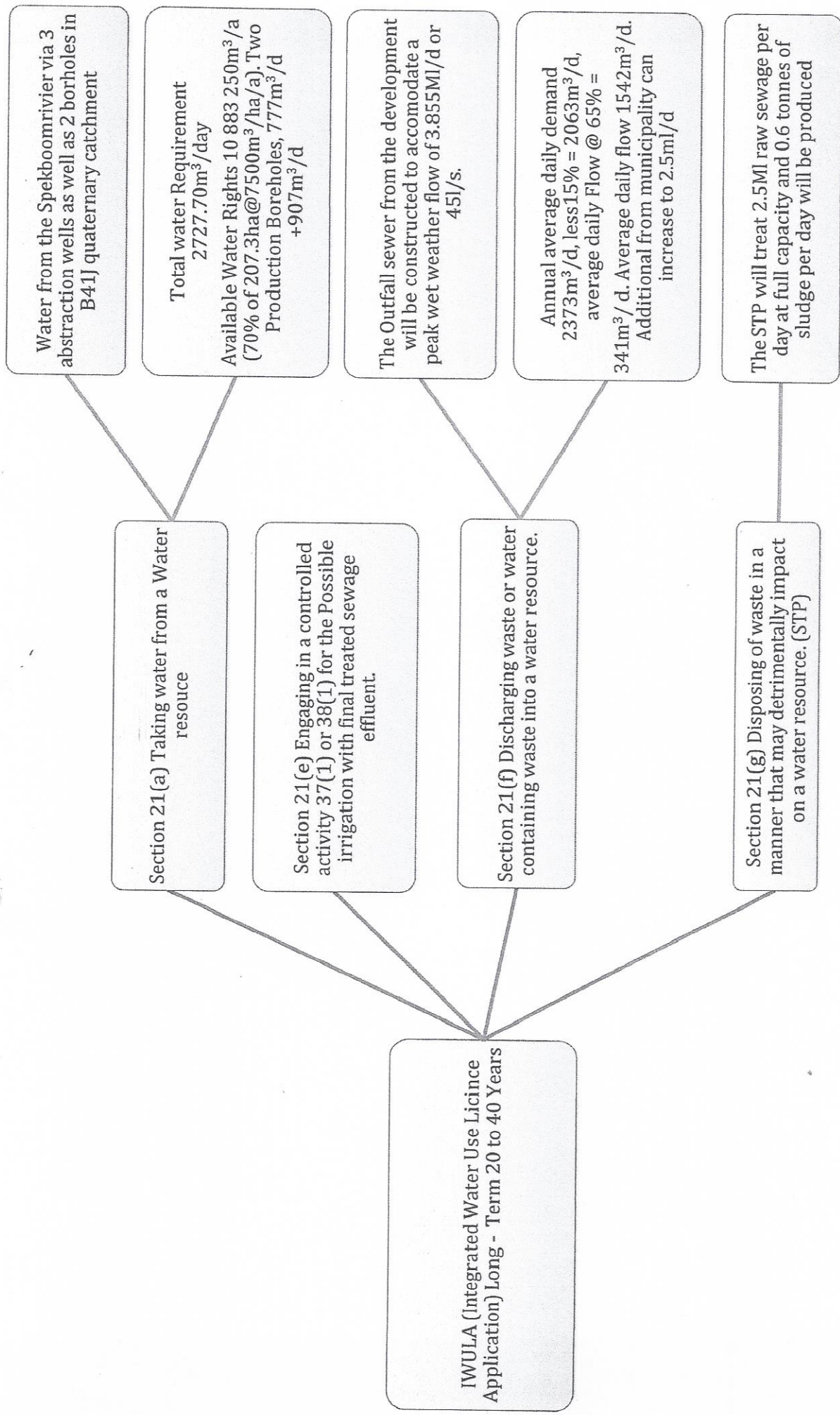
Date: 2010.11.11



N.J. VAN DER WAL
Cell 082 259 0204

Project Coördinator
Anglorand Holdings Limited
Burgersfort Development

**IWULA:
ACKNOWLEDGEMENT & CONSULTATION**



IWULA Application



PostNet Unit #136
Private Bag X1288
Potchefstroom
2520

Tel: (018) 293 3384
Fax: 086 762 5742

REF NO: Leeuvallei/MEC/1111/21afg

Department of Water Affairs
Private Bag X11259
NELSPRUIT
1200

29 February 2012

I hereby acknowledge the receipt of a Cheque of R114.00 and the following document submitted:

Integrated Water Use License Application (IWULA) for the Farm Leeuvallei 297 KT. The IWULA document will be used to motivate and also apply to obtain authorisation to change water from agricultural to domestic use from the Department of Water Affairs.

ZODWA

20-03-2012

NAME:

DATE:

Please fax this acknowledgement letter back to 086 762 5742

22.06.2008 14:40

NU. 109 P. 1/10



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref no: 16/1772-GS27; Enq: Ms M.E Molepo; Tel: 015 295 5633; Fax: 015 295 5016; E-Mail: molepome@edet.gov.za

Gillyfrost 56 Pty Ltd
P.O Box 16
OHRIGSTAD
1122

Fax: 013 238 0029

Attention: Mr. Buks van der Wal

APPLICATION FOR ENVIRONMENTAL AUTHORIZATION FOR THE PROPOSED RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 5, 58, 60, 62 AND THE REMINDER OF PORTION 27 OF THE FARM LEEUWVALLEI 297 KT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT: LIMPOPO PROVINCE

With reference to the abovementioned application, please be advised that the Department has decided to grant authorization. The environmental authorization and reasons for the decision are attached herewith.

In terms of regulation 10(2) of the Environmental Impact Assessment Regulations, 2006, you are instructed to notify all registered interested and affected parties, in writing and within 10 (ten) calendar days of the date of this letter, of the Department's decision in respect of your application as well as the provisions regarding the making of appeals that are provided for in the regulations.

Should you wish to appeal any aspect of the decision, you must, *inter alia*, lodge a notice of intention to appeal with the MEC for Economic Development, Environment and Tourism, Mr O C Chabane within 10 days of receiving this letter, by means of one of the following methods:

By facsimile : (015) 293 8317
By post : Private Bag X 9484, POLOKWANE, 0700
By hand : 3rd floor, Evridiki Towers, 20 Hans van Rensburg Street, POLOKWANE

Should you decide to appeal, you must serve a copy of your notice on intention to appeal on all registered interested and affected parties as well as a notice indicating where, and for what period, the appeal submission will be available for inspection.

Yours faithfully

SENIOR MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 17/10/2008

Cc: Wandima Environmental Services Attention: Mr. Danie van der Walt Fax: 013 752 6877

Cnr of Suid and Dorp Streets, POLOKWANE, 0700, P O Box 55464, POLOKWANE, 0700
Tel: 015 295 7000, Fax: 015 295 5015, website: <http://www.Limpopo.gov.za>

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water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

MPUMALANGA

Private Bag x11259, Nelspruit, 1200. Prorum Building, Cnr Brown & Paul Kruger Street

Enq: Ms Ngobe Celiwe

Email: ngobec@dwa.gov.za

Tel: 013 – 235 4206

Fax: 013 – 235 4745

☒ 16/2/7/B400/C1038

Afrika Enviro & Biology
P.O.Box 2980
White River
1240

Tell No: 072 623 1845

Fax No: 086 603 8875

LEDET REEF NO: 12/1/9/2-GS35

For Attention: Danie van der Walt

RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON PORTIONS 13 & 61 AND THE REMAINDER OF PORTIONS 5, 27, 58, & 60 OF THE FARM LEEUWVALLEI 297 KT, GREATER TUBATSE MUNICIPALITY, BURGERSFORT

The Department of Water Affairs (DWA) has assessed the above-mentioned application and wish to comment as follows:

1. The applicant shall take note of Section 22(1) of the National Water Act, 1998 (Act 36 of 1998), "Permissible water use", a person may only use water-
 - a) without a license-
 - I. if that water use is permissible under Schedule 1;
 - II. If that water is permissible as a continuation of an existing lawful use (section 32); or
 - III. If that water use is permissible in terms of general authorisation issued under section 39;
 - b) If the water use is authorised by a licence under this Act; or
 - c) If the responsible authority has dispensed with a licence requirement under subsection (3), (of the same Act).
2. Therefore any other water use activities associated with the proposed project that are not permissible as outlined on paragraph 1 above shall only commence upon receipt of authorisation from the DWA. Therefore no water use activities may be conducted prior to the granting of the necessary authorisation by the DWA.
3. **Water supply:** the identified water resource (three production wells) it is a water use in terms of Section 21a of the NWA, "taking water from a water resource" and is subject to the requirements as outlined on paragraphs 1 and 2 above.
4. **Water Diverting:** it is stated that water abstraction points will necessitate construction and establishment of pumps and pipeline infrastructure within the water

course. The applicant also investigating the possibility to construct a taxi rank and/or sports facilities on an area located within the 1:100 year floodplain.

Therefore the construction of pipelines and conveyors across watercourses are water use activities in terms of Section 21(c) and (i) of the NWA, "impending or diverting the flow of water in a watercourse" and "altering the bed, banks, course or characteristics of a watercourse" respectively, and is subject to the requirements as outlined on paragraphs 1 and 2 above.

5. **Storage of water:** Water will be pumped to a milk storage reservoir site capable to hold water within a 24 hour storage capacity with additional storage as specified by the fire risk consultant.

The storage of clean water in reservoirs is a water use activity in terms of Section 21(b) of the NWA, "storing water" and is subject to the requirements as outlined on paragraphs 1 and 2 above.

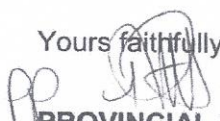
6. **Altering the banks:** The outer boundary of the main development area will be located within 32m of the outer edge of the Steelpoort and Speekboom Rivers. Activities and construction may take place within the 1:100 year flood lines.:

The applicant shall note that no activities shall take place within a watercourse in terms of Section 21(i) of the NWA, altering the bed ,banks course or characteristics of a watercourse. therefore any other water use activities associated with the mining project and that are identified as such in terms of Section 21 of the NWA shall have to be registered and authorised by the DWS.

7. **Dust:** The Applicant is requested to provide the Department with the quality and estimated quantity of the water that will be used for dust suppression during the developmental phase of the proposed project.
8. Excessive wash-down of soil shall be prevented and the disturbed areas shall be rehabilitated on an ongoing basis to prevent erosion.
9. The applicant shall outline the expected impacts on the other water users due to the construction of the proposed project.
10. The applicant shall note that in terms of section 19(1) of the National Water Act, 1998 (Act 36 of 1998), It is stated that " *An owner of land , a person in control of land or a person who occupies or uses the land on which-(a) any activity or process is or was performed or undertaken; or (b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resources must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring*". Any pollution incident(s) originating from the proposed project shall be reported to the Regional Office of the DWA within 24 hours.

Please do not hesitate to contact the DWA Regional Office should you have any queries.

Yours faithfully,


PP
PROVINCIAL HEAD: MPUMALANGA

DATE: 29/10/2014

ENVIRONMENTAL MANAGEMENT PROGRAMME

**RESIDENTIAL, BUSINESS AND INDUSTRIAL DEVELOPMENT ON
PORTIONS 13 & 61 AND THE REMAINDER OF PORTIONS 5, 27, 58 & 60
OF THE FARM LEEUWVALLEI 297 KT, GREATER TUBATSE
MUNICIPALITY, BURGERSFORT**

LEDET Reference: 12/1/9/2-GS35
Date of Authorization:
Date of EMP Submission:

Content

1. Background Information

- 1.1 Location and size
- 1.2 Project details
- 1.3 Details of the EAP/ECO

2. Objectives

3. Responsibilities

- 3.1 Applicant
- 3.2 Contractors and owners
- 3.3 Environmental Control Officer
- 3.4 Environmental Incidents

4. Legal Requirements

5. Environmental Monitoring and Reporting

6. Environmental Management Tables

Appendixes

1. Background Information

The EIA process for this project was undertaken by Afrika Enviro & Biology (EAP). The Environmental Management PROGRAMME (EMP) is formulated in order to manage and mitigate potential environmental impacts in order minimize their magnitude. This EMP must be submitted to the Provincial Authority for approval as partial requirement of the Environmental Authorization.

1.1 Location

The site is located to the north of Burgersfort CBD along the R37 to Polokwane and the R36 to Steelpoort (Appendix A-1). Central reference coordinates for the site are: **24°40.527"S; 30°18.477"E**.

1.2 Description of proposed activity

The applicant proposes to establish an industrial and residential township as well as business and municipal erven on the site. The developer envisage this as the second phase of development of the farm Leeuwvallei as the first phase has already been authorized and construction is in progress on Portions 5, 58, 60, 62 and the remainder of Portion 27 of the farm Leeuwvallei 297KT (Burgersfort X30; X31; X45; X46; X47). The operational phase will consist of residences, shops, small factories and workshops which will be built to the specifications of the Burgersfort Municipality and the South African National Building Regulations. The sizes of the houses, factories and workshops have not been finalized yet but will be of an acceptable and approved design. As this is a relatively large development, it will be divided into several phases, however the time span and structuring of the phases have not been finalized yet. The following activities that are listed in the EIA Regulations (2010) were applied for:

Listing Notices 1 & 2 (R.544 & R.545, 18 June 2010):

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description:
R. 544, 18 June 2010	9(a)(b)	The storm water and sewage infrastructure of the proposed township will consist of pipes with an internal diameter >0.36m and will have a peak throughput of 120L/s or more and will exceed a length of 1000m. The exact sizes of the pipes and flow rates will only be available with the completion of the services engineering report. This infrastructure will be installed within the road reserves of the township.
R. 544, 18 June 2010	11(vi) (x) (xi)	Construction and installation of infrastructure within 32m of the edge of a watercourse. The outer boundary of the main development area will be located within 32m of the outer edge of the 1:100 year flood lines of the Steelpoort and Spekboom Rivers. The following activities will also be established within this zone: 1) Bulk storm water outlets, 2) Waste water disposal outlets 3) Establishment of wetlands for waste water treatment and storm water attenuation 4) Water extraction pump stations

		<ul style="list-style-type: none"> 5) Sewage pump station/s 6) The construction of sport fields for recreational purposes >50m² 7) The construction of a taxi rank >50m² 8) The construction of earthen and gabion walls in order to protect the abovementioned structures from erosion and flooding
R. 545, 18 June 2010	15	<p>Development of vacant land where the total area to be transformed is more than 20ha. The combined properties are 170 ha in size and the project will entail development areas for the following activities:</p> <ul style="list-style-type: none"> 1) Business 2) Residential 3) Municipal 4) Industrial 5) Resort 6) Services infrastructure and roads <p>A conceptual layout plan is included with appendix 1. Take note that the final layout and number and types of erven will only be finalized once all consultations and recommendations of stakeholders and specialist studies have been evaluated and considered.</p>
R. 544, 18 June 2010	18(i)	<ul style="list-style-type: none"> 1) In order to protect the banks of the Steelpoort and Spekboom Rivers from erosion and to address present erosion, infilling and earthmoving will be necessary to rehabilitate erosion within the 1:100 years flood lines.
R. 544, 18 June 2010	22(i) (ii)	<p>The present zoning of the proposed township is agriculture. The proposed road network in the township will:</p> <ul style="list-style-type: none"> 1) Have a reserve wider than 13.5m and 2) Will be wider than 8m where no reserve exists <p>The planned roads will include 13m, 16m, 20m and 40m reserves.</p>

Listing Notice 3 (R.546, 18 June 2010):

Activity No (s) (in the notice):	No. of Geographical Area and Description as per project	Describe each listed activity as per project description:
6	(a)(ii) Proposed tourist facility within 100m of the edge of the Steelpoort River.	The applicant proposes to construct a tourist orientated facility that will sleep more than 15 people within 100m of the edge of the Steelpoort River on the remainder of portion 60 of the Farm Leeuwvallei 297KT.
14	(a)(i) The clearance of >5ha of indigenous vegetation on the remainder of portions 58 and 60 of the Farm Leeuwvallei 297KT.	The proposed township establishment will result in the clearance of >5ha of indigenous vegetation on the remainder of portions 58 and 60 of the Farm Leeuwvallei 297KT.

1.3 Details of the EAP/ECO

The lead EAP of project is Danie van der Walt (*M.Sc. Natural Sciences*) who has a scientific background and has completed EIA and SHEQ accredited courses as well as several accredited ecological and biological orientated courses. This EAP has more than 10 years experience in environmental management projects.

2. Objectives

The objectives of environmental management are to oversee that the potential environmental impacts are managed and mitigated to a satisfactory level and also to

ensure that the terms as set in the RoD are complied with. The environmental management plan (EMP) will form the basis as tool to measure compliance by the developer. It is also this tool that gives guidance during monitoring, auditing and taking corrective actions during its implementation, thereby ensuring continuous monitoring of the environment. An EMP is developed after an environmental assessment, depending on the level of such assessment. It can also be drawn after the authorization by the environmental authority, to incorporate the conditions thereof.

An EMP is normally implemented throughout the project life-cycle, i.e. during planning, construction, rehabilitation, operation and decommissioning, in order to minimize negative impacts and enhance positive ones. An effective EMP will be a practical working document that sets out the requirements and the goals required in mitigation. The main terms of the EMP will be detailed to achieve the following:

- To allocate responsibilities;
- To provide time frames.
- To define measures to be taken during planning, construction, and operation and decommissioning/closure;
- To define the actions needed to implement those measures;
- To describe how these will be achieved;

These objectives are defined and discussed in the following sections.

3. Responsibilities

3.1 Owner

The owner of the authorization is responsible for ensuring that the activity is implemented according to the requirements of the EMP. The owner must ensure that relevant professionals are appointed to perform functions as required by the authorities and legislation. The owner will have the following responsibilities:

- To ensure there is sufficient allocation of resources to the professional role players to perform their tasks in terms of the EMP;
- In event that the Environment is significantly negatively affected, the owner will be responsible for rehabilitation and restoring the affected areas to an acceptable level;
- The owner must include the EMP with all tender and contractual documents in order to ensure that all parties involved are bound to the terms of the EMP;
- The Environmental Control Officer (ECO) must be appointed oversee the environmental aspects of the development and ensure compliance with the EMP.
- The owner or developer must provide the contractors with a copy of the EMP and any other relevant documentation or supporting documents.

3.2 Contractors and owners

The contractor/owner is bound to the terms and conditions of the EMP by way of the contract with the developer. The contractor must be familiar with the terms of the EMP before commencement of the activities on site and must request clarification on any issues that be unclear. The main responsibilities of the contractor are as follows:

- The contractor/owner must comply with all the terms and conditions of the EMP and must ensure that all sub contractors are initiated with the EMP and comply with the terms of the EMP;
- The contractor/owner must attend a site inspection and orientation session with the ECO to identify and be informed of the sensitive elements of the site and take cognizance of the boundaries of the construction area. The ECO must point out any particular site-specific elements of importance;
- The contractor/owner must ensure that the construction crew attends an environmental briefing and training session presented by the ECO prior to commencing activities on site;
- The contractor/owner must adhere to all verbal all written orders given by the Environmental Control Officer (ECO) or other responsible persons (project manager or site engineer) in terms of the EMP;

3.3 Environmental Control Officer

The applicant must appoint an independent environmental officer (ECO) that will have the responsibility of implementing the EMP and ensuring compliance with the conditions of this environmental authorization. The main responsibilities and duties of the ECO are as follows:

- The priority of the ECO is to ensure that the site environment is not significantly negatively affected by the proposed activities and that minimal environmental damage is done during construction and adequate measures is emplaced to ensure that future operations and maintenance does not significantly impact on the environment.
- The ECO shall liaison with relevant authorities and keep record of all correspondence with external interested and affected parties;
- To ensure that the proponent, construction team, the operational and maintenance workers are acquainted with their responsibilities.
- To ensure compliance with regulatory authorities requirements.
- To respond to changes in the project implementation not considered during the assessment phase, and respond to unforeseen events.
- To verify environmental performance through information on impacts as they occur.
- To establish proper communication channels and provide feedback for continual improvement.

3.4 Environmental Incidents

In order for the EMP to be efficient in case of any environmental incidents, the following criteria should be adhered to:

- In event of a significant environmental incident occurring the contractor must notify the ECO and/or the authorities within 24 hours of occurrence;
- Investigate the cause of the incident and compile an environmental incident report;
- Take corrective measures to mitigate the incident;
- Rehabilitate any residual damage to the environment;
- Introduce alternative operating procedures and/or technology to prevent a recurrence of the incident;

4. Legal Requirements

Legislation and guidelines are considered during this process are as follows:

- Constitution of the Republic of South Africa (No 108 of 1996)
- National Environmental Management Act (No 107 of 1998)
- National Environmental Management: Waste Act (No 59 of 2008)
- National Environmental Management: Air Quality Act.
- National Environmental Management: Biodiversity Act (No 10 of 2004)
- National Environmental Management: Protected Areas Act (No 31 of 2004)
- Environmental Conservation Act (No 73 of 1989)
- National Water Act (No 36 of 1998)
- Conservation of Agricultural Resources Act (No 43 of 1983)
- National Heritage Resources Act (No 25 of 1999)
- Occupational Health and Safety Act (No 85 of 1993)
- Promotion of Access to Information Act (2000)
- National Roads Act (No. 7. 1998)
- Advertising on Roads and Ribbon Development Act (No. 21, 1940)
- EIA regulations and guidelines (2010)
- All relevant Provincial regulations and Municipal bylaws

5. Environmental Monitoring and Reporting

The ECO appointed on behalf of the owner will be responsible to monitor compliance with the conditions of the authorization, environmental legislation and this EMP for the duration of the planning, construction and rehabilitation phases of the project and must submit compliance reports on a monthly timeframe. After completion of the rehabilitation phase a post construction audit must be carried out and submitted. The services of the ECO will terminate as soon as an acceptable level of rehabilitation has been reached.

6. Environmental Management Tables

The EIA report and specialist reports were used as basis in order to compile the EMP for this project. The impacts, objectives, mitigation measures, time frames (phases) and responsibilities are condensed into the EMP tables for easy reference. These tables list the key activities and relate these activities with resulting environmental impacts identified during the EIA process as well as the conditions included with the authorization granted by the competent authority.

Table 1 Compliance with legislation and regulatory authorities

Relevance		Compliance with regulatory authorities. Non compliance may result in legal liabilities.	
Environmental Statement			
Ref:	Responsibility	Mitigation	Phase
1.2	Applicant	All requirements of the National Water Act (1998) and the South African Heritage Resources Act (1999) must be complied with.	All phases
1.3	Applicant	The owner is responsible for compliance with the provisions for Duty of Care and Remediation of environmental damage as contained in section 28 of NEMA.	All phases

Table 2 Protection of sensitive areas and habitats

Impact		Inadequate planning and the construction activities may cause unnecessary environmental damage and the degradation and destruction of sensitive areas and habitats.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
2.1	Development Planner	Construction activities must remain within the defined development areas and no disturbance to the natural environment is allowed outside thereof.	Planning Construction
2.2	Development Planner	Sensitive habitats (riparian zones; closed woodland) essential for the maintenance of ecological functions and biodiversity must be protected/conserved.	Planning Construction
2.3	ECO	The riparian zones must be marked out and these areas are out of bounds for any unauthorized activities which may cause a significant impact thereupon: a) No stockpiles, untreated effluent, refuge are allowed within these zones. b) These zones are out of bounds for unauthorized personnel and contractors.	Planning Construction
2.4	ECO	Before construction commences the building line restrictions as required by the above conditions must be demarcated where there is a chance that it may be affected.	Planning
2.7	Engineer	The storm water management plan must be followed and mitigation must be constructed as stipulated in Table 5 in order to protect the wetland and riparian areas.	Planning
2.10		Known heritage sites must be protected and managed according to the specialist heritage report. Destruction permits will have to be obtained in the case that any sites are to be disturbed or destroyed.	Planning

Table 3 Management of construction camp and labor discipline

Impact		<ul style="list-style-type: none"> ○ The establishment of the construction camp on an inappropriate site may cause damage to the environment. ○ The construction camp may cause pollution due to sewage, littering and domestic waste which may enter the environment. ○ The spread of uncontrolled fires is dangerous to people, property and the environment. ○ Poor discipline and long working hours will impact on the social integrity of the local area. 	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
3.1	Contractor	Prior to establishing the construction camp, the contractor shall produce a plan showing the positions of all structures, lay-down yards and other infrastructure for approval by the ECO.	Planning
3.2	Contractor	Prior to the commencement of construction activities, the contractor and construction personnel must be initiated with regards to the conditions of the environmental authorization as well as the EMP.	Planning Construction
3.3	Contractor	The construction camp must have a minimum buffer zone of 50m from the 1:100 year flood line, wetlands, dams and other sensitive habitats.	Planning Construction
3.4	Contractor	The construction camp must be fenced off and contractors and the personnel's movements must be limited to the construction sites only. This must be enforced in terms of appointment contracts.	Construction
3.5	Contractor	No indigenous trees or shrubs will be felled or damaged for the purpose of obtaining firewood or construction material.	Construction
3.6	Contractor	Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowners/tenants/persons lawfully living in the vicinity, will be kept to a minimum.	Construction
3.7	Contractor	All personal washing operations will take place at a location within the construction camp perimeter, where wastewater can be disposed of in an acceptable manner.	Construction
3.8	Contractor	A designated place for food preparation and eating must be established at the construction camp.	Construction
3.9	Contractor	Dry chemical toilets must be made available at a ration of 1 toilet per 10 staff, within the campsite perimeter and effluent must be disposed off site at an approved municipal facility.	Construction
3.10	Contractor	Fires will only be allowed on pre designated sites approved by the ECO areas and in facilities or equipment specially constructed for this purpose.	Construction
3.11	Contractor	If required by applicable legislation, a firebreak shall be cleared around the perimeter of the camp and office sites.	Construction
3.12	Contractor	Construction activities must be limited to normal working hours (7h00-17h00).	Construction

Table 4 Waste management and disposal

Impact		Inadequate waste disposal will result in environmental pollution.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
4.1	Contractor	An adequate number of appropriate refuse bins must be provided at the construction camp and sites for refuse and solid waste. These bins must be emptied on a daily basis into an appropriate container bin that should be located in a designated waste storage area. This waste should be removed regularly to a registered dumping site for disposal.	Construction
4.2	Contractor	The contractor may not dispose of any waste and/or construction debris by burning or by burying.	Construction
4.3	Contractor	All general construction waste such as packaging and off-cuts, empty cement bags must be disposed to central collection points on a daily basis.	
4.4	Contractor	A specific site should be allocated for the collection of construction waste e.g. empty cement bags, etc. A low temporary fence may be erected around such a site in order to contain the waste and assist the effective removal thereof from the site. Construction waste should be removed on a weekly basis.	Construction
4.5	Contractor	The contractor must maintain good housekeeping practices to ensure that the construction site is kept tidy and litter free.	Construction
4.6	Contractor Owners	All general and construction waste must be disposed of at a permitted landfill site.	Construction Operational

Table 5 Protection of water resources and soil

Impact		<ul style="list-style-type: none"> o Soil and water resources may be polluted by various activities during the construction and operational phases of the proposed development if not properly managed. o Topsoil may be lost if not handled and stockpiled with care. o Inadequate storm water management will cause erosion of topsoil and degradation of water courses and wetlands. 	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
5.1	Contractor	Pollution of any kind or reason is strictly prohibited. Reasonable precautions must be taken to prevent the pollution of soil and surface or groundwater on and adjacent to the site. It is the developer's responsibility to rectify and address any pollution caused by the activities on site.	Construction
5.2	Contractor	No natural water resource is to be used for washing, the cleaning of tools or any other apparatus or the dumping of refuse and waste. This includes for purposes of bathing, or the washing of clothes etc.	Construction
5.3	Contractor	Adequate sanitation facilities and water supplies must be available to the construction personnel.	Construction
5.4	All	No water is allowed to go to waste. This resource must be used responsibly and reticulation pipes, taps and reservoirs must be monitored for leaks.	All phases
5.5	Contractor	Topsoil shall be removed from all areas where physical disturbance of the surface will occur.	Construction
5.6	Contractor	Topsoil must be stockpiled separately for rehabilitation later and	Construction

		may not be used as filling material. Topsoil stockpiles are not to exceed 5m in height.	
5.7	Contractor	Soil that has become compacted as result of construction activities must be loosened to allow for seed germination.	Rehabilitation
5.8	Developer	Establishment and use of sand/gravel/soil borrow pits must be authorized and comply with relevant legislation.	Construction
5.8	Contractor	During construction, all areas susceptible to erosion must be protected by the installation of the necessary, temporary and permanent drainage works as soon as possible. a) The drainage diversion system should also prevent run-off from areas of potential pollution. b) There should be monitoring and inspection of the site's drainage system to ensure that the water flow is unobstructed. c) Measures must be taken to prevent ponds of surface water.	Construction
5.9	Developer Contractor	Prevent soil erosion and correct any cause of erosion at the onset thereof in the most appropriate manner.	Construction
5.10	Developer	Existing signs of erosion must be rehabilitated using interventions such as gabions or geotextile fabric and ingenious methods of landscaping.	Construction
5.11	Developer	Areas with a high potential of erosion must be protected by the, the use of groundcover or grass and the construction of cut of berms, and terracing should be applied to steep slopes.	Construction Operational
5.12	Developer	A detailed storm water management plan must be formulated and be approved by DWA before commencement of the construction phase. This plan must have the have the following objectives: a) The increase in peak flows must be mitigated by retaining storm water until after peak flows e.g. by method of attenuation dams; b) Storm water management measures must be designed to promote infiltration and to slow the rate of flow before water is released into the natural drainage areas (wetlands and watercourses); c) No surface storm water may be channeled directly into any water course or wetland and the point of overland storm water discharge must be located 30m away from watercourses and wetlands and must occur over areas with a minimum vegetation cover of 80%; d) The rate of storm water runoff must be reduced by mechanisms such as the construction of earth berms and grass swales. Where erosion at the base of swales or channels and at pipe/culvert outlets is likely to occur, inverts must be armoured to obviate scour and where appropriate, swales must be vegetated with grass or be lined; e) Infiltration at storm water outlets will be promoted by gabion type mattresses.	Construction
5.13	Contractor	Surface water rich in sediment or pollutants must be prevented from entering any water course or wetland and mechanisms for dissipating water energy (such as those listed in the above cell) must be implemented at the inception of the construction phase	Construction
5.14	Owners	Rain water runoff from roofs must be directed into gardens or rainwater tanks as opposed to storm water drains.	Operational

Table 6 Management of construction vehicles, stockpiles and construction sites

Impact		<ul style="list-style-type: none"> ○ Poorly maintained vehicles and the servicing of construction vehicles may cause environmental pollution. ○ Inadequate stockpiling, handling and storage of building materials may cause degradation of the environment and pollution. ○ Improper storage and handling of hazardous substances pose a health threat. 	
Environmental Statement			
Ref:	Responsibility	Mitigation	Phase
6.1	Contractor	There must be proper handling, storage and control of all materials, fuels and chemicals that could potentially leak or spill and thereby pollute the environment.	Construction
6.2	Contractor	The surface at the servicing and refueling areas must be protected against pollution caused by spills and/or tank overfills. The protection used must be impervious so as to prevent any soil contamination.	Construction
6.3	Contractor	Refueling, maintenance and repair work of any vehicles or machinery may only be carried out at the construction site within an area designated for this purpose, equipped with the necessary pollution containment measures. In the event of a breakdown or emergency repair, any accidental spillage must be cleaned up and removed immediately.	Construction
6.4	Contractor	All construction equipment and machinery must be maintained in good order. Regular checks must be undertaken for leaks. Any potential causes of pollution must be immediately repaired, and spills must be cleaned immediately. No spills may be hosed down into a storm water drain or sewer, or into the surrounding natural environment. All contaminated soil is to be excavated to the depth of contaminant penetration, placed in 200 liter drums and removed to a registered landfill site.	Construction
6.6	Contractor	Construction vehicles have to be parked in the construction camp area after working hours.	Construction
6.8	Contractor	Tar, oil based products and chemicals should be applied according to the manufacturer's specifications. Care should be taken to identify signs of pollution and suitable methods of decontamination should be used.	Construction
6.9	Contractor	The mixing of cement, concrete, chemicals (e.g. solvents, asphalt, sealants, adhesives, paints, etc.) will be carried out in designated areas on concrete aprons, protected linings, and provision will be made to contain spillages or overflows.	Construction
6.10	Contractor	Oil residue shall be treated with oil absorbent product such as Drizit, or a similar product, and this material must then be moved to an approved waste site.	Construction
6.11	Contractor	Stockpiles and storage yards must be demarcated in areas already disturbed or where they will cause minimal disturbance and must be within the boundary of the construction camp site.	Construction
6.12	Contractor	Construction activities and the use of machinery must be respectful of the environment. No unnecessary vegetation clearing, excavations or temporary roads is allowed.	Planning
6.13	Contractor/ECO	All temporary roads for construction or any other purposes must be planned and approved by the ECO before use.	Construction
6.14	Contractor/ECO	Any complaints received from the public must be addressed and resolved to the satisfaction of all concerned.	Construction

6.15	Contractor	Warning signs must be used to warn the general public regarding dangers around the construction sites.	Construction
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Table 7 Management of noise and dust

Impact		Noise and dust pollution can be caused by various activities during both the construction and operational phases of the development if not properly managed.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
7.1	Contractor	Noise disturbance or any other form of disturbance that may have an affect on the persons lawfully living in the vicinity must be kept to a minimum and mitigated.	Construction Operational
7.2	Contractor	Machinery such as pumps/compressors should be placed in a manner that will allow the noise generated from them to be directed away from the closest neighbors.	Construction
7.3	Contractor	Stringent measures must be applied to minimize the generation of dust from the site or construction vehicles.	Construction Operational
7.4	Developer	A speed limit must be enforced to limit the levels of dust pollution.	Construction

Table 8 Visual Aspects

Impact		The construction of the proposed development may impact negatively on the visual character of the area.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Compliance Rating
8.1	Contractor	The contractor must ensure that the site is kept tidy at all times, that sufficient refuse bins are provided, and that they are emptied regularly. Refuse or building rubble generated on the premises must not be deposited on adjacent properties, road verges or open spaces.	Construction
8.2	Developer	Disturbed and open areas must be rehabilitated and re-vegetated as soon as possible after construction. No unnecessary removal of indigenous vegetation should be allowed, but should rather be incorporated into the landscaping design.	Operational

Table 9 Biodiversity & Ecology: Flora

Impact		Activities associated with the construction and operation of the township may have a negative impact on natural vegetation.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Compliance Rating
9.1	Developer	Use only indigenous vegetation for landscaping. A list of locally indigenous species must be compiled and distributed to all home owners as a guideline and the estate management must ensure that this guideline is complied with.	Rehabilitation Operational
9.2	Developer	Implement a long-term management plan for the eradication and control of invasive plants and alien plants weeds.	All phases
9.3	Developer	Vegetation clearance must be kept to a minimum and re-vegetation must occur as soon as possible.	Construction Rehabilitation

9.4	Developer	Any evidence of plant theft (especially protected species) and illegal wood harvesting must be followed up with prosecution and penalties levied on the person/s involved company.	Construction
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Table 10 Biodiversity & Ecology: Fauna

Impact		Activities associated with the construction and operation of the township may have a negative impact on natural fauna.	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Compliance Rating
10.1	Developer	No wild animal may under any circumstance be hunted, snared, captured, injured or killed.	Construction Operational
10.2	Contractor	Trenches and excavations must be inspected daily to monitor for trapped animals.	Construction
10.3	Developer	Do not make use of any pesticides, unless approved by the management.	Construction Operational
10.4	Contractor	The open spaces and natural areas must be inspected regularly for snares, traps and evidence of poaching.	Construction

Table 11 Rehabilitation

Impact		Disturbed sites have the potential to cause erosion and environmental degradation if not appropriately rehabilitated	
Environmental Statement			
Ref:	Responsibility	Mitigation and objectives	Phase
11.1	ECO	The Environmental Control Officer must ensure that all temporary structures, roads, materials, waste and facilities used for construction activities are removed upon completion and affected areas must be rehabilitated.	Rehabilitation
11.2	ECO	With completion of construction a proper site cleanup must be undertaken to ensure that all building rubble, excess materials, concrete spills and litter are collected and disposed of in the correct manner.	Rehabilitation
11.3	Contractor	All uneven surfaces must be leveled and excavations must be backfilled. Soils that have become compacted during the construction phase must be loosened to allow for vegetation growth.	Rehabilitation
11.4	Contractor	Bare soil surfaces must be protected from erosion.	Rehabilitation
11.5	ECO	If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the area must be prepared and planted with indigenous trees or an appropriate grass seed.	Rehabilitation