

BASIC ASSESSMENT REPORT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:
Application Number:
Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
11. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

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

YES	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest"

for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

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

The applicant is in the process of developing and expanding on their mining activity and requires new power line, from the current power line network towards the East of the expansion site of the mine , to supplement the power required for the extension activities. This will also require a small substation.

The requirement for a new substation, power output of more than 10mw but less than 20mw, that will form part of the power network, new power line, is required as part of the mines expansion plans.

The new power line will be a 132kv line with mostly monopole structures used for the power line, See Appendix C

The new sub station will include the normal transformer and electrical infrastructure as required. The sub station will be close to the current expansion site, see appendix B for layout details.

Currently Heric Ferro chrome's mining activity at their current site is reaching its completion stage. The mine will look at expanding their activities to ensure and extend the mines life expectancy. The project is a 2 billion rand expansion in total with the power line section about 2 to 3 million rand. The expansion will ensure the job security of the current employees and will create about 800 new jobs. The financial input to the province and country will be vast

The project can be described as follows:

Both the switching Station and the Sub Station is on the applicants properties.

The development of a Switching station 1X 132kv power line and a sub station close to the new mining expansion site will be required. Power will be obtained from current Eskom power infrastructure within the are at Crocette. See PP report for meeting feedback with Eskom and Heric.

Note, the Bokfontein OHL will be constructed to 132-kV specs but operated at 88-kV. Same apply to the substation. This allows upgrade in future to 132-kV if required.

88-kV SWITCHING STATION

An 88-kV Switching station is to be established on the Crocette site, just off from the current Eskom line.

Size of switching station site will be approximately 30-m x 30-m. The switching station will be configured as follows::

- Turning in the existing 88-kV OHL into the switching station,
- Establish 2 x 88-kV feeder bays to accommodate the turned in circuits,

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

- Establish an 88-kV busbar, 2 Bays, equipped with busbar voltage transformers
- Establish a 3rd outgoing feeder bay to supply the 132-kV overhead (to be operated at 88-kV) line to Bokfontein.
- Each feeder bay will consist of the following, equipment nominated in sequence as seen from the busbar,
 - 88-kV Busbar Isolator, 3 phase;
 - 88-kV circuit breaker, 3 phase;
 - 88-kV current transformers, 3 x single phase units;
 - 88-kV Line isolator, 3 phase
 - 88-kV Surge arresters, 3 x single phase units;
 - Control room, brick built, size approx 6-m x 5-m
 - Entire yard fenced, surface covered with 19-mm stone.

From the switching station 1x 132kv line will run to the new sub station site as indicated in the BAP report alternatives. The pylons or tower will consist on monopole design, \pm 20m high. See Appendix C for example

The 88(132-kV)/11-kV SUBSTATION

An 88/11-kV, 20-MVA Substation is to be established on the Bokfontein site close to proposed expansion areas of the mining activities. The site will be a substation site of approximately 70-m x 45-m.

The substation will be configured as follows:

- Turning in the 132-kV OHL into the substation,
- Establish 1 x 88-kV feeder bay to accommodate the turned in circuit, consisting of
 - 88-kV Line isolator, 3 phase
 - 88-kV Surge arresters, 3 x single phase units;
- Establish an 88-kV busbar, 3 Bays, equipped with busbar voltage transformers
- Establish 2 x 88/11-kV, 10-MVA transformer bays, each bay consisting of
 - 88-kV Busbar Isolator, 3 phase;
 - 88-kV circuit breaker, 3 phase;
 - 88-kV current transformers, 3 x single phase units;
 - 88-kV Surge arresters, 3 x single phase units;
 - 88/11-kV, 10-MVA Transformer
- 11-kV Neutral earthing compensator with 100-kVA, 11-kV/400-V auxiliary transformer (NECRT)
 - Establish an Control room and 11-kV Switch house, brick built, size approx 22-m x 9-m
 - Control room equipped with protection and control panels, AC & DC DB's, Nicad battery charger and batteries
 - Switch house equipped with a 16 x 11-kV Panel metal clad switchboard

The entire substation will be fenced with palisade and the surface covered with 19-mm stone.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

Alternative

Hernic Ferrochrome requires power supply to a new section of the mining area. The power supply will be required for the expansion of the mine activities and will increase employment opportunities within the area. The expansion will also ensure the continued operations of the mine. Included in the power supply expansion is the following:

- Switching Station
- New 132 kv power line; and
- 10mw Sub station (the sub station will be smaller than 20nm).

Two alternative sites for the sub station was investigated. The sites depended on the outcome of the final power line alignment. The sub station sites are on the applicants property and are both similar in ecological zones.

Various alternative power line alignments were investigated. The final three is indicated in this report see Figure 1.

Alternative 1

This alternative runs along the N4 highway for most of the route. The line turns to the north and east to connect with the southern sub station alternative. The policy of placing impact be it roads or power line close to each other was favoured by the visual and avi-funa specialists. This route circumvented the agricultural areas as well as wetland areas which is favoured by birds. Although the heritage specialist found graves on this route the spanning of the power line would ensure that none of the graves will be damaged.

The N4 high way servitude, which had to be taken into account when determining the final routing on this alignment meant that the power line had to be moved to the north and into agricultural areas.

Alternative 2 – Preferred Alternative

This alternative followed the secondary road along the northern boundary of the applicants properties. It follows the route all the way to the east of the site and then turns south until it connects with the northern sub station site. There is currently smaller power lines and telephone lines that also runs along the road. This alternative also follows the policy of placing impacts together. This alternative is preferred by the vegetation specialist and also acceptable to the visual specialist. It will span the well known water furrow, as indicated in the heritage assessment, and will not damage the water furrow as a 10m buffer has been placed on the water furrow.

This alternative was also requested by one of the I&AP's see PP report appendix H

Alternative 3

This alternative followed the secondary road for a while and then turned south following the water furrow and then turned west to connect with the northern substation. This alignment crossed over several agricultural areas but also across already mine impacted areas. The route did however cut across areas that in the future could be rehabilitated to agricultural areas and this would have had power lines running through agricultural lands and create farming difficulty i.e. with pivot irrigation etc.

No Go

The required power lines are not only for the expansion of the mining activity but more important will ensure that the mines life expectancy is extended. The No Go option is not considered as the impacts of the proposed activities are limited and can be mitigated. The preferred option of the new proposed power lines and the sub station site will ensure that the positive impact of the extension of the mines life will outweigh the negative impacts. Currently the mine employs over 200 people. The expansion will ensure job security for these employees as well as create a possible 800 new employment opportunities. The new power line and sub station will not go through areas that have not been impacted on by either agriculture, infrastructure or mining in the past.

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Figure 1 Alternative power line alignment and substation sites



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

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative: Switching Station

Alternative S1² (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):

Longitude (E):

25°	41' 1.65	27°	46' 25.94
0	'	0	'
0	'	0	'

Alternative: Sub Station

Alternative S1³ (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):

Longitude (E):

25°	41' 32.21	27°	43' 38.84
25°	41' 42.29	27°	43' 39.59
0	'	0	'

In the case of linear activities:

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only route alternative)

See Next Page for full position points

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27°	43' 36.826	25°	41'30.654
0	'	0	'
27°	44'31.986	25°	40'43.700

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

0	'	0	'
0	'	0	'
0	'	0	'

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

0	'	0	'
0	'	0	'
0	'	0	'

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

² "Alternative S.." refer to site alternatives.

³ "Alternative S.." refer to site alternatives.

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EIA alternatives	E_decimal degrees	S_decimal degrees	Edg	Emin	Esec	Sdeg	Smin	Ssec	
Preferred Alternative	27.726896	25.69184843	27	43	36.826	25	41	30.654	Start
Preferred Alternative	27.72703656	25.68959551	27	43	37.332	25	41	22.544	
Preferred Alternative	27.72717712	25.6873426	27	43	37.838	25	41	14.433	
Preferred Alternative	27.72731768	25.68508969	27	43	38.344	25	41	6.323	
Preferred Alternative	27.72838009	25.68316118	27	43	42.168	25	40	59.380	
Preferred Alternative	27.73020513	25.68176536	27	43	48.738	25	40	54.355	
Preferred Alternative	27.73261262	25.68118858	27	43	57.405	25	40	52.279	
Preferred Alternative	27.73502009	25.68061176	27	44	6.072	25	40	50.202	
Preferred Alternative	27.73742754	25.68003491	27	44	14.739	25	40	48.126	
Preferred Alternative	27.73983496	25.67945802	27	44	23.406	25	40	46.049	
Preferred Alternative	27.74221822	25.6788056	27	44	31.986	25	40	43.700	Finish
Alternative 3	27.77380643	25.68386799	27	46	25.703	25	41	1.925	
Alternative 3	27.77140389	25.68333677	27	46	17.054	25	41	0.012	
Alternative 3	27.7690217	25.68267934	27	46	8.478	25	40	57.646	
Alternative 3	27.76663953	25.68202186	27	45	59.902	25	40	55.279	
Alternative 3	27.76425738	25.68136435	27	45	51.327	25	40	52.912	
Alternative 3	27.76187527	25.6807068	27	45	42.751	25	40	50.544	
Alternative 3	27.75949317	25.6800492	27	45	34.175	25	40	48.177	
Alternative 3	27.75716307	25.67988043	27	45	25.787	25	40	47.570	
Alternative 3	27.7547802	25.67922519	27	45	17.209	25	40	45.211	
Alternative 3	27.75239735	25.67856992	27	45	8.630	25	40	42.852	
Alternative 3	27.75001453	25.6779146	27	45	0.052	25	40	40.493	
Alternative 3	27.74756014	25.6777705	27	44	51.217	25	40	39.974	
Alternative 3	27.74510946	25.67808704	27	44	42.394	25	40	41.113	
Alternative 3	27.74270329	25.6786681	27	44	33.732	25	40	43.205	
Alternative 3	27.74267732	25.67867437	27	44	33.638	25	40	43.228	
Alternative 3	27.74403921	25.68056351	27	44	38.541	25	40	50.029	
Alternative 3	27.74540114	25.68245263	27	44	43.444	25	40	56.829	
Alternative 3	27.74558313	25.6845526	27	44	44.099	25	41	4.389	
Alternative 3	27.7433241	25.68550221	27	44	35.967	25	41	7.808	
Alternative 3	27.74106503	25.68645179	27	44	27.834	25	41	11.226	
Alternative 3	27.73880593	25.68740133	27	44	19.701	25	41	14.645	
Alternative 3	27.73654679	25.68835084	27	44	11.568	25	41	18.063	
Alternative 3	27.73428761	25.68930032	27	44	3.435	25	41	21.481	
Alternative 3	27.73269497	25.69100022	27	43	57.702	25	41	27.601	
Alternative 3	27.73209752	25.69171267	27	43	55.551	25	41	30.166	
Alternative 3	27.72974198	25.69244526	27	43	47.071	25	41	32.803	
Alternative 3	27.7273065	25.69267147	27	43	38.303	25	41	33.617	
Alternative 1	27.73209752	25.69171267	27	43	55.551	25	41	30.166	
Alternative 1	27.73444997	25.69097203	27	44	4.020	25	41	27.499	
Alternative 1	27.73680239	25.69023134	27	44	12.489	25	41	24.833	
Alternative 1	27.73919093	25.68960278	27	44	21.087	25	41	22.570	
Alternative 1	27.74155509	25.6894795	27	44	29.598	25	41	22.126	
Alternative 1	27.74374385	25.69055593	27	44	37.478	25	41	26.001	
Alternative 1	27.74610513	25.68987974	27	44	45.978	25	41	23.567	
Alternative 1	27.74847901	25.68919918	27	44	54.524	25	41	21.117	
Alternative 1	27.75087582	25.68858651	27	45	3.153	25	41	18.911	
Alternative 1	27.75327266	25.687974	27	45	11.782	25	41	16.706	

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Alternative 1	27.75568762	25.68742301	27	45	20.475	25	41	14.723	
Alternative 1	27.75810649	25.68688715	27	45	29.183	25	41	12.794	
Alternative 1	27.76053909	25.68640417	27	45	37.941	25	41	11.055	
Alternative 1	27.76297167	25.68592115	27	45	46.698	25	41	9.316	
Alternative 1	27.76540422	25.68543809	27	45	55.455	25	41	7.577	
Alternative 1	27.76783676	25.68495499	27	46	4.212	25	41	5.838	
Alternative 1	27.77028548	25.68455586	27	46	13.028	25	41	4.401	
Alternative 1	27.77275462	25.68426261	27	46	21.917	25	41	3.345	

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4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: Switching Station

Alternative A1⁴ (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)
 or, for linear activities:

Size of the activity:

900m ²
m ²
m ²

Alternative: Sub Station

Alternative A1⁵ (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)
 or, for linear activities:

Size of the activity:

3500m ²
3500m ²
m ²

Length of the activity:

Alternative:

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

5801m
4900m
6110m

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

The servitude and right of way is 32m

Alternative:

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

Size of the site/servitude:

185632m ²
156800m ²
195520m ²

5. SITE ACCESS

Does ready access to the site exist?

YES	NO
m	

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

Describe the type of access road planned:

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

6. SITE OR ROUTE PLAN

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

⁴ "Alternative A.." refer to activity, process, technology or other alternatives.

⁵ "Alternative A.." refer to activity, process, technology or other alternatives.

The site or route plans must indicate the following:

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

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 45 mil
What is the expected yearly income that will be generated by or as a result of the activity?	R 30mil
Will the activity contribute to service infrastructure?	YES NO
Is the activity a public amenity?	YES NO
How many new employment opportunities will be created in the development phase of the activity? Contracted out to already established contractor	Limited
What is the expected value of the employment opportunities during the development phase?	Limited
What percentage of this will accrue to previously disadvantaged individuals?	80%

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How many permanent new employment opportunities will be created during the operational phase of the activity?	650
What is the expected current value of the employment opportunities during the first 10 years?	R15mil
What percentage of this will accrue to previously disadvantaged individuals?	80% +

9(b) Need and desirability of the activity

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

NEED:			
1.	Was the relevant provincial planning department involved in the application?	YES	NO
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	NO
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO
6.	Will the proposed land use / development set a precedent?	YES	NO
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	NO
2.	Explain: The infrastructure in the long run will remain which will ensure power supply to a bigger area than currently is the case. In the short term the activity will bring income to the local municipality and will bring more employment opportunities to the area.		

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3.	Will the land use / development have any benefits for the local communities where it will be located?	<input checked="" type="checkbox"/>	NO
4.	Explain: 650 new jobs will be created and the job security of 2000 current jobs will be ensured		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act, 1998 (NEMA) (Act No 107 of 1998)	Department of Environmental Affairs	June 2010
National Heritage Resources Act of 1999 (Act No. 25 of 1999)	SHARA	1999
National Water Act of 1998 (Act No. 36 of 1998);	Department of Water Affairs	2010
The National Environmental Management Biodiversity Act of 2004 (Act No. 10 of 2004);	Department of Environmental Affairs	

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? YES NO

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

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

All construction waste must be disposed of at a licensed waste disposal site for construction material. The closes site will be in Brits on the R511

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

Will the activity produce solid waste during its operational phase? YES NO

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

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

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

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the YES NO

relevant legislation?

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

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

YES	NO
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If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

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

YES	NO
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If yes, what estimated quantity will be produced per month?

m ³	
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Will the activity produce any effluent that will be treated and/or disposed of on site?

Yes	NO
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

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

YES	NO
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If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

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11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
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If yes, is it controlled by any legislation of any sphere of government?

YES	NO
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Limited dust during the digging of the holes for the pylons could be emitted. As well as during the clearing of the area for the sub station. There is however, due to current mining and agricultural activities, a lot of dust emissions in the surrounding area already and the contributions that could be made by the construction of the new power line and substation is negligible and of short term importance.
--

11(d) Generation of noise

Will the activity generate noise?

YES	NO
----------------	----

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

YES	NO
-----	---------------

BASIC ASSESSMENT REPORT

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

If no, describe the noise in terms of type and level:

Limited noise during the digging of the holes for the pylons could be emitted. As well as during the clearing of the area for the sub station. There is however, due to current mining and agricultural activities, a lot of noise emissions in the surrounding area already and the contributions that could be made by the construction of the new power line and substation is negligible and of short term importance.

12. WATER USE

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

municipal	water board	Groundwater	river, stream, dam or lake	other	the activity will not use water <input checked="" type="checkbox"/>
-----------	-------------	-------------	-------------------------------	-------	---

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:

litres	
YES	NO

Does the activity require a water use permit from the Department of Water Affairs?

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

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

N/A

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

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

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

<input checked="" type="checkbox"/>	NO
-------------------------------------	----

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

BASIC ASSESSMENT REPORT

All specialist reports must be contained in Appendix D.

Property description/physical address:	The farm Derdepoort See list in appendix I (Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.
	See appendix I
	In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.
Current land-use zoning:	Agriculture and special for mining In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?
Must a building plan be submitted to the local authority?

YES	NO
YES	NO

Locality map: An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- an indication of the project site position as well as the positions of the alternative sites, if any;
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50	-	1:20	-	1:15 – 1:10	1:10	-	1:7,5 – 1:5	Steeper than 1:5
	1:20		1:15			1:7,5			

Alternative S2 (if any):

Flat	1:50	-	1:20	-	1:15 – 1:10	1:10	-	1:7,5 – 1:5	Steeper than 1:5
	1:20		1:15			1:7,5			

Alternative S3 (if any):

Flat	1:50	-	1:20	-	1:15 – 1:10	1:10	-	1:7,5 – 1:5	Steeper than 1:5
	1:20		1:15			1:7,5			

2. LOCATION IN LANDSCAPE

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

- 2.1 Ridgeline - None
- 2.2 Plateau - None
- 2.3 Side slope of hill/mountain - None
- 2.4 Closed valley - None
- 2.5 Open valley - None
- 2.6 Plain - yes
- 2.7 Undulating plain / low hills - None
- 2.8 Dune - None
- 2.9 Seafront - None

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

BASIC ASSESSMENT REPORT

Natural veld - good condition ^E	Natural veld with scattered aliens ^E 50%	Natural veld with heavy alien infestation ^E - 4%	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land - 36%	Paved surface	Building or other structure - 8%	Bare soil - 2%

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area – Yes there is a small natural area remaining towards the east of the site. The infrastructure and power lines will not have a direct impact on this area as it circumvent the area to the South. There are many smaller areas in the vicinity but these are very fragmented and of low ecological status. The area has a history of agriculture and mining activities that has mostly replaced the natural areas.

5.2 Low density residential – Yes there are on the agricultural farms limited residential units that are rented out and also where farm workers reside. None of the infrastructure will impact on these units except for a visual impact by the power lines. The preferred power line does not go close to any of these units

5.3 Medium density residential - None

5.4 High density residential - None

5.5 Informal residential - None

5.6 Retail commercial & warehousing - None

5.7 Light industrial - None

5.8 Medium industrial ^{AN} - None

5.9 Heavy industrial ^{AN} Yes there are on site mining activities as well as towards the north and south of the site mining activities mixed with agricultural activities.

5.10 Power station - None

5.11 Office/consulting room – There is a small recreational diving activity with offices about 250m north of the proposed power line. Other than visual there will be no effect on these building. Heric's expansion offices is towards the west of the power line and sub station. There will be no effect on these from the new infrastructure.

5.12 Military or police base/station/compound - None

5.13 Spoil heap or slimes dam^A - On Site as part of the current mining activities in the area and at the start point, to the east, there are heaps from other mining activities. These will not be effected by the new power line or infrastructure developments

5.14 Quarry, sand or borrow pit – None currently in used.

5.15 Dam or reservoir – Yes towards the north of the proposed alternative is old mine quires that is now filled with water. The area is used as a recreational diving site. There are also other water bodies and the effect of the power lines on these will be limited to water birds as indicated in the specialist study. Mitigation is to place bird flappers on the power line close to these water bodies.

5.16 Hospital/medical centre - None

5.17 School - None

5.18 Tertiary education facility - None

- 5.19 Church- None
- 5.20 Old age home- None
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N- None
- 5.23 Railway line^N- None
- 5.24 Major road (4 lanes or more)^N – Yes the N4 highway runs along the southern side of the site and one of the alternatives follow the N4 high way. There should not be any effect from the proposed development if the correct servitude legislation is followed.
- 5.25 Airport^N- None
- 5.26 Harbour- None
- 5.27 Sport facilities- None
- 5.28 Golf course- None
- 5.29 Polo fields - None
- 5.30 Filling station^H - None
- 5.31 Landfill or waste treatment site- None
- 5.32 Plantation- None
- 5.33 Agriculture – the area is a combination of mining and agriculture activities. The proposed alternative will follow current infrastructure and have a limited impact on agricultural activities. All attempts have been made to limit the impact on agricultural activities in the area
- 5.34 River, stream or wetland – Yes there are small drainage lines towards the east of the area. Both the switching station and sub station will not be close to any drainage areas. The power line will be spanned so as to avoid these areas.
- 5.35 Nature conservation area - None
- 5.36 Mountain, koppie or ridge- None
- 5.37 Museum- None
- 5.38 Historical building - None
- 5.39 Protected Area- None
- 5.40 Graveyard – Yes the heritage report give a clear indication as to where these graves are found. One of the alternatives does go across this area, but this is not the preferred alternative. The graves should not be impacted as the cable span will be across the graves.
- 5.41 Archaeological site – Yes on site there is a water course (irrigation channel) as indicated in the heritage assessment report. A buffer of 10m was places around the water course or irrigation channel. The switching station and Sub station will not be close to the channel. The preferred power line alternative will also avoid the channel. On infrastructure, pylons, my be within 10m of any heritage or archaeological sites.
- 5.42 Other land uses (describe)

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

The preferred alternative will not have any impact on the N4 highway. There is a alternative close to the N4 but even this will not have an impact as it falls outside the servitudes of the High way.

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

If YES, specify and explain: The new infrastructure will, directly, not have an impact on any of the surrounding mines. The infrastructure will however have a positive impact on the Hernic mining activity

If YES, specify:

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

If YES, specify and explain: N/A

If YES, specify:

|

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6. CULTURAL/HISTORICAL FEATURES

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

YES	NO
<input checked="" type="checkbox"/>	
Uncertain	

If YES, explain: There are various sites including graves and a old irrigation channel on site, see heritage assessment report

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

Briefly explain the findings of the specialist:

Canal system of the Hartebeespoort irrigation scheme and canal bridge
 This irrigation scheme was one of the largest and most successful agricultural developments if South Africa. It also represents the poor white problem of the 1920/30`s and job creation. As such it is given a field rating of at least a Grade II.

Cemetery
 The cemetery is still visited and given a field rating of IV C

STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)
 The canal system and canal bridge is important in demonstrating the solving of poor white problem of the 1920/30`s as well as the technical achievement during the 1920/30`s in irrigation and agricultural development.

RECOMMENDATIONS
 It is recommended that the power line pylons should be placed in such a way as to avoid the canals, the canal bridge and the cemetery. The pylons should be at least ten meters away of the heritage sites.

Will any building or structure older than 60 years be affected in any way?
 Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	NO
	<input checked="" type="checkbox"/>
YES	NO
	<input checked="" type="checkbox"/>

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

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;

- (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
- (iii) the nature and location of the activity to which the application relates;
- (iv) where further information on the application or activity can be obtained; and
- (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

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

5. COMMENTS AND RESPONSE REPORT

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

6. AUTHORITY PARTICIPATION

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

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

List of authorities informed:

BASIC ASSESSMENT REPORT

North West Department Agriculture Conservation Environment and Rural Development Madibeng Local Municipality Department of Mineral Resources Department of Water Affairs SHARA

List of authorities from whom comments have been received:

Awaiting Comments

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7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority. Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
---	-----------------------------

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

<p>To Date two registered I&AP's have send us forms as indicted in the PP report.</p> <p>See Public Participation Report.</p>
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SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Low Flying aeroplanes during crop spraying, New roads could lead to more crime increase, New lines could mean less area available for development as nothing can be developed under the power lines.

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

EMPR indicates that the lines will need to be clearly marked as required by the Civil Aviation Authority. No new roads will be constructed. The proposed alternative will follow current infrastructure and therefore not have any new impact on development areas. This is the reason why the alternative is the preferred alternative.

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

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

Alternative (preferred alternative)

Direct impacts: Visual and increase of possible bird strikes. Positive is the growth of economical and employment opportunities

Indirect impacts: Visual and positive increase in the regional economy

Cumulative impacts: Visual. Positive is that the infrastructure can in the future, after mine closure be used to improve the local community.

Please see full table as appendix G

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with

BASIC ASSESSMENT REPORT

specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

The proposed development will have a profound social impact as it will enable the applicant to not only extend its current activities but also expand and employ 650 more people in a region that is struggling with unemployment. The economic benefit to the local and regional economies can not be ignored. Impacts in the short term during construction will be limited to noise, dust and limited congestion if the preferred route is followed. This is due to the fact that there is already infrastructure, road, along the route that gives easy access to the route and pylon points. This road is mainly used by mining trucks and farmers in the area. The first view KM from the R566n to the Miracle Water Dive site is busy over week ends with traffic. If construction takes place over week ends this will need to be managed. Farming activities should not be compromised as the construction area falls outside of any farm land. The switching station and Sub Station is on the applicants properties.

During operational phase the environmental impacts are limited due to the fact that the area has a low ecological status due to historical farming and mining activities in the area. The visual impact, though limited due to the areas previous and historical degradation, will be the biggest impact. The route and surrounding areas are dotted with limited natural areas and there are a number of old un-rehabilitated mining quarries and areas to be found. The old quarries are filled with water which does provide habitat for water fowl and the agricultural areas do provide feeding areas for birds. The new power lines could have a collision risk for birds and therefore the mitigation measure of bird flappers on the power lines. A bird collision management and monitoring plan must be designed by the applicant and monitoring must take place for the first 2 years to see if the bird flappers are effective.

There are two important heritage features on site and route that have to be avoided. The construction phase has the biggest risk to these features as they can be damaged due to the movement of machinery etc. In the operational phase there is no risk. The construction team must adhere to the EMPR and stay out of the buffer as indicated.

The impact on the agricultural activities in the areas will be limited if the preferred option is approved as the line will follow along the current road infrastructure. The other two alternatives will have much bigger impacts resulting in the loss of cultivation land and could directly impact on pivot point irrigation. The farmers spray their crops and therefore the risk to low flying aeroplanes has to be taken into account. The new power lines have to be marked clearly as required by CAA authorities and the applicant must communicate with the other land owners as to the markings and ensure that the land owners communicate the new lines to pilots doing the crop spraying for the first two seasons.

Alternative A (preferred alternative)

The preferred alternative will have the following advantages to the other alternatives:

- **The impact will form part of existing impacts as it will mostly follow existing infrastructure and this leads to easy access to the route and pylon sites**
- **No new roads will be required**
- **The least amount of impact of agricultural activities**
- **The least amount of impact on birds as there is already some power lines on route and it does not cut across cultivated lands that could have a bigger impact**

The alternative will influence the visual status quo of surrounding land owners.

The risk to crop spraying aeroplanes can not be eliminated and the applicant will have to take cognisance of this risk and institute measures to limit the risk

See Appendixes G for impact assessment

No-go alternative (compulsory)

The proposed development is not only to expand the workings of the mine but also to ensure the mines continuation. Currently the Platinum mining industry is going through a very difficult time with mine having to close some of there operations. In the light of this Heric is in the position to offer more employment and reduce the risk of job security if this development is approved. The no go will mean a limited life span to the mining activities as well as job losses in the medium term of the current 2000 employees. The No Go is therefore nor considered the best option.

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SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
--	--------------------------------

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

--

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

The EMPr must be adhered to; Construction to taken place in the dry months as fare as possible Close communication with other land owners in the area as to the construction time table Bird flappers as required by specialist Institute a bird collision management and monitoring plan to monitor the effectiveness of the bird flappers Warning spheres as required by CAA to be erected on the lines. Institute a communication programme with crop spay land owners and pilots to limit the risk of collision with new power lines by crop spraying aeroplanes.

Is an EMPr attached?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
--	--------------------------------

The EMPr must be attached as Appendix F.

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SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Impact Assessment Table

Appendix H: Public Participation Report

Appendix I : Properties forming part of the study area.

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Appendix A



Legend




Sub station alternatives

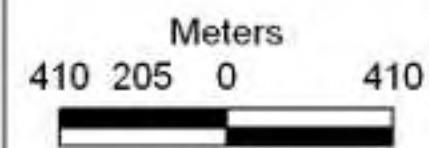
Alternative

-  A
-  B
-  Switching Station

Henric 132 kVA Alternatives

Alternatives

-  Alternative 1
-  Alternative 2
-  Alternative 3



METADATA

Project: BAP Henric
132 kVA

Data source: Henric/
TCSC Engineering

Projection: None
Datum: WGS84
Scale: 1:18,509

Map compiled by Willem
de Frey, EkoInfo CC

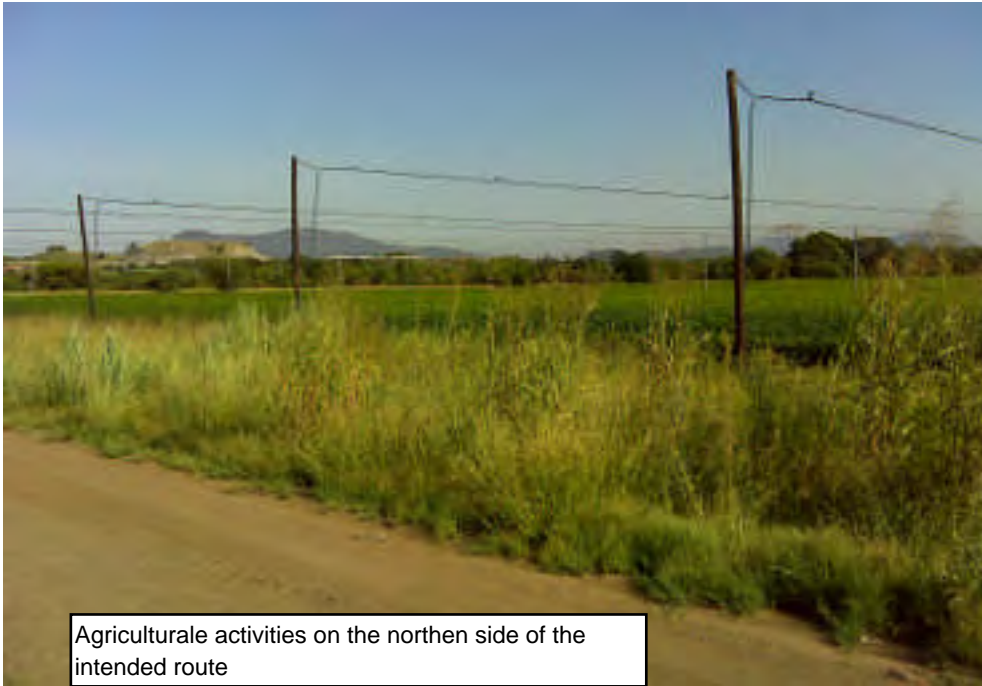
EkoInfo CC

www.ekoinfo.co.za

TRUE NORTH

Overview of the location alternatives associated with the 132 kV power line and sub station

Appendix B



Agricultural activities on the northern side of the intended route



Servatude area on the southern side of the road



Agricultural activities within the area



Road that the preferred alternative will follow

Route side



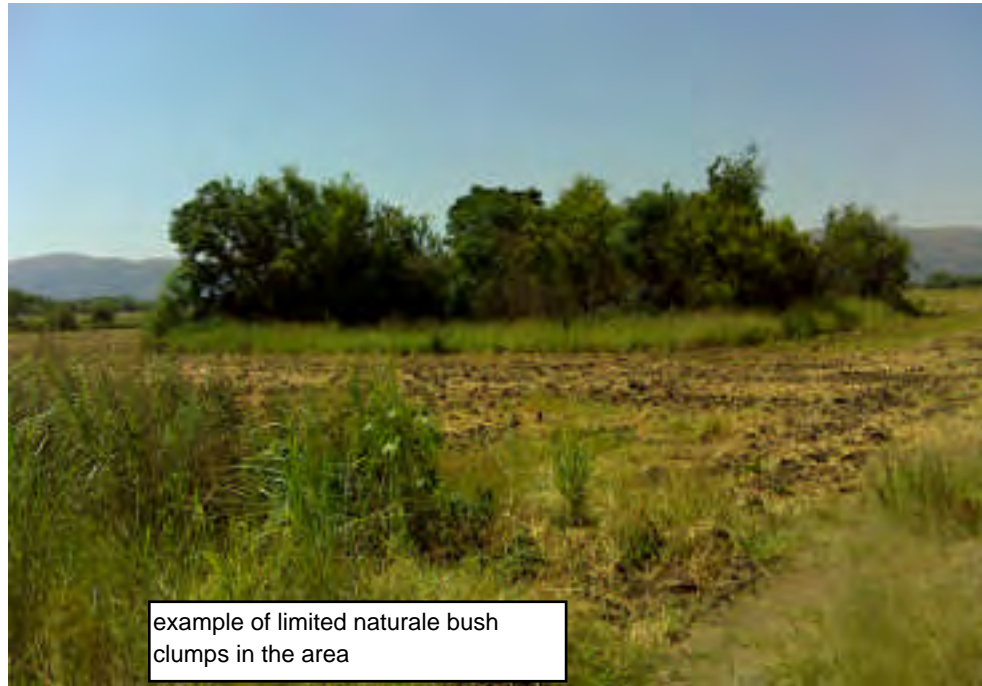
Prefiously mined areas now rehabilitated



Agriculturale areas



Switching Station areas



example of limited naturale bush clumps in the area



Previously farmed area and residence commonly found



Limited natural areas occurring on route



Agriculture within the area



current infrastructure



open veld in the areas



agricultural activities along the route



example of farm dams in the area



mining activity in the areas along the route



Irrigation channel with heritage status

Appendix C

TOWER TYPES

Monopole Self-supporting tower will be utilized in this proposed development. The figure below is a indication of the towers to be used. These towers will be at a high of about 20m.



Example of mono-pylon/tower to be used



Base of the mono-pylon/Tower



Sub Station Layout

Appendix D

Terra Logix

C O N S U L T I N G

BAP REPORT

TITLE: Visual Impact: Heric-Bokfontein Transmission Project

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1 Introduction

An area to the south of Brits, Northwest Province, is the subject of this visual impact assessment report on the of the proposed new 132 kV transmission line between the Heric and Bokfontein substations.

2 Study area

The study area is to the south of Brits, (see Figure 1), with its centre approximately at Y-75371 X+2842260 (WG27). The site visit was carried out during February 2012.

3 Method

The method used during the study are based on the methods given by the Landscape Institute & IEMA [1], the BLM [2], Smardon [3], and Blair [4].

3.1 Landscape Description

The landscape consists mainly of plains with a few open slopes, local ridges and midslope drainages. In the study area there are a couple of non-perennial streams. The vegetation is dominated by agricultural fields with some areas of bush. There are scattered agricultural buildings dominated by very prominent mining dumps. A number of water canals were observed.

4 Assumptions and Limitations

The following assumption and limitations are relevant:

- The analyses are based on available data at a scale of 1:50 000 and smaller

- For the purpose of comparative analysis, any existing power lines were disregarded.
- A detailed aerial photograph was not provided
- Pylon height is approximately 20m
- Span distance between pylons is approximately 200m.

5 Analysis

5.1 Visual Exposure Analysis

Visual exposure analysis uses the digital terrain model (DTM) and derivatives thereof to determine to what extent the topography of the study area exposes or hides human structures. The DTM covers a 4 km buffer area around the study area.

Slope

The slopes were derived from the DTM and the produced raster dataset (in degrees) was classified into the following VE (Visual Exposure) scores:

Slope	Visual Exposure Score
< 5°	1
5-10°	2
10-15°	3
15-20°	4
> 20°	5

The scores above assume that structures on steep slopes and ridges would be more exposed than those situated on flat slopes (for example a flat valley bottom).

Aspect

The aspect dataset (degrees) was derived from the DTM was classified into the following VE scores:

Aspect	Visual Exposure Score
Flat	5
North	4
East	3
West	3
South	2

The scores assume that structures located on flat areas and north facing slopes are illuminated by the sun during the whole day, that on east and west facing slopes they are illuminated during mornings and afternoon respectively and that on south facing slopes they tend to be in the shade.

Landform position

Certain landforms will expose structures more than others. Structures located on top of a ridge will be more visible than structures located in a deep canyon. Using the DTM and the Topographic Position Index (TPI) as defined by Weiss [5] were used to determine a landform-type raster dataset. For the analysis, focal statistics circular neighbourhoods (ESRI, Arcgis 10.0) with radii of 300m and 2000m were used. The landform types are classified in terms of visual exposure as follows:

Landform Type	Visual Exposure Score
Canyons, deeply incised streams	1
Midslope drainages, shallow valleys	2
Upland drainages, headwaters	2
U-shape valleys	2
Plains	3
Open slopes	3
Upper slopes, mesas	4
Local ridges, hills in valleys	4
Midslope ridges, small hills in plains	4
Mountain tops, high ridges	5

Slope Position

The visibility of structures positioned on slopes is dependent on where the structures are positioned. Structures on upper slopes and ridges are prone to be more visible than structures in on lower slopes or in valleys. Using the DTM and the TPI analysis with a focal statistics circular neighbourhood (ESRI, Arcgis 10.0) with a radius of 1000m, the slope position raster dataset was determined. The slope position is classified in terms of slope position as follows:

Slope Position	Visual Exposure Score
Valleys, cliff base	1
Lower slope	2
Flat	3
Mid slope	4
Upper slope	5
Ridge, hilltop, canyon edge	5

Relative elevation

The visibility of a structure at any given position is *inter alia* determined by that position's elevation relative to the elevation of the surrounding topography. If at any given position, most of the immediate surrounding topography has a higher elevation any structure would be less visible than if most of the immediate surrounding topography has a lower elevation. For this analysis the mean elevation of a focal statistics circular neighbourhood (ESRI, Arcgis 10.0) with a radius of 1000m was determined and subtracted from the DTM. In the resulting raster dataset, negative values indicate surrounding topography with a higher elevation and positive values indicate surrounding topography with a lower elevation. Using a tower height of 20m the dataset was classified as follows:

Relative elevation	Visual Exposure Score
< -20	0
-20 – 0	2
0 – 20	4
> 20	5

Ruggedness

Ruggedness refers to the topographic diversity of an area. It is assumed that if at any given position the surrounding topography is very homogenous, any structure will be

easier visible than if the surrounding topography is diverse. Ruggedness was determined by calculating the standard variation of the DTM using a focal statistics circular neighbourhood (ESRI, Arcgis 10.0) with a radius of 1000m. The resulting raster dataset was classified into 5 classes using the “Natural Breaks (Jenks)” method (Arcgis 10.0) as follows:

Ruggedness	Visual Exposure Score
High STD values	1
	2
	3
	4
Low STD values	5

Final Visual Exposure Raster

The above mentioned five raster datasets were summed and adjusted back to a scale of 1-5 by reclassifying into 5 classes using the “Natural Breaks (Jenks)” method (Arcgis 10.0) and smoothed by Majority Filter technique (Arcgis 10.0).

The dataset was then classified into the following five categories (see Figure 2):

Visual Exposure Category	Visual Exposure Score
Very low	1
Low	2
Moderate	3
High	4
Very High	5

5.2 Visual Absorption Capacity

Visual absorption capacity (VAC) is a measure of the ability of topographical features to hide introduced structures. It is thus the inverse of the visual exposure analysis (See Figure 3). Comparative scores are as follows:

Visual Exposure	Visual Absorption
1 - Very Low	5 - Very High
2 - Low	4 - High

3 – Moderate	3 - Moderate
4 – High	2 - Low
5 - Very High	1 - Very Low

For analytical purposes it is preferred to use the Visual Exposure scores.

5.3 Land use analysis

A land use raster dataset was created using the following datasets:

- Landcover 2000
- Conservation (ENPAT)
- Natural Features (ENPAT)
- Formal protected Areas (SANBI)
- Informal protected areas (SANBI)

Viewer sensitivity values between one (1) and five (5) were assigned to the different land uses, such that one (1) represents low sensitivity and five (5) represents high sensitivity.

The land use raster was thus classified as follows:

Land use	Sensitivity
Mines & Quarries (mine tailings, waste dumps)	1
Mines & Quarries (surface-based mining)	1
Urban / Built-up : commercial - education, health, IT	1
Urban / Built-up : commercial – mercantile	1
Urban / Built-up : industrial / transport : light	1
Bare Rock & Soil (natural)	2
Cultivated, temporary, commercial, dryland	2
Cultivated, temporary, commercial, irrigated	2
Cultivated, temporary, subsistence, dryland	2
Degraded Forest and Woodland	2
Degraded Natural Grassland	2
Natural Grassland	2
Thicket, Bushland, Bush Clumps & High Fynbos	2
Woodland	2
Urban / Built-up : residential, formal suburbs	3
Urban / Built-up : residential, informal township	3

Urban / Built-up : smallholdings, thicket, bushland	3
Urban / Built-up residential	3
Waterbodies	3
Wetlands	3
Conservation	5

The visual exposure raster dataset (Figure 2) was multiplied by the viewer sensitivity raster dataset (see Figure 4) to obtain the modelled potential impact raster dataset which was rescaled to 1-5 (1 = Very Low, 5 = Very High) (see Figure 5). The distribution (proportional to area) for the potential impact within the study area is as follows:

Potential Impact	% of Study Area
1 - Very Low	0.75%
2 - Low	21.98%
3 - Moderate	43.82%
4 - High	33.45%
5 - Very High	0.00%

Areas of potential impact were used to determine photo sites for the site visit.

5.4 Viewshed analysis

Viewshed analyses for the different alternatives were done to determine the modelled visibility using a digital elevation model (DEM) that was calculated by adding heights of the mine dumps and other landcover features to the DTM. The results of the analyses are shown in Figures 6, 7 and 8.

The viewshed analyses are limited to a distance of 2000m. At a distance of more than 2000m a power line becomes such a small component of the visual scene that it is regarded as insignificant.

6 Visual Impact

The photo positions used during the site are shown on Figure 9. No highly sensitive

viewer locations within a distance of 2000 m of all the alternatives were identified during the modelling or the site visit. The photographs taken during the site visit are shown in Figures 10 to 24.

The potential impact raster dataset was resampled at 100m pixel size (to cater for 100m wide servitudes) and was used compare the provided alternatives as follows:

Alternative	Length (m)	PI sum
Main	6110	243
1	4900	192
2	5801	235

The values in the table above are calculated by summing the potential impact raster cells that are covered by the respective alternatives.

7 Conclusion

The results of the study show the following:

- The majority of the study area is covered by very low to moderate modelled potential visual impact
- Alternative 1 is the shortest and has the least potential impact.

8 General mitigation measures

The most important mitigation measure is planning and design in such that the transmission line is placed in such a manner that the visual intrusion is either avoided or limited as far as possible.

Secondarily, it is important that during the construction phase the short term visual disturbance is kept to a minimum that any such disturbance is adequately rehabilitated such that no long term disturbance remains.

General mitigation measures include the following:

- Colour/Coating: Using a coating on the steel that is darker than galvanized steel will reduce the visual impact.
- Erosion: A major part of the study is prone to contain dispersive soils which are highly erodible – special attention to erosion control is important as erosion tends to develop long term scars in the landscape. If the existing line is decommissioned, bringing in big machinery to remove the concrete foundation can cause more damage than leaving the foundations and covering them with suitable soil and vegetation.
- Clearing of vegetation: Any clearing of vegetation should be limited to cutting only – no earth moving equipment. Clearing of any vegetation that would provide a screening effect should be avoided.
- Access Roads: Use existing roads and tracks as far as possible
- Rehabilitation: Any temporary disturbance should be rehabilitated as soon as possible to reduce the effects of erosion.

9 References

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4. BLAIR W.G.E. (1986). Chapter 13: Visual Impact Assessments in urban Environments. *In: Foundations for Visual Project Analysis*, edited by Smardon R. C., Palmer J, & Felleman J. State University of New York, College of Environmental Science and Forestry.
5. WEISS, A. 2001. Topographic Position and Landforms Analysis. Poster presentation, ESRI User Conference, San Diego, CA.

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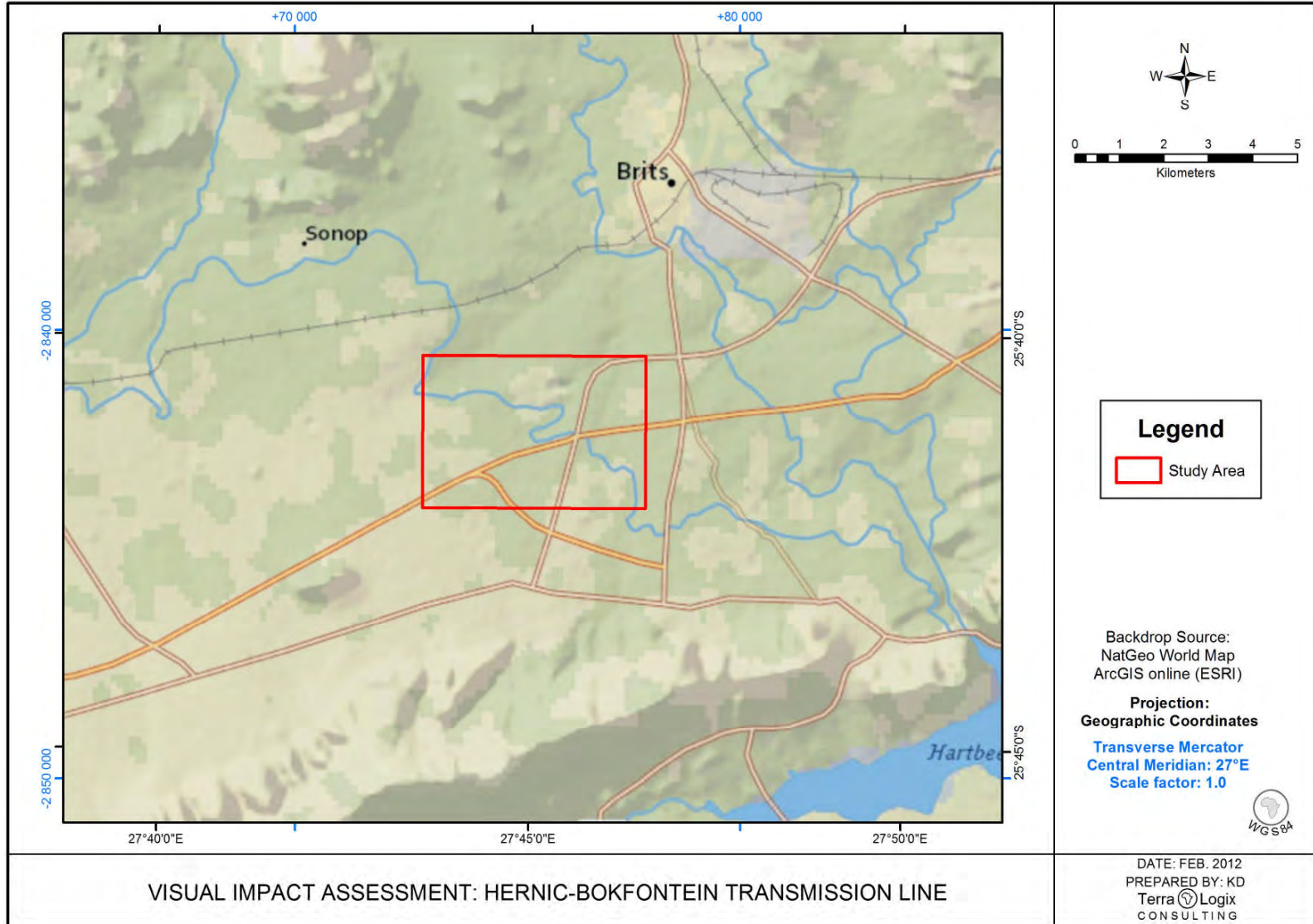


Figure Locality map

TC-0439: Visual Impact Assessment Heric-Bokfontein

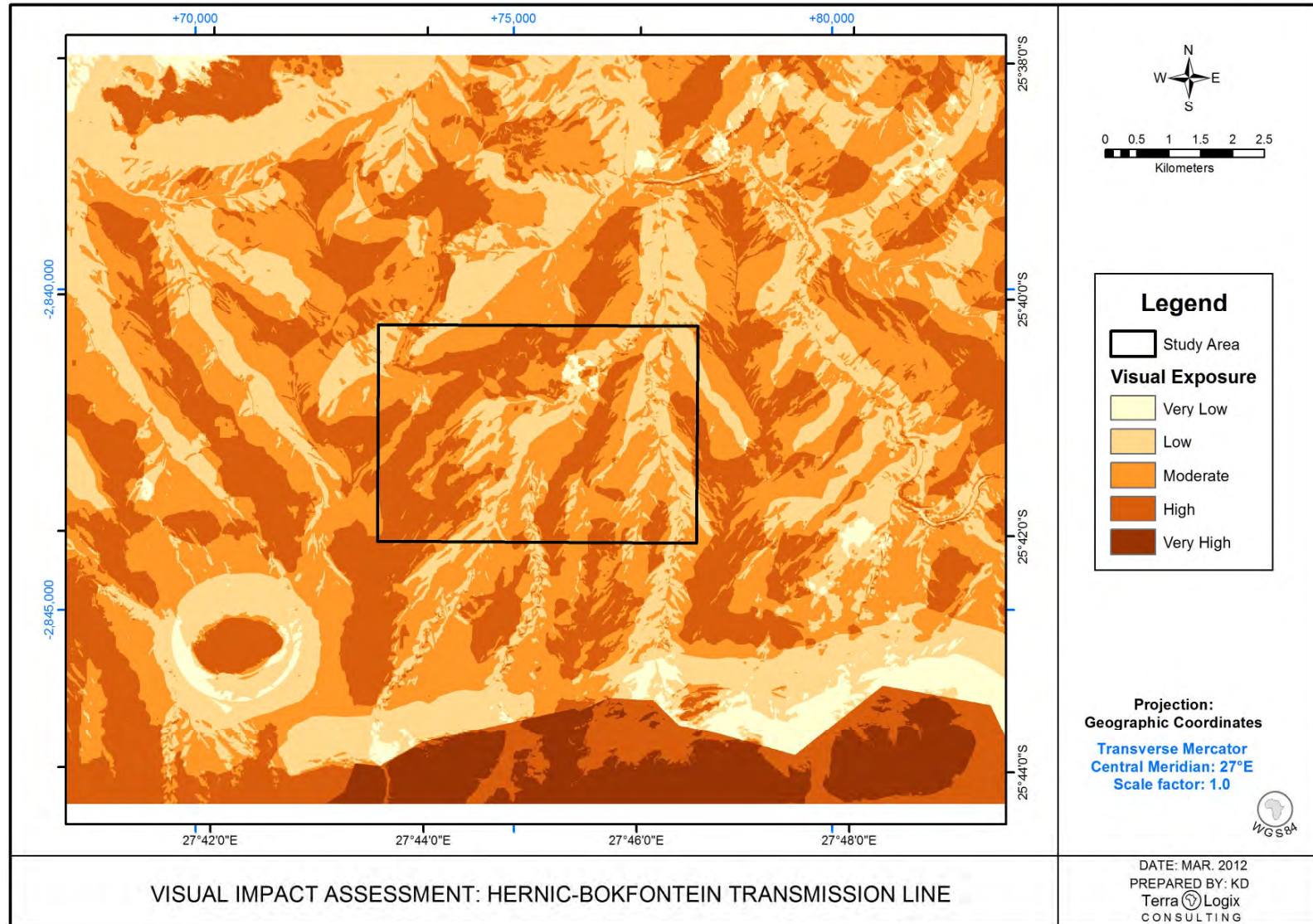


Figure Visual Exposure Analysis

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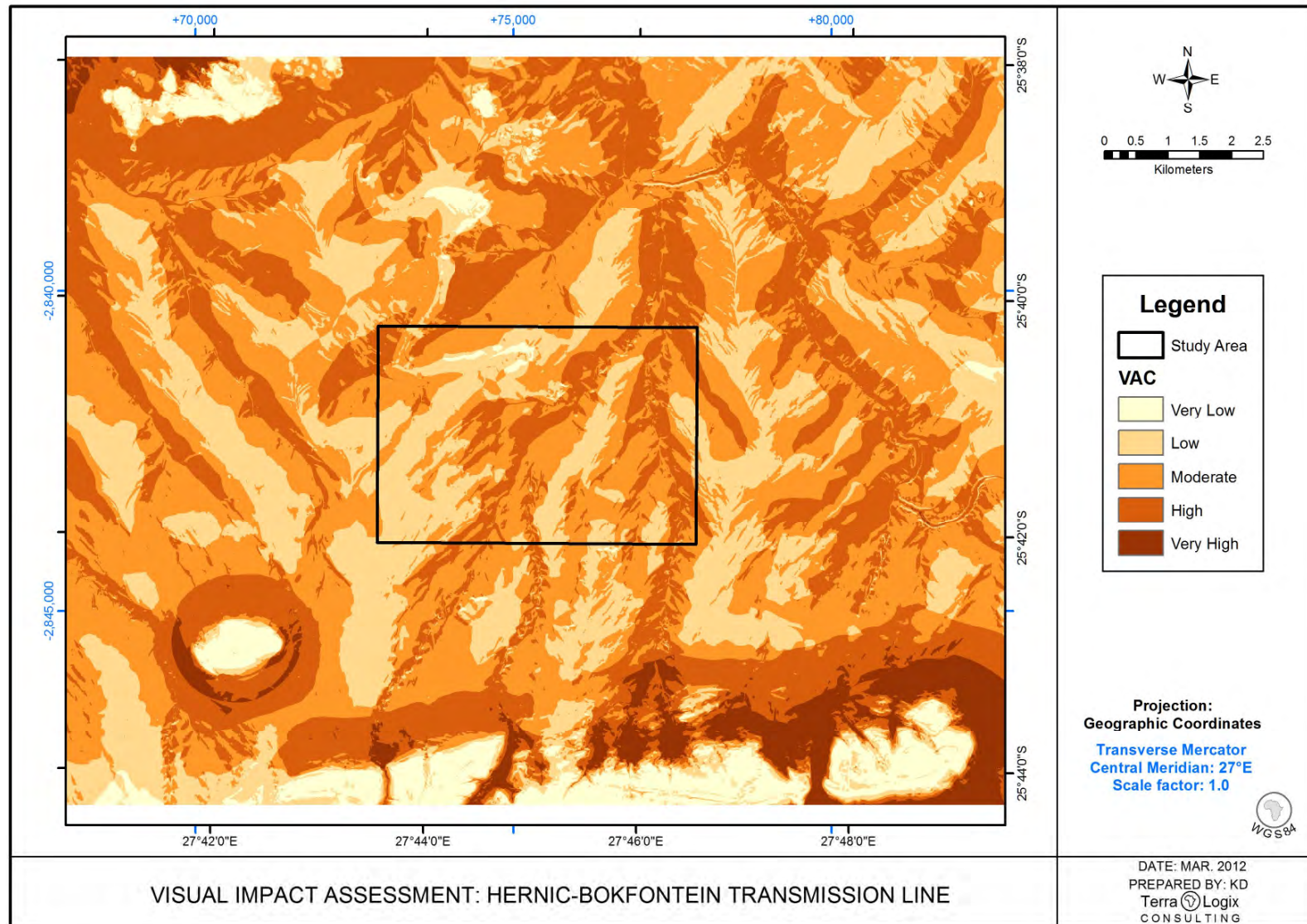


Figure Visual Absorption Capacity

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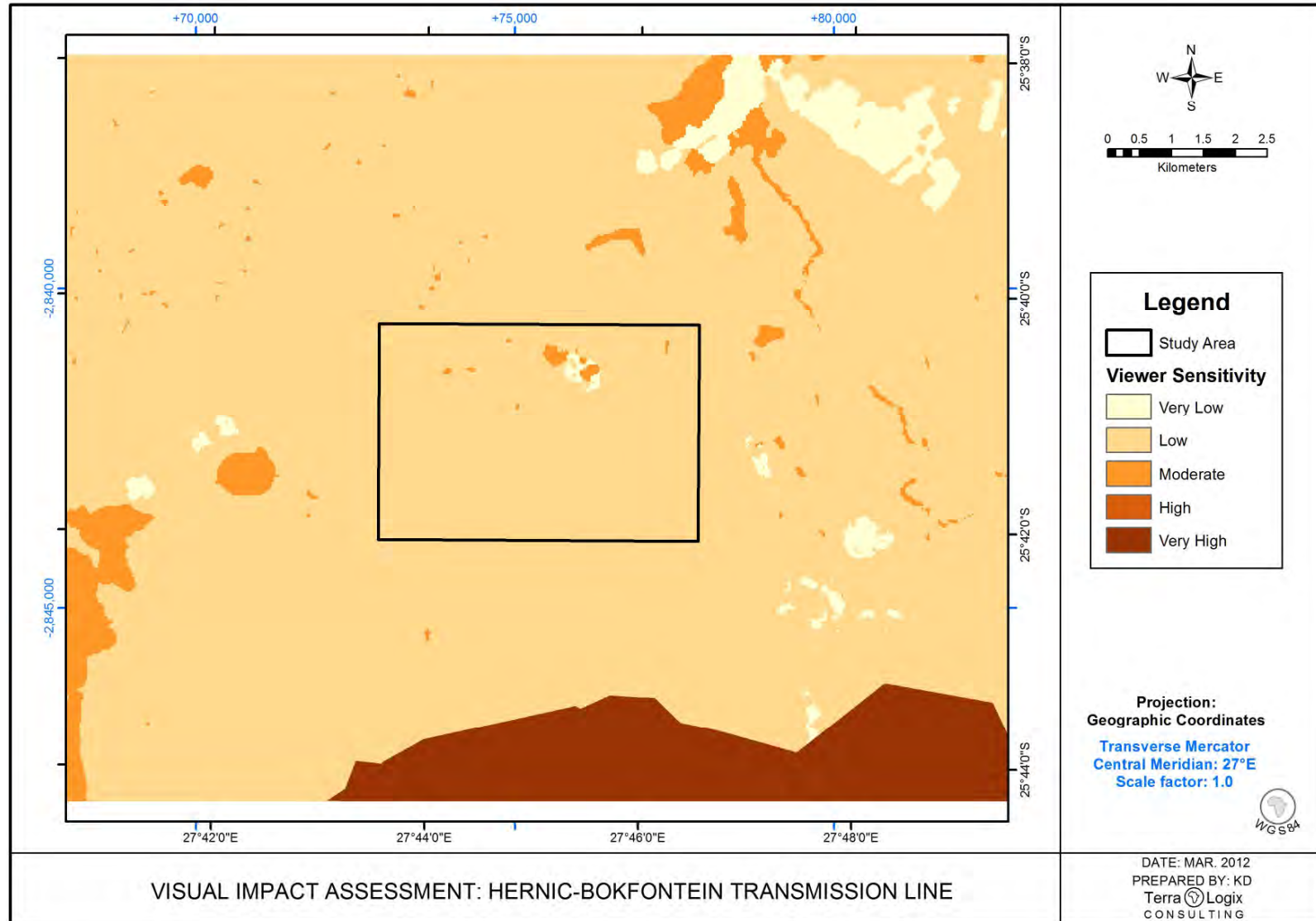


Figure Viewer sensitivity

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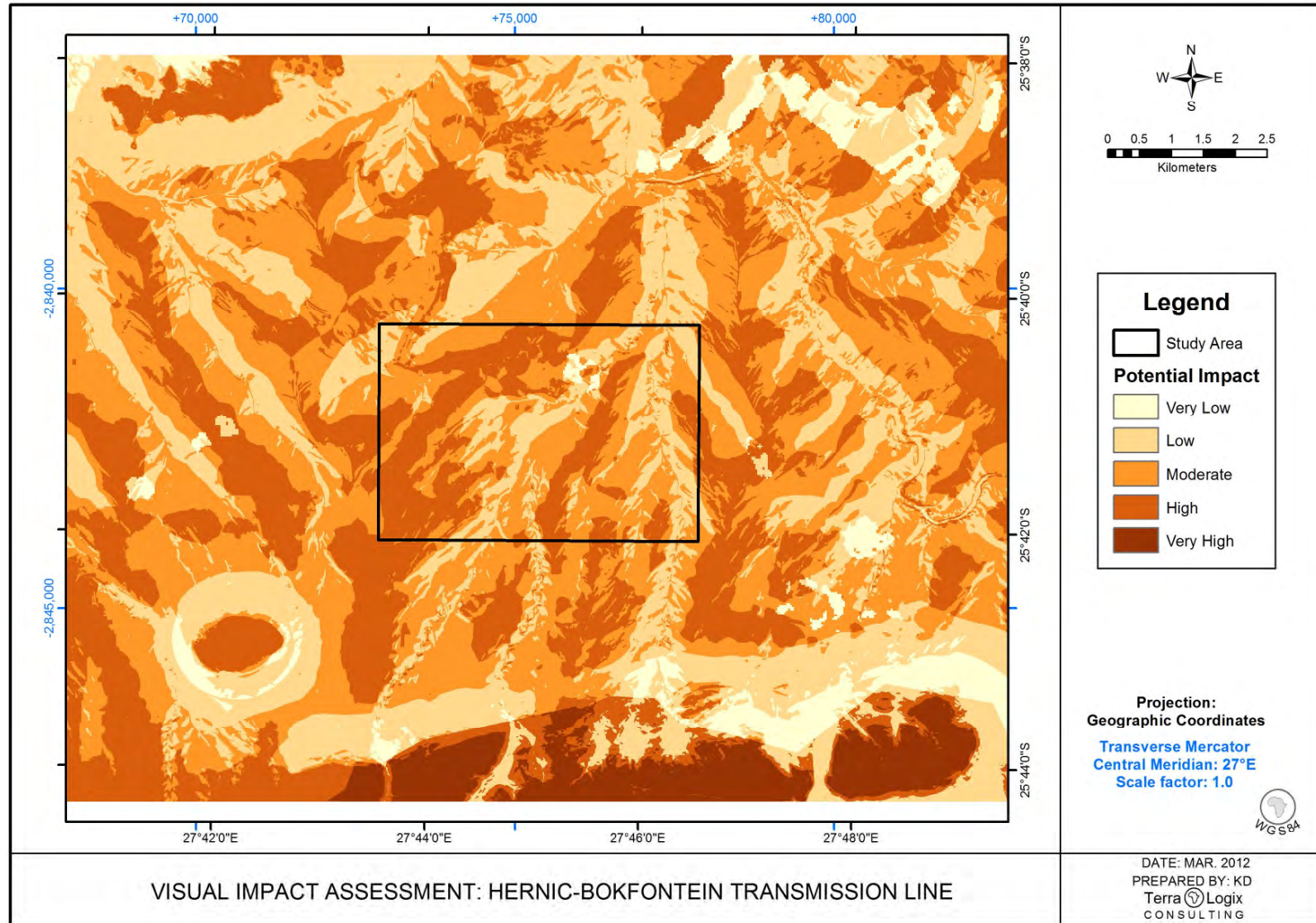


Figure Modelled potential visual impact

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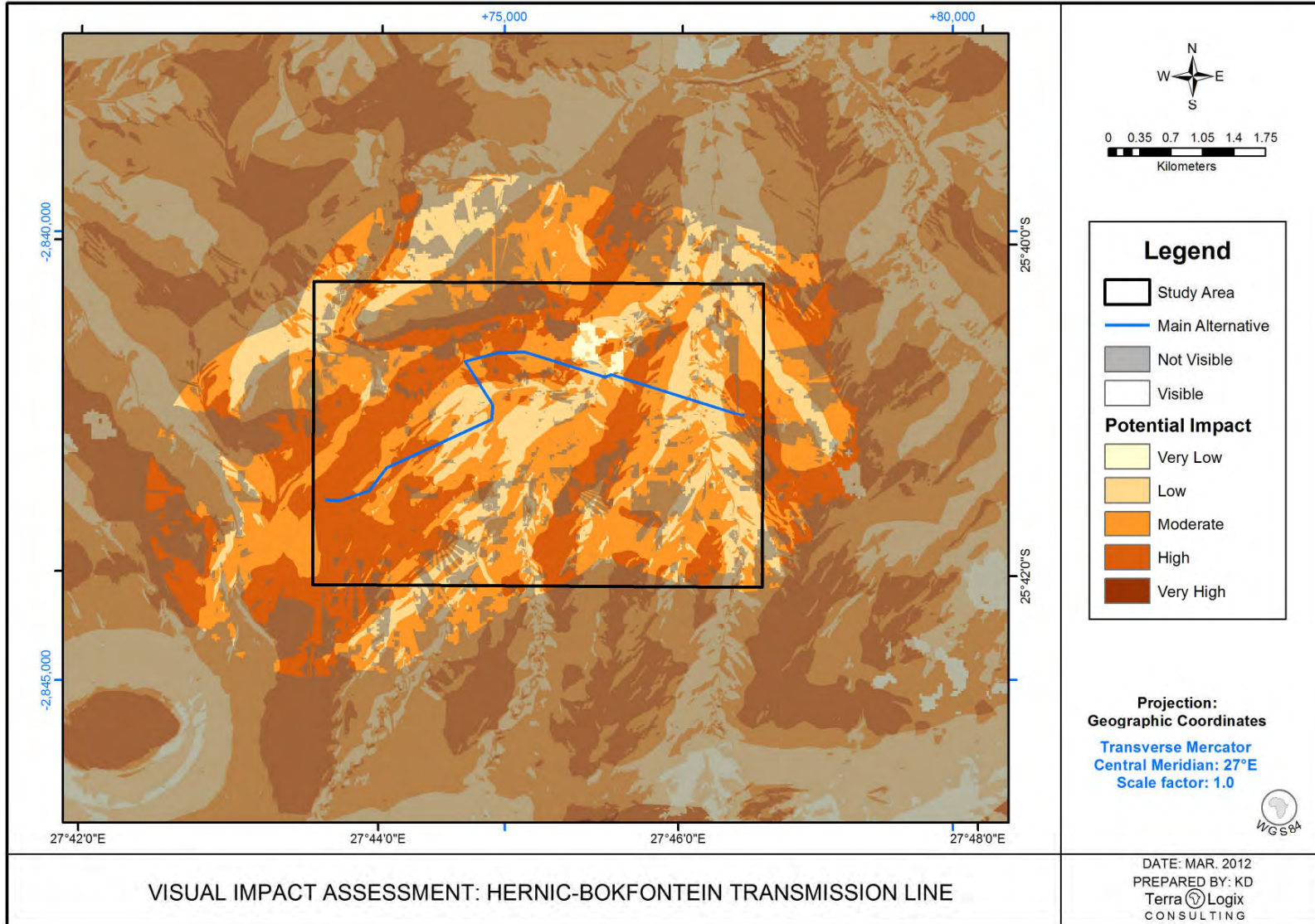


Figure Viewshed analysis for the Main Alternative

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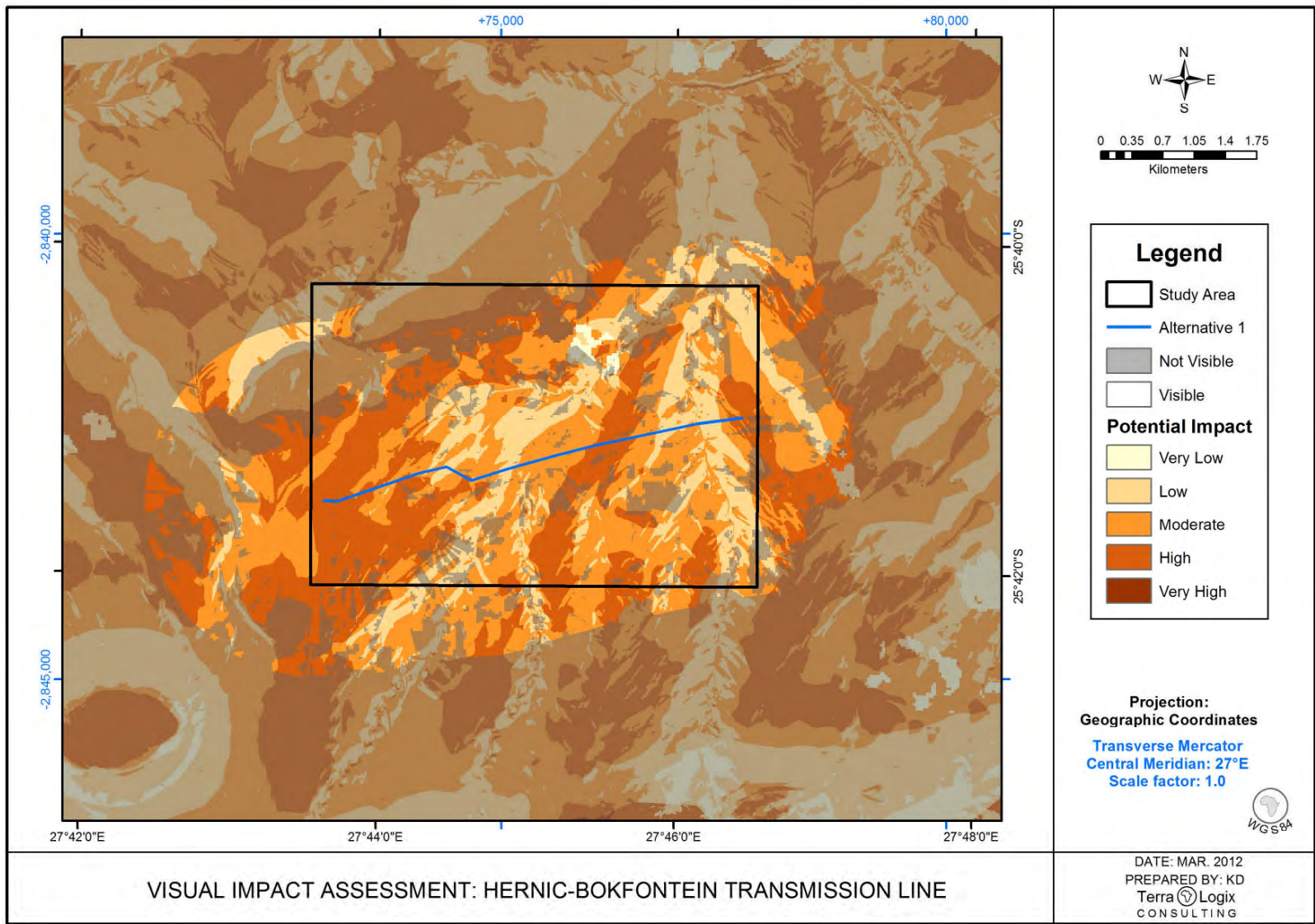


Figure Viewshed analysis for Alternative 1

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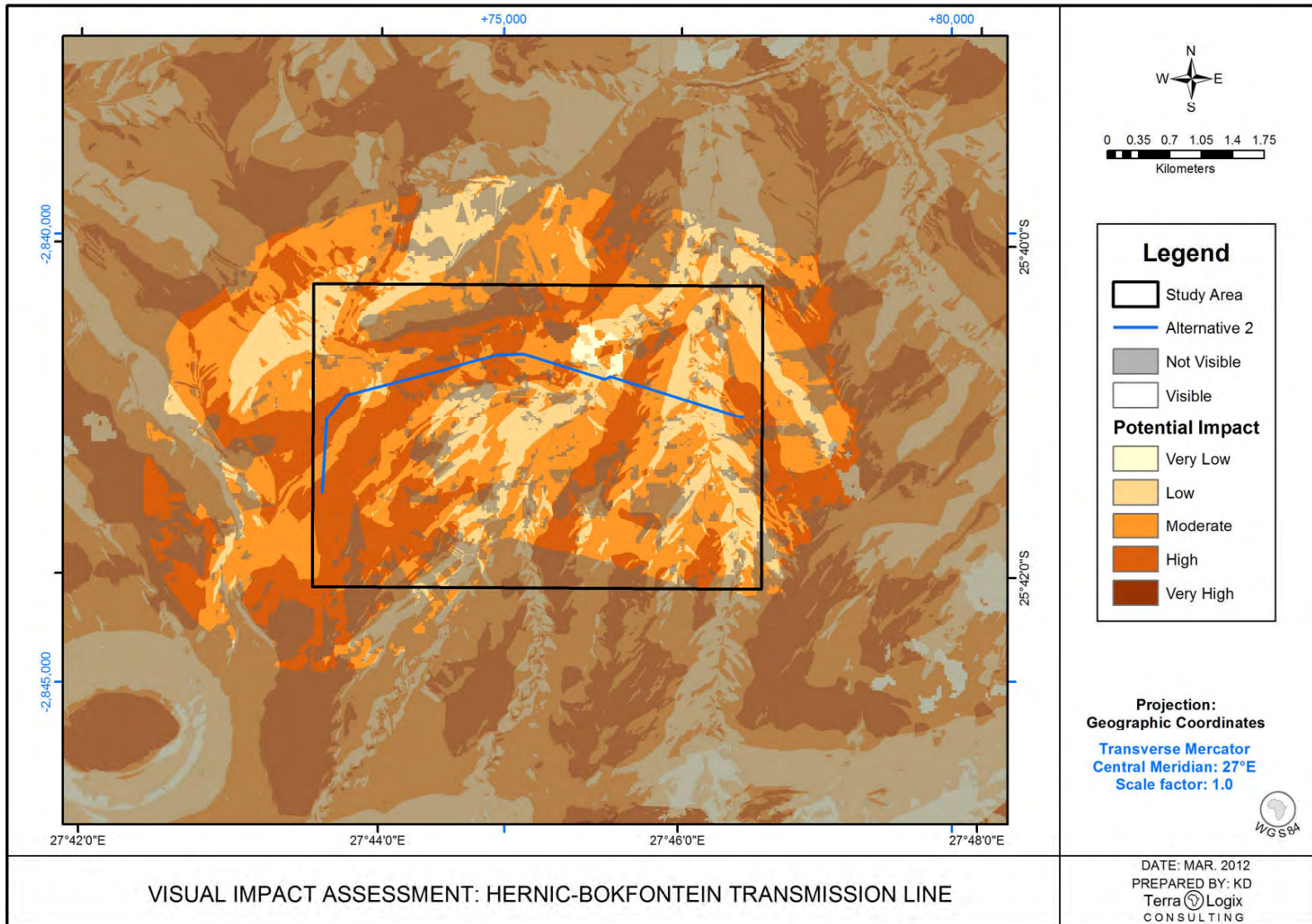


Figure Viewshed analysis for Alternative 2

TC-0439: Visual Impact Assessment Heric-Bokfontein

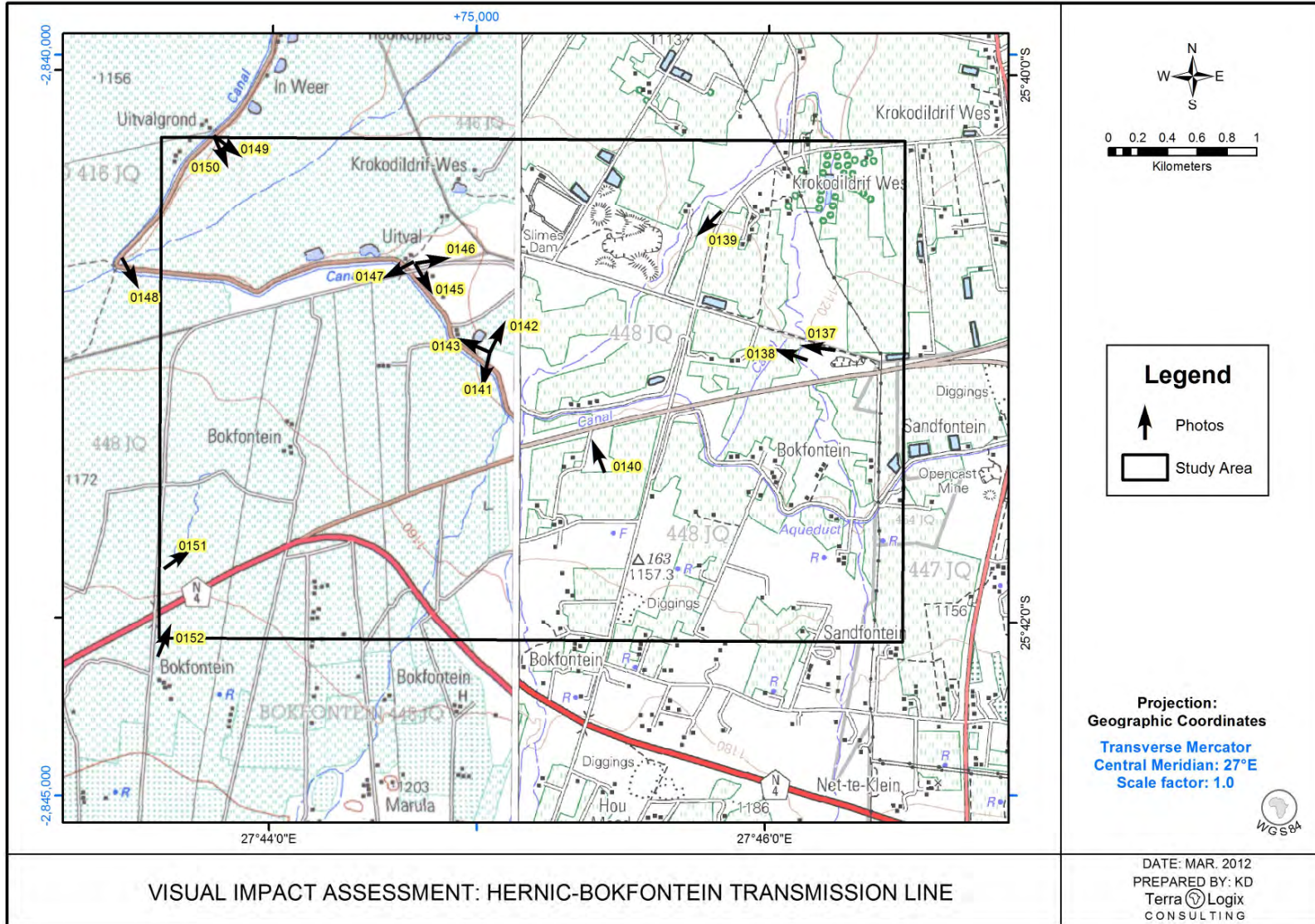


Figure Positions of photographs



Figure Photo 0137



Figure Photo 0138



Figure Photo 0139



Figure Photo 0140



Figure Photo 0141



Figure Photo 0142



Figure Photo 0143



Figure Photo 0145



Figure Photo 0146



Figure Photo 0147



Figure Photo 0148



Figure Photo 0149



Figure Photo 0150



Figure Photo 0151



Figure Photo 0152

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HERNIC POWERLINE BASIC ASSESSMENT

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Enviro **INSIGHT** environmental impact assessments

EXECUTIVE SUMMARY

- A basic assessment was carried out on three proposed power line positions for the Heric Powerline Development.
- The main focus of the Heric study was negative interactions between avifauna and powerlines.
- For the purposes of the avifaunal study, the prevailing study identified four main habitat types; namely short open cultivated lands, semi-natural/natural lands, wetlands and existing mining infrastructure.
- The short cultivated lands and wetlands have been identified as areas of HIGH sensitivity. These areas encompass 57.8% of the study area.
- Of the three proposed powerline positions, the line (labelled as Alternative 1) has been deemed the least sensitive of the options. The option is the shortest in distance and follows closely the existing infrastructure.
- The Alternative 1 requires flappers on 99.8% of its extent, due to the proximity to agricultural lands and wetland areas.

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INTRODUCTION

Enviro-Insight cc was appointed by EKOINFO on a sub-contractual agreement, headed by HERNIC (herewith known as the client), to conduct a Basic Assessment for the proposed HERNIC power lines, North-West, South Africa.

The scope of the study was to conduct a general avifaunal basic assessment with special focus on red-data species and the possible negative impact of the creation of the powerline. An additional focus of the study was to conduct an onsite sensitivity verification of the avifaunal habitat for the three proposed powerline placements as well as the overall demarcated corridor area. The line placements are shown in Figure 1. The fieldwork was carried out by the author (Samuel Laurence) and associates on the 31st of January 2012, representing peak summer wet-season conditions.

The purpose of the baseline assessment is to implement basic management and design recommendations for parties the construction of the 110 kV transmission lines. All parties must be made fully aware of the potential impacts (derived from both the basic assessment) and subsequent (early stage) mitigation measures for said negative impacts.

TERMS OF REFERENCE

- Conduct a literature review of the avifaunal communities within the study site.
- Conduct an onsite verification of the habitat and proposed powerline positions.
- Identify red-data species and probability of occurrences for the study site.
- Identify mitigation measures (including pylon relocations) regarding the negative impacts on the ecological community.

BACKGROUND INFORMATION

The study site is situated in the North-West Province in the Republic of South Africa; the study site traverses two Quarter Degree Squares (QDS), **QD 28 S 23 E**. The prevailing habitat type is listed by Mucina and Rutherford 2006 as Marikana Thornveld. This vegetation type is not considered to be of conservation concern.

1.1 GENERAL IMPACTS

The impacts on the avifaunal communities by the creation of power lines are represented in a number of ways, namely;

- Avifaunal habitat clearing for line servitude and for line stringing
- Powerline avifaunal interactions

The primary mandate of the faunal study is the negative impacts between powerlines and avifauna. There are two forms of powerline/avifaunal interaction that must be addressed in more detail.

1.2 COLLISION

There are two kinds of negative interactions between avifauna and powerlines, namely collision and electrocution. Collision occurs when birds fly into powerlines, most often incurring terminal injuries. Electrocutions occur mostly during roosting or less frequently, nesting behaviour. Most avifauna/powerline interactions are thought to be collisions. Earthing and/or small voltage wires relatively thin and are therefore less visible to flying birds. There are a number of avifaunal groups that are more susceptible to collision impacts. These are mainly heavier or larger bodied or poor flying species such as flamingoes, korhaans, bustards, cranes, storks, herons, ducks and geese. Many of these birds either fly in a sub-optimal position (i.e. neck out) or are unable to change direction or manoeuvre successfully whilst flying. Other reasons for collisions include the penchant for certain species to fly in formation (V formation or straight line) which impairs the vision for most of the flock or to fly at night (flamingoes), which creates almost zero visibility.

1.3 ELECTROCUTIONS

Although not as common as collisions, electrocutions must be considered in the overall scheme of impacts. Electrocutions occur in a number of ways. Firstly, when larger birds connect the gap between live wires and the earth lines to create a circuit, electrocutions will occur. This often happens during takeoff, landing or during general roosting behaviour. The second form of electrocution occurs when birds excrete uric acid onto live wires, creating a short circuit. It is mainly smaller powerlines (below 220 kV) that are of a higher risk to bird species, due to the distance of spacing between the lines, Species within the study area that are susceptible to electrocution include large raptors, vultures, nest constructors such as weavers, larger owl species, large geese, egrets and herons. Streamer electrocution candidates include species of ibis, egyptian geese, spur-winged geese, eagle owls, barn owls, pied crows, steppe buzzards, goshawks, tawny eagles and herons.

METHODS

The methods were split into two sections, namely desktop and the onsite survey. The desktop component primarily involved overlaying the powerline positions onto Google images and examining the route for any potentially sensitive habitats. These locations were allocated waypoints and subsequently pursued for verification. The focus of the fieldwork centred on a typical “drive through” assessment approach.

The primary focus of the study was the effect of powerlines on avifauna within the study area. The avifauna component was divided into three sections.

- a) Desktop component focused on the distribution and probability of occurrence for red-data species.

- b) Drive through verification survey focusing on avifaunal habitat and species present.
- c) Mapping of habitat and relevant mitigation measures.

The desktop resources utilised for the study are listed below:

- Hockey *et al.* (2005) for general information on bird identification and life history attributes;
- Barnes (2000) for information regarding the IUCN status (Red Data) of species;
- Distributional data, especially for species of conservation concern (apart from those obtained during the field survey) was sourced from the South African Bird Atlas Project (SABAP1) and verified against Harrison *et al.* (1997). Therefore, the SABAP1 data represents an indication of the abundance and composition of species recorded within a quarter degree grid cell (QDGC), which was the sampling unit chosen.

The latest remote sensing imagery available through Google Earth (Google Corporation) was used to delineate the open water bodies and man-made canals. Buffers were created around the open water bodies (150m) and the man-made canals (100m). These buffers were merged and the intersect points between the proposed powerline alternatives and the buffers mapped. Similarly, the landscape was classified into 4 major landscape types, namely Agricultural (past/present), semi-natural, wetland areas and mining. These units were mapped and then the intersect points between the wetland and the agricultural landscape types (identified as most avifaunally sensitive) with the proposed powerline alignments were calculated.

1.4 LIMITATIONS

- The level of detail for the study was of a BASIC assessment and therefore no high level Avifaunal assessment was possible. This included a lack of a dual season approach which is the normal standard for avifaunal analysis.

- To counteract the lack of detail in the sampling phase, the emphasis was placed on assessment of habitats for the relevant species, with special focus on species of conservation concern.

RESULTS AND MITIGATION DISCUSSION

1.5 HABITAT SPECIFIC INFORMATION

There are four significant habitat types that are represented by the map in Figure 2. The mapped habitats were established arbitrarily as no precise shapefile was given (as only the proposed powerline positions were provided). The habitat types were divided into four major types, specifically in relation to avifaunal. These habitat types were measured (once again, according to the arbitrary shape file) and rated in accordance with their potential significance to avifauna. A full summary of the habitat areas are shown in Table 1.

Short open grassland/cultivated lands

Avifaunal Significance: HIGH

The short open lands/cultivated lands represent current or previously used agricultural lands within the study area. These areas are structurally open (few or no trees) and either show a short to medium grass sward or ploughed fields. The open structure as well as the presence of cultivation serve as an attractant to a variety of powerline susceptible bird species such as ducks, geese, egrets and especially storks. The total area of this land type is 350.7 hectares, representing 55.5% of the study area. Figure 3 provides a photographic representation of the habitat type.

Natural/Semi-natural habitat types

Avifaunal Significance: LOW TO MODERATE

This habitat type represents areas that are natural or semi natural. The habitat types are variable between closed woodland to semi-open thornveld. The closed habitats are highly fragmented and provide habitat for smaller bird species, not usually associated with avifaunal mortalities. The open grassy thornveld may potentially provide habitat for some susceptible species such as bustards and secretary birds, although frequent long term occurrence on the study site can be considered to be unlikely. The total area of this land type is 132.9 hectares, representing 21.0% of the study area. Figure 3 provides a photographic representation of the habitat type.

Wetlands/open water bodies/man-made canals

Avifaunal Significance: HIGH

The wetland areas within the study area are represented by three forms, namely man-made canals, farm/mine water impoundments and semi-natural wetlands. Natural wetlands as well as the farm/mine impoundments on site are often surrounded with avifaunal breeding habitat such as *Phragmites australis*. These habitats are also important feeding sites for species of waterfowl as well as water associates. The man-made canals are used by various species as corridors and/or navigational pathways. The total area of this land type is 14.6 hectares, representing 2.3 % of the study area. Figure 4 provides a photographic representation of the habitat type.

Mining footprint

Avifaunal Significance: LOW

The mining area is predominant within the study area, which is totally transformed and thus shows no viable avifaunal habitat. Such areas of the mine infrastructure such as powerlines are currently utilised by perching or roosting birds. Amur falcons and black shouldered kites were observed on site. Due to the lack of intact habitat, the avifaunal significance is low. The total area of this land type is 134.1 hectares, representing 21.2 % of the study area. Figure 5 provides a photographic representation of the habitat type.

1.6 BUFFERING AND FLAPPER POSITIONS

The buffering of identified sensitive habitats are illustrated in Figure 2. The areas of the relative habitat types are summarised in Table 1, additionally providing the proportions of the habitats for the study area. The exact intersect points for the buffers, per habitat type are shown in Table 2. Finally, the lengths of powerline requiring bird flappers, per powerline alternative, are provided in Table 3.

1.7 DISCUSSION OF RED-DATA SPECIES

Secretary bird (Sagittarius serpentarius) – “Near-threatened”

Secretary birds are but have declined over most of their geographic distribution range outside of larger conservation areas. They are highly susceptible to negative powerline interactions, especially from collisions. They prefer relatively open areas that are strongly represented within the study area. Although not observed on site during the survey, this species may forage in the short natural thornveld found within the region.

Kori Bustard (Ardeotis kori) – “Vulnerable”

Kori bustards are highly susceptible to negative powerline interactions, usually due to collision impacts. This species are more common in large conservation areas or areas with large tracts of suitable agricultural lands.

Black Stork (Ciconia nigra) – “Near-threatened”

Black storks are highly susceptible to collision impacts. These species forage on short open and cultivated lands. There are a small number of nesting pairs in the region, although the overall risk in terms of the development is LOW.

Martial eagle (Polemaetus bellicosus) – “Vulnerable” and tawny eagle (Aquila rapax) – “Near-threatened”

These eagle species are highly susceptible to electrocution impacts. These species are much more common in larger conservation and/or agricultural areas and will only occasionally inhabit the study site. The overall risk in the scheme of the powerline development is LOW.

All recommendations, designed to mitigate the impacts of the construction process should be documented by the ECO and relayed to the constructor for implementation. The mitigation factors were designed to deal directly with the aforementioned negative avifaunal effects.

1.8 MITIGATION FOR COLLISION

- The shortest powerline route (whilst avoiding short grasslands, cultivated lands and water bodies) should be sought.
- The buffering and avoidance of water bodies, wetlands and drainage lines are the cornerstone of the mitigation procedure. Waterbodies provide foraging habitat, nesting habitat and general congregation points for a variety of susceptible species, whilst also providing navigation pathways for birds in flight. Placement of powerlines across such habitats bring avifauna into direct conflict with powerlines. Table 2 shows the exact points of contact between the proposed powerlines and the buffer zones of significant water-based habitats. The buffer zones are a guideline based on the perceived “importance” of the on-site wetland. The permanent, large bodied water systems are buffered at 150 metres whilst man made, linear or smaller water bodies such as canals are buffered at 100 metres.
- Any existing linear structures such as roads and powerlines are often incorporated as landmarks into bird's behaviour patterns and are therefore avoided by birds in flight. It is therefore prudent to align new powerline developments with currently existing linear developments, which will serve to increase the visibility of the existing structures and be considered to be part of the bird population's existing landmark frame of reference.
- Although the fundamental principles of collision avoidance state that the proposed alignments should deviate from any wetland feature, the minimum requirement is the placement of double

loop flight diverters (see Figure 6) at 5 metre intervals on lines traversing all water bodies as well as within a 150 metre buffer zone.

- All alignments traversing open cultivated areas and open grasslands should be marked with double looped bird flight diverters spaced at 5 metres apart. The close alignment is considered to be minimum in order to at least reduce the incidences of collision from grassland species.

1.9 DESIGN OPTIONS

Of the three proposed line options, Alternative 1 is considered to be the most suitable. The reason for this are three-fold.

- 1) The line closely follows existing road and powerline infrastructure.
- 2) The line is the shortest in distance of the three options.
- 3) The line avoids the wetlands which are the most sensitive of the habitat types, more than the other options.

As with collision impacts, avoidance of water-based congregation points are a key element in the mitigation process.

The design of smaller powerlines is paramount to the mitigation for smaller kV powerlines. Figure 7 illustrates the most appropriate monopole design for the current study area. There are a number of design parameters that must be taken into consideration.

1. The height of pylons should allow for unrestricted movement of ground-based birds between successive towers.
2. The elimination of bird streamers can be achieved (in a small part) with rubberised perch spikes (see Figure 6).
3. Live components should be bundled to increase visibility for approaching birds as well reduce surface area of live zones.

4. The clearance of live wires should either be staggered, or spaced sufficiently in order to prevent wing contact with live wires.
5. A monopole bird friendly design should be utilised.

The design shown in Figure 7 shows the number of key design features that make the pylons less likely to cause electrocutions.

1. Diagonal crossbars discourage perching of larger bird species.
2. Adequate staging and spacing of pylon arms in order to reduce wing contact electrocutions.
3. Bird spikes placed above the conductors discourage birds from perching above live areas which will reduce the likelihood of defecation related electrocutions.
4. Finally, a horizontal perch bar is provided in a safe area, aiming to eliminate both wing-contact and defecation electrocutions.

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Figure 1: The proposed locations of the hernic powerlines combined with visitation tracks

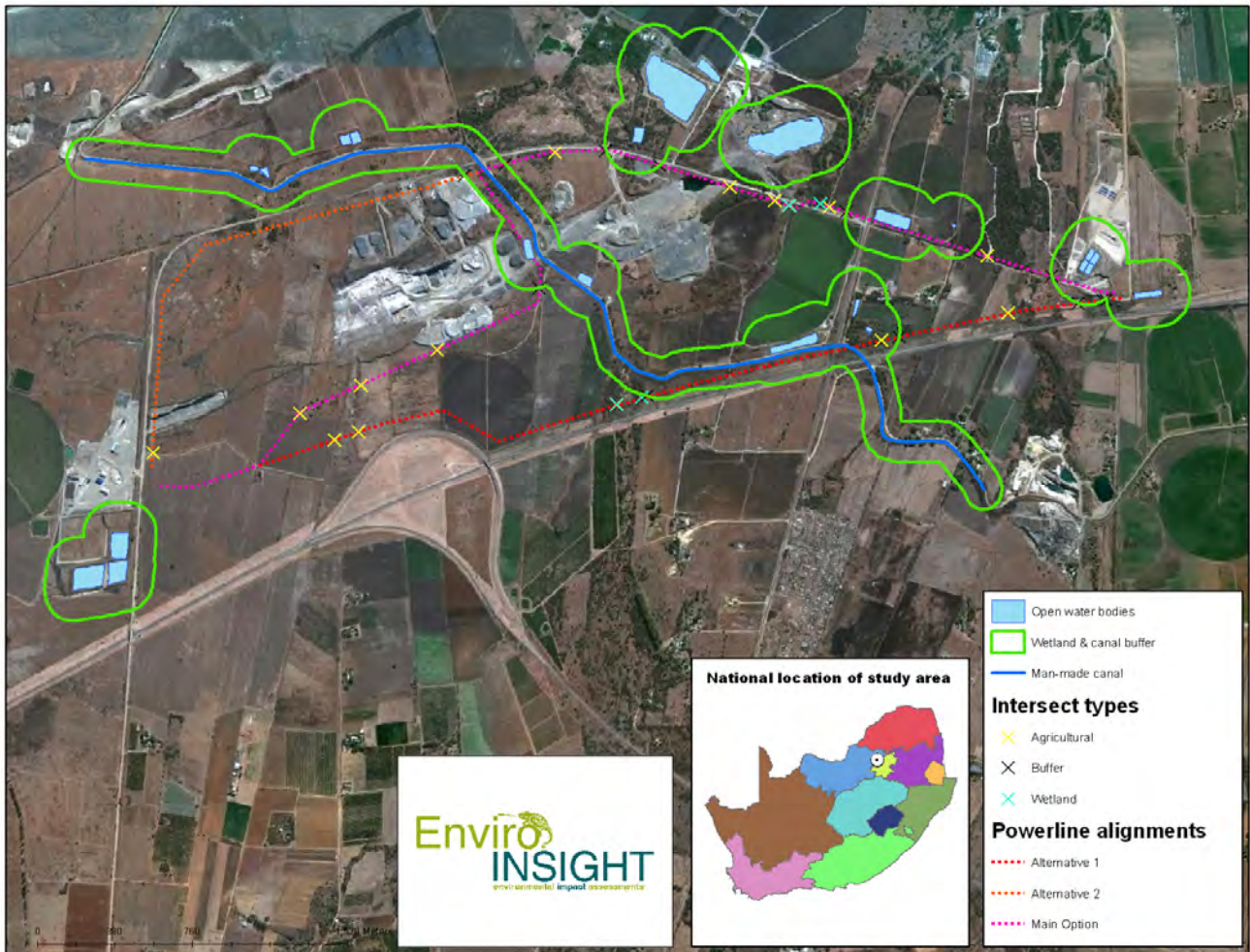
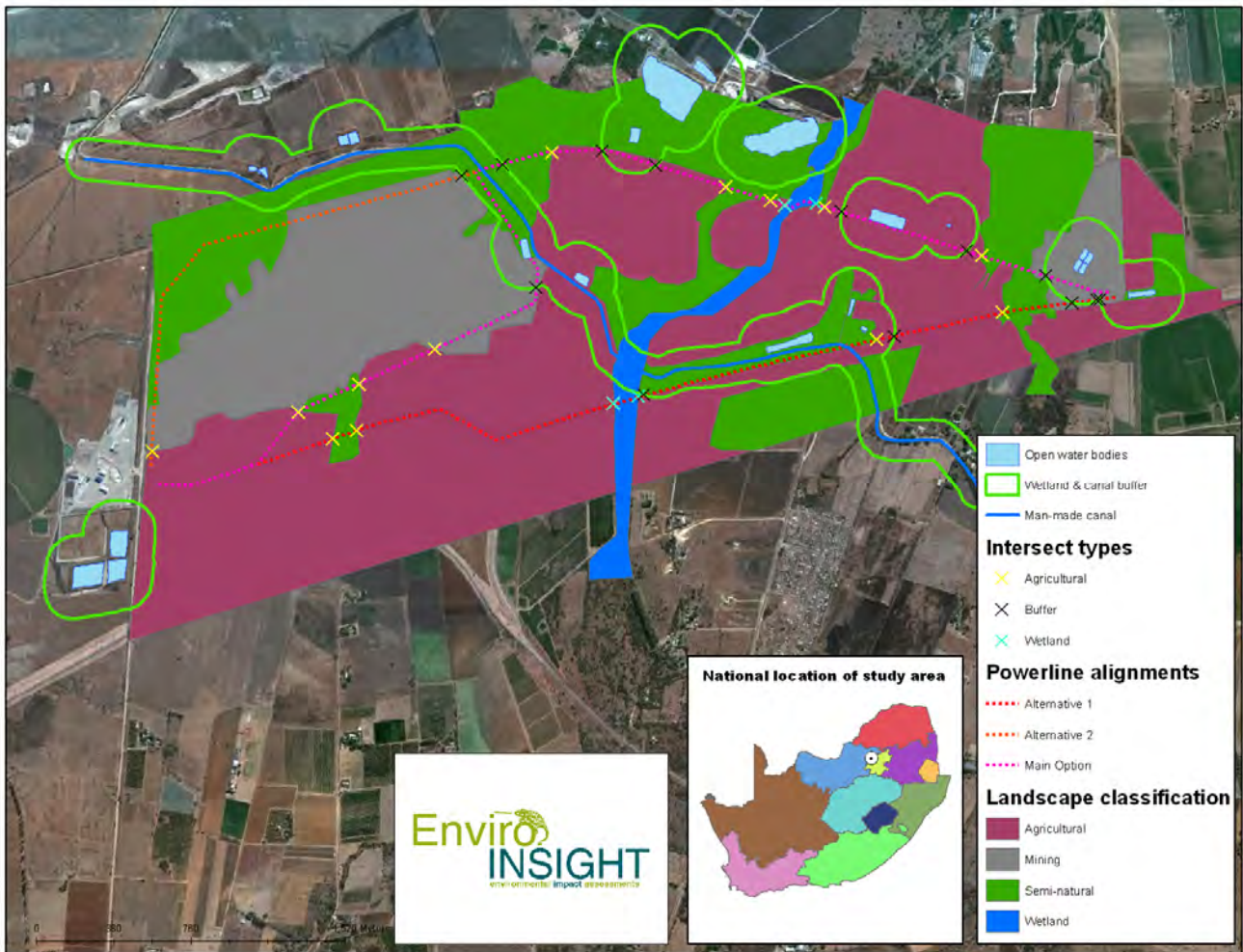


Figure 2: The proposed locations of the hernic powerlines combined with visitation tracks



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Table 1: Habitat area sizes as well and proportions of total study area.

Landscape	Area (Ha)	Proportion (%)
Agricultural	350.7	55.5
Mining	134.1	21.2
Semi-natural	132.9	21.0
Wetland	14.6	2.3
Total	632.3	100

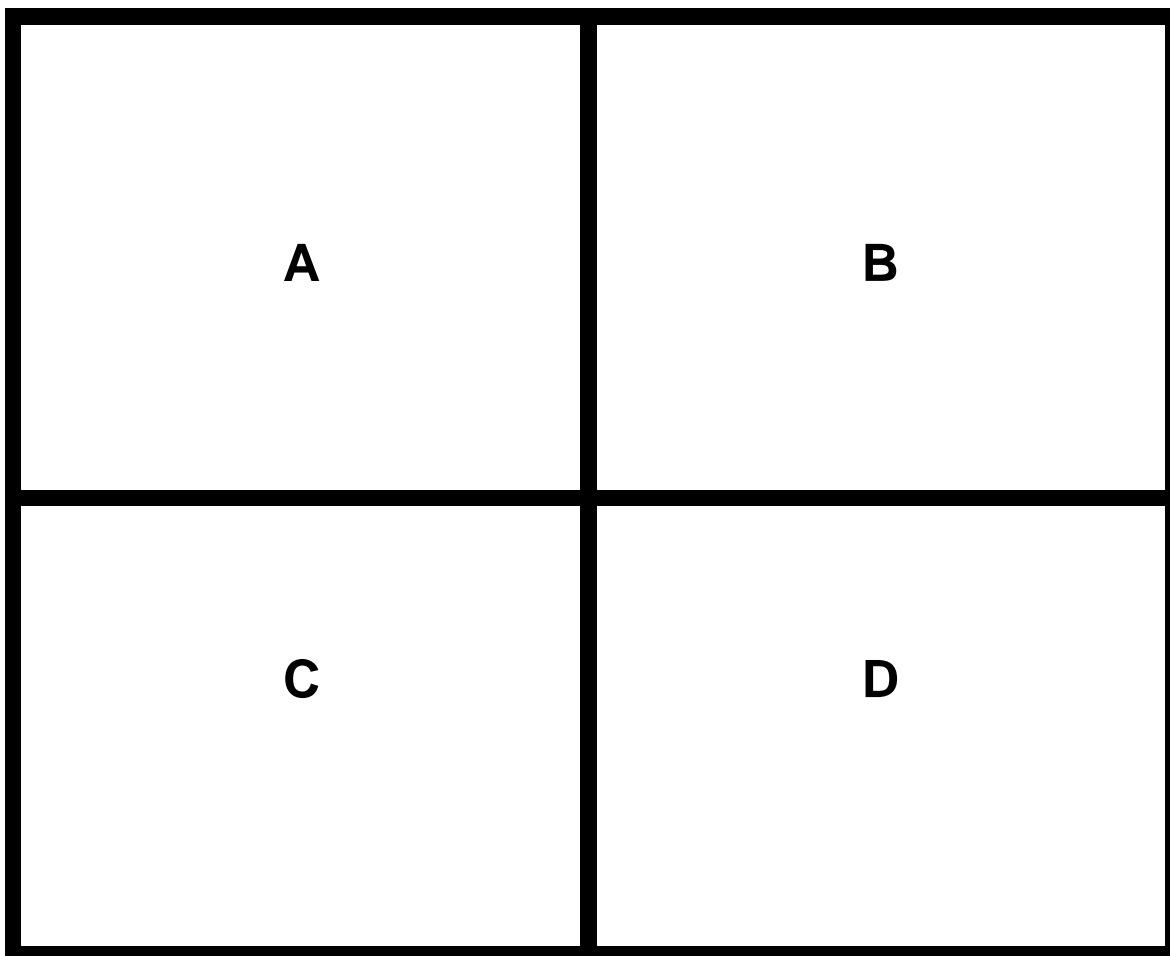
Table 2. Geographic coordinates (decimal degrees) of the location of the three different powerline intersect types.

Type	Longitude	Latitude
Agricultural	27.7598441661743	-25.6801460997131
	27.7675911317432	-25.6822845073069
	27.7464668619196	-25.6778123701639
	27.7549956830421	-25.6792844489925
	27.7407785159193	-25.6865722195559
	27.7370870650669	-25.6881237688615
	27.7341017738345	-25.6893784160242
	27.7571836822005	-25.6798860964244
	27.7578947233633	-25.6800816073015
	27.7686313777789	-25.6847971741594
	27.7624495274735	-25.6860248354783
	27.7495573622000	-25.6889235381559
	27.7369524437526	-25.6901840931505
	27.7358024929412	-25.6905461749420
27.7269394756202	-25.6911515856134	
Buffer	27.7707177818518	-25.6831472955853
	27.7606789571626	-25.6803764603054
	27.7668174397939	-25.6820707546841
	27.7440376918752	-25.6783458551130
	27.7457239866487	-25.6837965206716
	27.7489541973608	-25.6777171034551
	27.7515726611232	-25.6783430575790
	27.7733939120545	-25.6841866630022
	27.7732117121134	-25.6842083026330
	27.7720268460675	-25.6843490275070
	27.7632924720677	-25.6858573244767
27.7510526100913	-25.6885412908958	
27.7420434555192	-25.6788555523937	
Wetland	27.7594120298787	-25.6800268019420
	27.7578947233633	-25.6800816073015
	27.7507803156976	-25.6886109253382
	27.7495573622000	-25.6889235381559

Table 3: Lengths of flappers required per powerline alternative.

Name	Total length (m)	Unique lengths (m)	Bird flappers required on unique lengths(m)	Proportion of unique length requiring flappers (%)
Main Option	6110.43	2857.73	2049.5	71.7
Alternative 1	4391.69	4391.69	4382	99.8
Alternative 2	5801.03	2548.33	144	5.7
Shared length between Main & Alt 2	3252.7	-	2405.5	74.0

Ordering of collage presented for photographic evidence.



The photographic evidence is presented in a quadrant, divided into A, B, C and D in the exact order as shown above. Summaries of each Quadrant are presented below each collage.

Figure 3: Photographic examples of habitat types in the study area.



- A) Short grassland/ agricultural lands
- B) Current agricultural lands.
- C) Semi-natural open vegetation
- D) Semi-natural closed vegetation

Figure 4: Photographic examples of habitat types in the study area.



- A) Semi-natural wetland
- B) Wetland/farm impoundment
- C) Made-made canal/man-made canal and ephemeral vegetation

Figure 5: Photographic examples of some potential impacts found within the line corridor



A) Mine site and infrastructure with existing powerline

B) Mine site

Figure 6: The recommended bird diverter to be used (copyright Preformed Line Products, www.preformedsa.co.za).

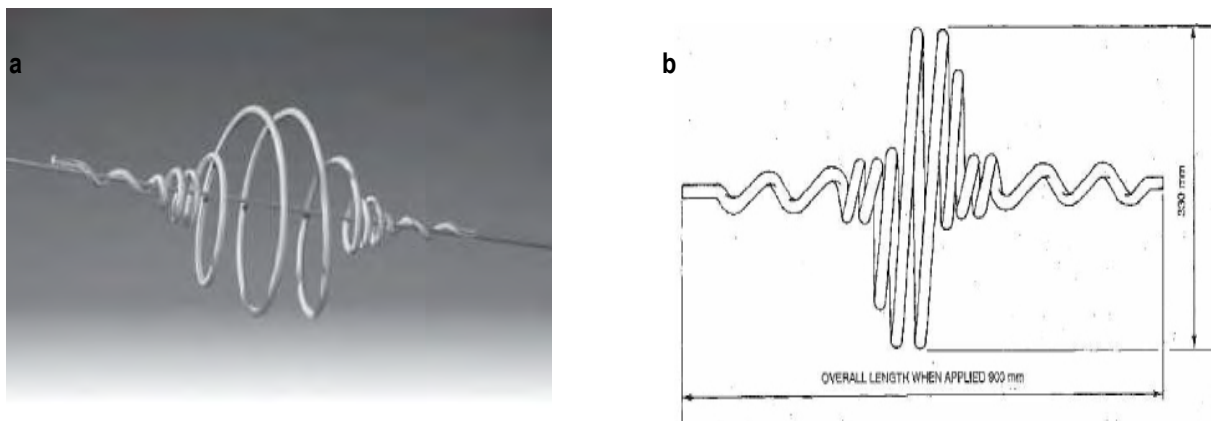


Figure 7: A bird-friendly tower designs to be used for the current project



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**SPECIALIST REPORT: Flora and broad wetland assessment
for a proposed 132 kVA power line –
Hernic Mine, Northwest Province**

Commissioned by

Hernic Ferrochrome

Compiled by

Ekoinfo CC & Associates

April 2012

DRAFT

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Report Status	Version	File Route
Draft	1	D:\GIS\projekte\BAP_Heric132kVA_EnviroInsight\Reports\tx\EkolInfo Heric 132kVA Flora_wetland studyMS2k.doc

1 EXECUTIVE SUMMARY

EkoInfo CC assessed the vegetation and broad wetland as part of the Basic Assessment Process required with regards to the development/ construction of a proposed 132 kVA power line in Northwest Province.

The proposed power line will cover a distance of approximately 5 km between its start and end point, however due to the presence of man made features such as cultivated lands and mining infrastructure, the three alternatives proposed which avoid these man made features exceed this distance. The scope of this study is to assess the three alternatives in terms of vegetation and wetlands.

The study area, which comprise of the area covered by the three alternatives, is located within the **endangered** Marikana Thornveld regional vegetation unit. This regional vegetation unit is poorly conserved and under pressure from cultivation, urbanisation and mining. With regards to the 14 threatened Red Data flora, the study area does not present optimal habitat, because these species prefer coarse textured soils derived from sedimentary rock, while the study area is underlain by igneous rock which is a source of fine textured vertic soils. **Therefore the probability for threatened Red Data being present is low.**

During the site visit completed in January 2012, the presence of species of concern (provincially protected, medicinal and alien invasive species) was noted. These species occur mainly in the remaining highly fragmented natural vegetation along the drainage systems. Due to the presence of the fine textured soils, wetlands are poorly developed and mainly associated with drainage lines.

Overall, it is concluded that the area has limited potential with regards to vegetation conservation, due to past and current cultivation as well as the expansion of mining activities, but has moderate ecological significance with regards to wetland hydrology.

The three proposed route alternatives as well as a least environmental sensitive alignment derived from the flora-wetland sensitivity model were evaluated using 31 m servitude. Based on the results of this comparison it was determined, that alternative 1 is the least optimal alignment with regards to the flora and wetlands, while either the main alternative or alternative 2 could be considered.

Irrespective of either the main alternative or alternative 2 being implemented, it is strongly recommended that the proposed power line should remain south of the game fence along section A to B (Figure 10) and along the southern edge of the road (Section B to C), while overall preference should be given keeping the infrastructure in all ready transformed areas such as road reserves, rehabilitated mining land and cultivated fields. In addition, a walk down should be done prior to construction to ensure that none of the pylons are located within the wetlands present. Furthermore 50 cm deep topsoil should be removed and replaced the moment the foundations of the pylons had been completed to ensure the effective recovery of the vegetation.

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2 INTRODUCTION

Henric XXXX approached EkoInfo CC to do a flora and broad wetland assessment as part of the Basic Assessment Process for a proposed 132 kVA power line between their properties in the Northwest Province (Figure 1).

2.1 Scope of work/ Terms of reference

To assess the vegetation and wetlands on a Basic Assessment/ informative level in terms of the following environmental legislation:

1. National Environmental Management Biodiversity Act
2. National Water Act
3. Conservation of Agricultural Resource Act
4. Northwest Province Nature Conservation Ordinance

The study consists of a literature and desktop review with a site visit to verify the information from the literature and desktop review.

3 STUDY AREA

The study area is located north of the N4 between Pretoria and Rustenburg (Figure 2). It transects the R566 along its eastern side, while remaining south of the Miracle Waters Diving Centre. The landscape represents rural agricultural (Figure 3) with mining activities increasing (Figure 4).

From the start in the east towards the end in the west, the distance between the two points covers almost 5 km in a straight line. However to avoid obstacles such as homesteads, irrigation infrastructure (pivots) and mining infrastructure (discard dumps, processing plants), the proposed alignment follows three alternatives.

4 METHOD STATEMENT

A literature review was done using scientific and popular publications. Available small-scale datasets from national and provincial government formed part of the desktop review using commercially available Geographic Information System (GIS) software such as ESRI's ArcView 9.3 and Idrisi Andes.

During the site visit, those areas appeared to represent natural areas was visited to confirm their status. Where relevant a species list was compiled to assess the presence of species of concern (Red Data, protected, medicinal and alien invasive).

The three alternatives were evaluated using Idrisi Andes, to determine which of the three alternatives transects the least remaining natural vegetation and is therefore the least sensitive from a vegetation and wetland perspective.

The area was assessed from both a regional perspective (quaternary catchment) and local perspective (local watershed – ten percent or larger of the quaternary catchment). For the regional perspective, the national land cover dataset from 2000 was used, while the local perspective involved the updating of the 2000 dataset using more recent Google Earth images.

4.1 Limitations And Assumptions

1. Due to the ability of power lines to span wetlands, the wetlands were not delineated in detail and a 100 m buffer was applied.
2. Species information was only recorded in the remaining natural areas, where it is expected that the proposed power lines could have a significant impact.

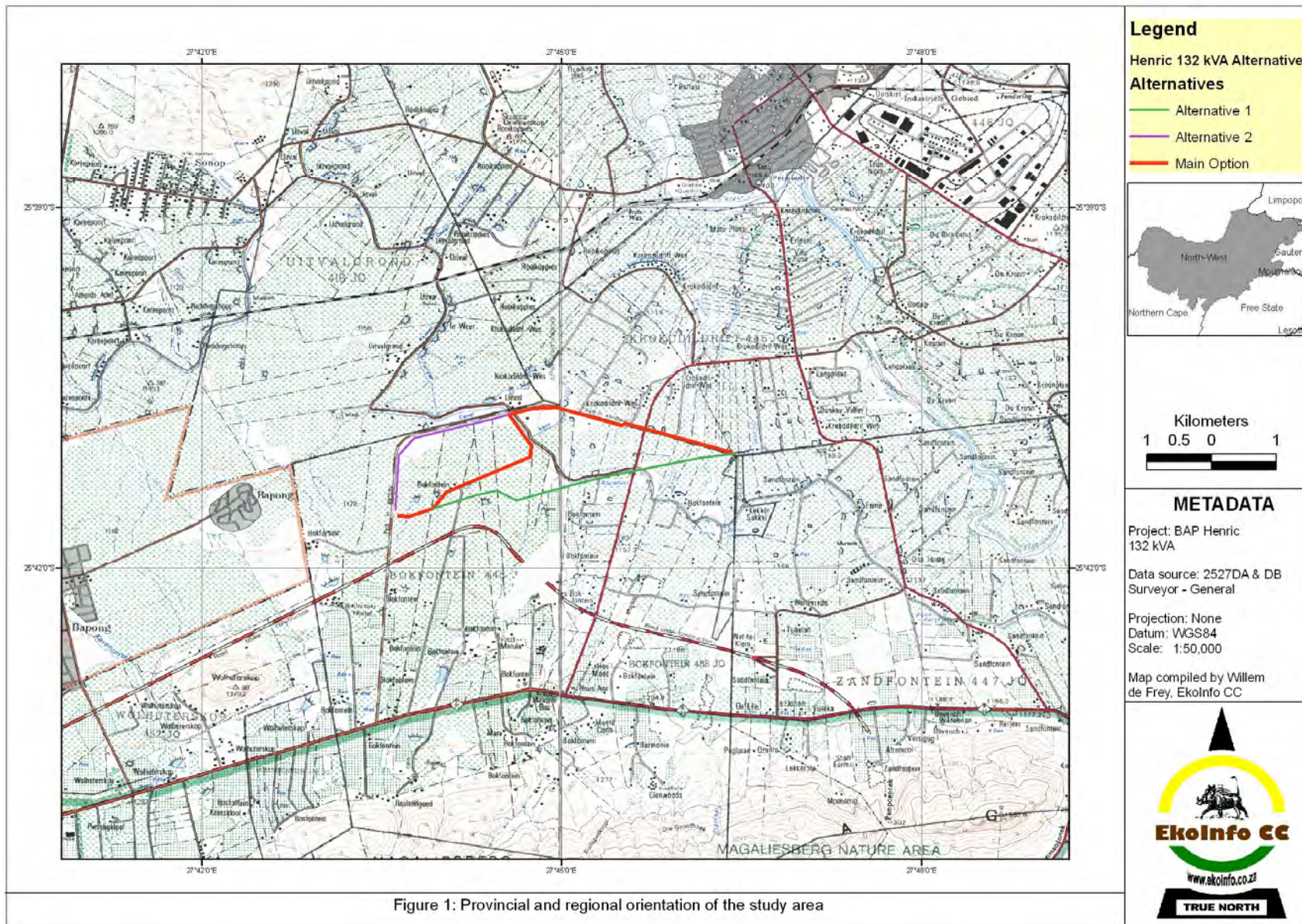


Figure 1: Provincial and regional orientation of the study area

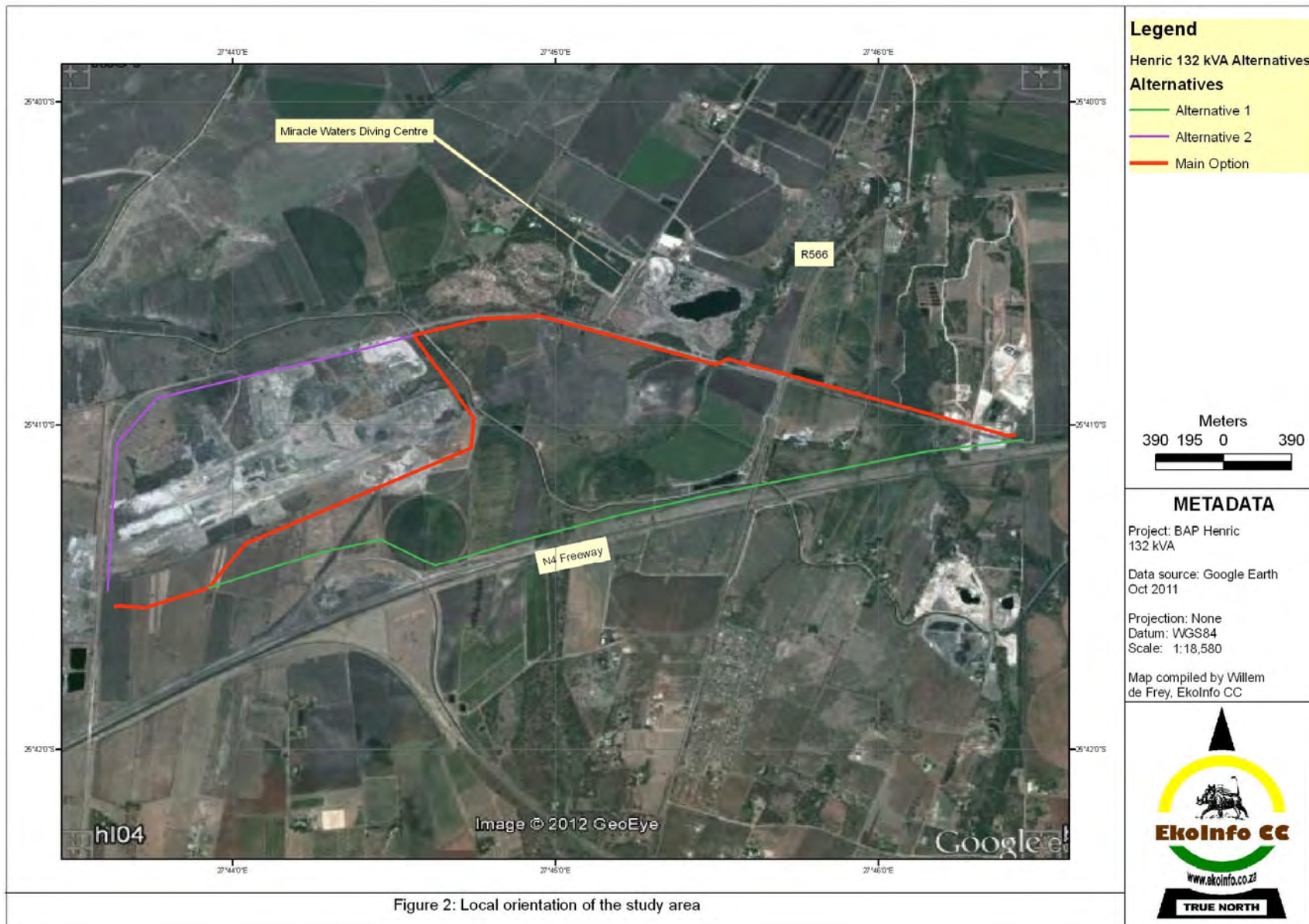
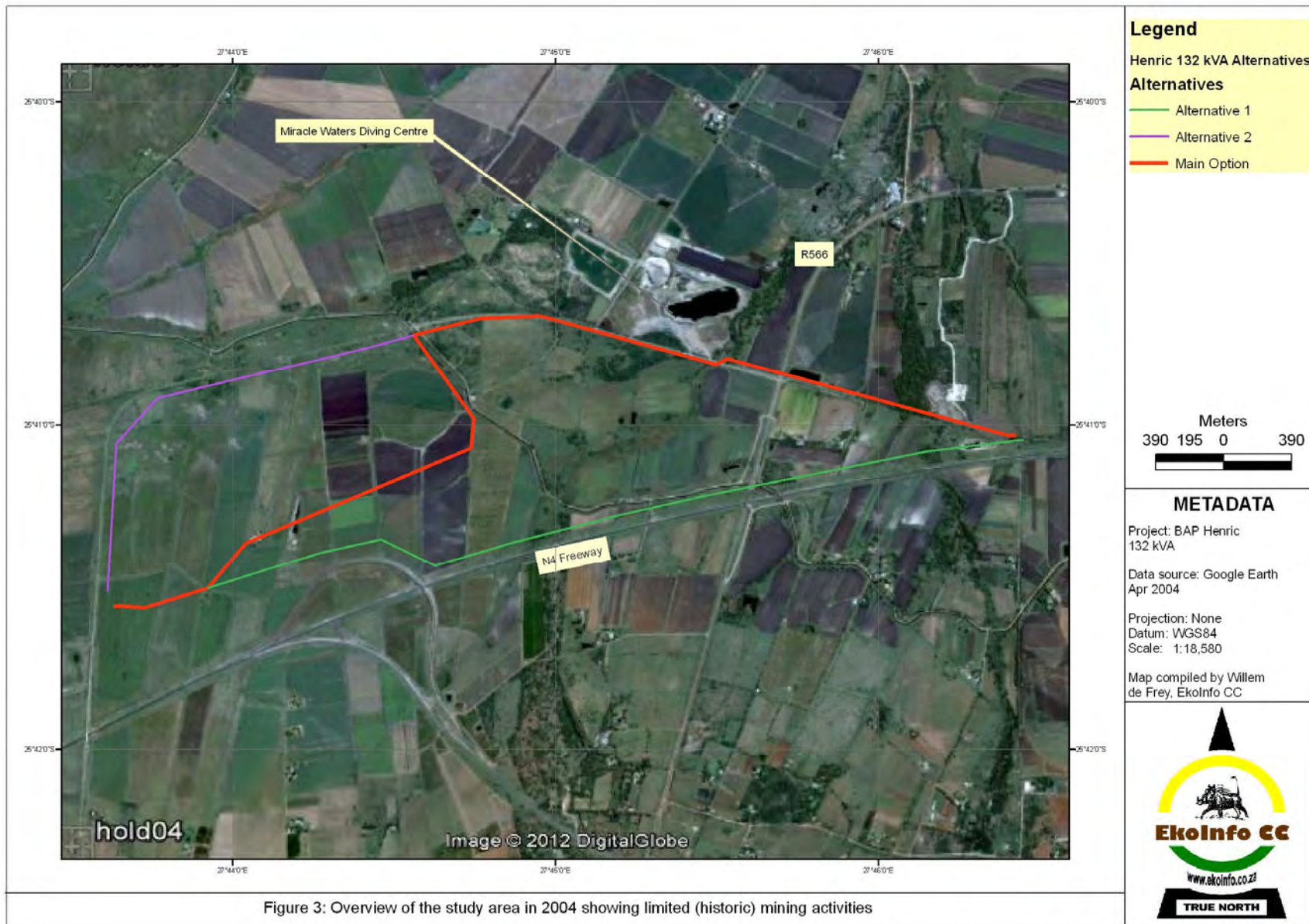
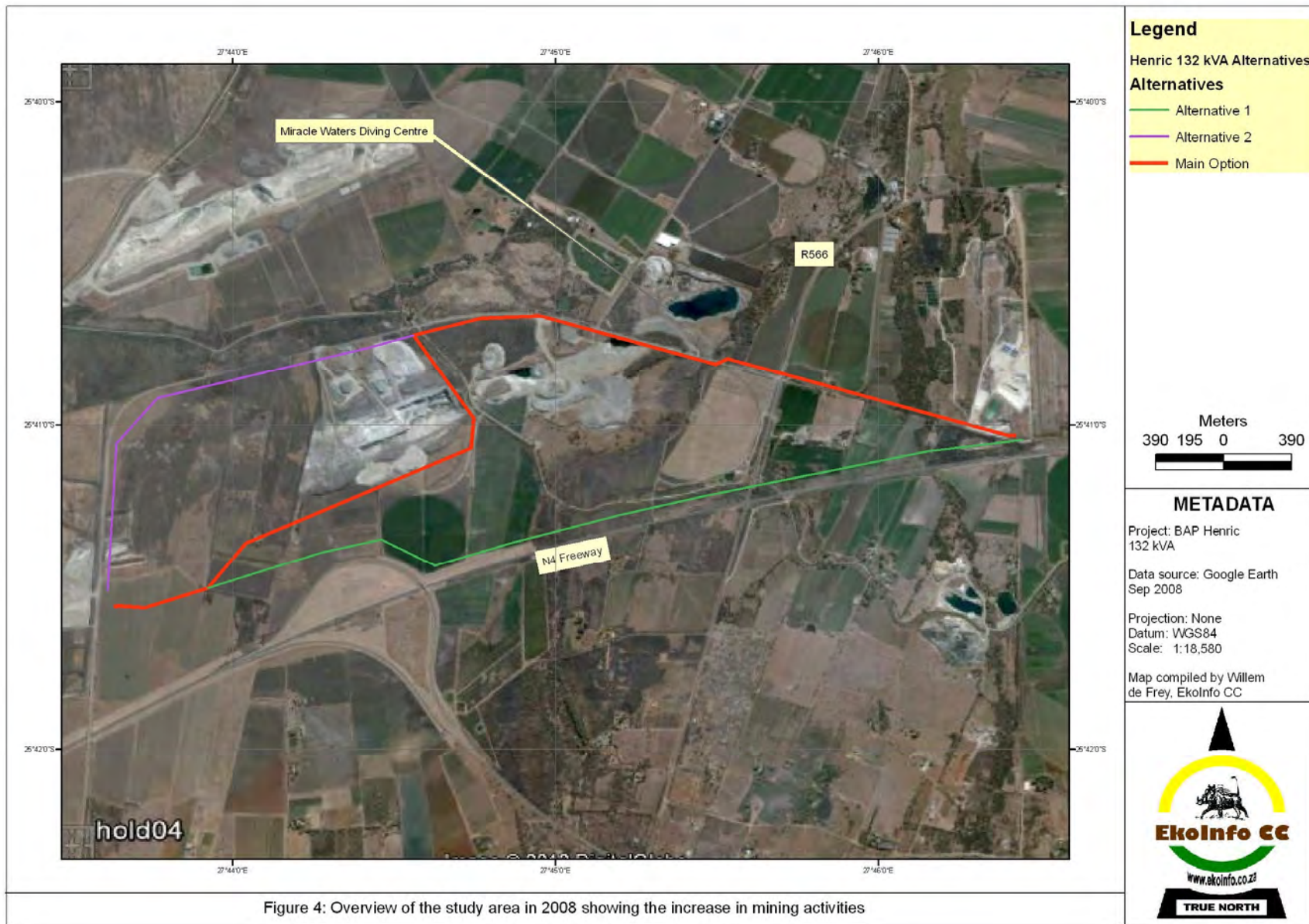


Figure 2: Local orientation of the study area





5 RESULTS

In accordance with the National Environmental Management Biodiversity Act, 2004 an overview is provided of the ecosystems and species of concern on a regional scale. Quaternary catchments are considered to represent landscapes on a regional scale (Turner, Gardner & O'Neill 2001, Wiens, Moss, Turner & Mladenoff 2006).

5.1 Regional Context

The study area is located within quaternary catchment A21J, it has been extensively impacted upon by human activities, but the potential to rehabilitate it remains (Nel, Maree, Roux, Moolman, Kleynhans, Silberbauer & Driver 2004). If local watersheds in size of ten percent and larger of the quaternary catchments are determined, then six local watersheds represent them. The study area is located within one of these six local watersheds (Figure 5).

5.1.1 Ecosystem Diversity

The study area is located within the **endangered** Marikana Thornveld, which belongs to the Savanna Biome (Figure 5) (Mucina & Rutherford 2006). An extract of the vegetation unit is provided in Appendix B.

The vegetation unit is described as: "Open Acacia karoo woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are more dense along drainage lines, on termitaria and rocky outcrops or in other habitat protected from fire." (Appendix B).

This endangered regional vegetation unit does not contain any biogeographically important taxa, but is under severe pressure from cultivation and urbanisation (Appendix B), with basically 48% of it transformed. Less than 1% of this vegetation unit is statutorily conserved. Erosion is very low to moderate. Alien invasive species occur in high densities along drainages lines.

5.1.2 Species Diversity

Species information for Northwest Province is available from the South African National Biodiversity Institute (SANBI¹) website. Approximately 2 452 plant species had been recorded for the Northwest Province, of which 14 species are classified as threatened (Vulnerable, Endangered, Critical Endangered) Red Data² (Table 1). Based on 182 records from the PRECIS database at SANBI; it was determined that these 14 threatened species are mainly associated with areas of between 1000 and 1 500 m above mean sea level, on most petrological units such as igneous, metamorphic and sedimentary rock, with a slight preference to towards sedimentary rock (sandstone and dolomite), mainly on dryland, with moderate to coarse textured soils, with or without rocks, often on the cold to cooler aspects (south to east) of the landscape in association mainly with Savanna (Bushveld) and grassland.

5.1.3 Human influence (Habitat loss and fragmentation)

Based on the national land cover information available from 2000 (Figure 6), 72% of quaternary catchment A21J is natural (Table 2), while 28% had been transformed. It is evident that up and to 2000, the main driver of habitat loss (transformation) within the landscape was cultivation, with mining only contributing 1%.

On a local scale using the same data source, it is evident that the levels of transformation is higher at 43%, while only 57% of the area within the local watershed is considered to be natural (Table 3). It should be noted that even though a natural area is classified as being degraded, it does not imply that it could not be restored. The influence of cultivation on the landscape is also emphasised at this scale with cultivation contributing 35% to the transformation in the area. The remaining vegetation within the area consists of thicket/ bushland and woodlands. These results confirm the fragmented nature of the area, which has a negative influence on connectivity and biodiversity (Hilty, Lidicker Jr & Merenlender 2006).

¹ <http://www.sanbi.org/>

² <http://redlist.sanbi.org/>

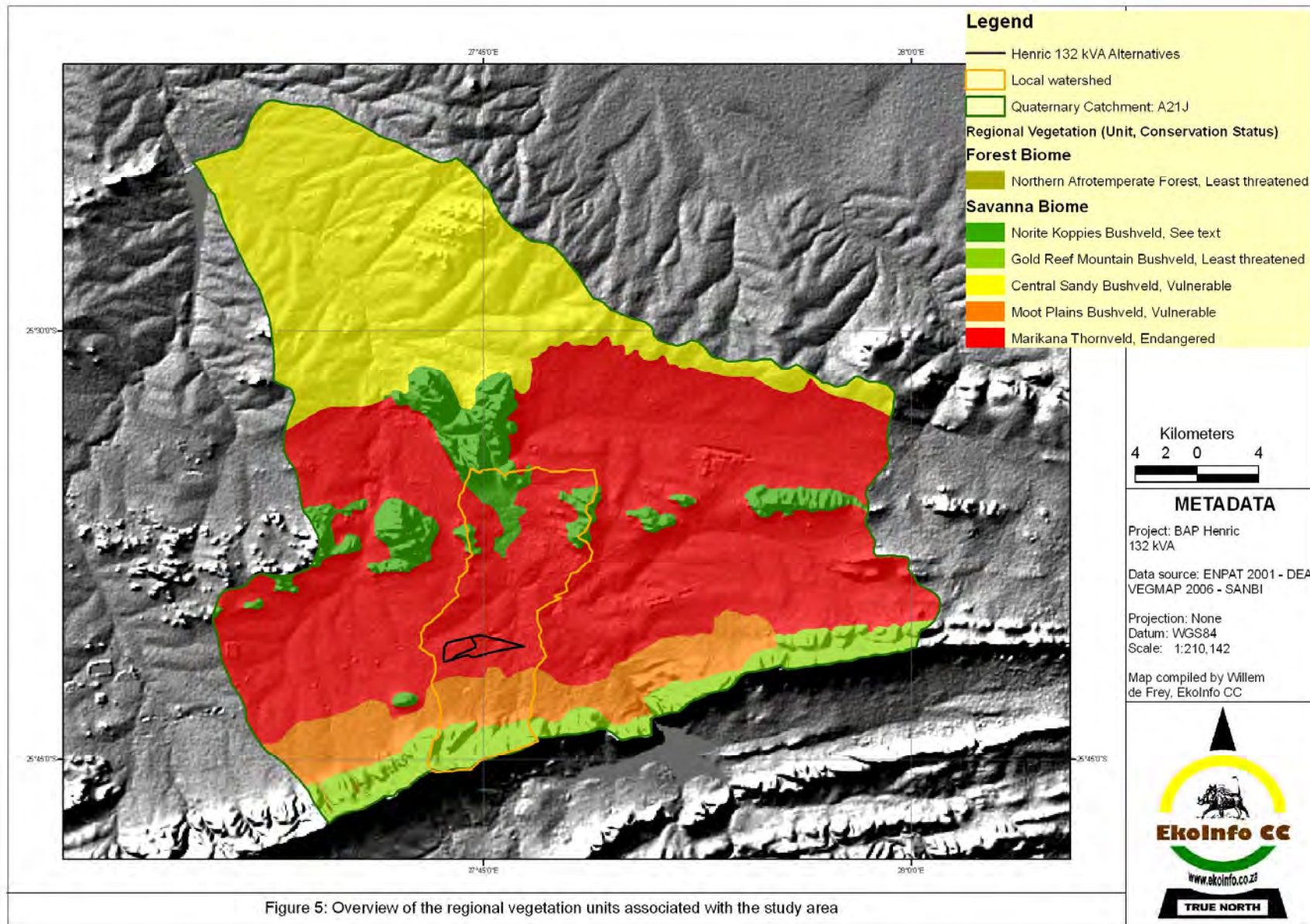


Figure 5: Overview of the regional vegetation units associated with the study area

Table 1: List of the 14 plant species classified as threatened (Vulnerable (VU), Endangered (EN), Critical Endangered (CR)) within Northwest Province

Family	Species	Threat status	SA Endemic	Growth forms
Apocynaceae	<i>Brachystelma canum</i> R.A.Dyer	CR	Yes	Herb, succulent
Apocynaceae	<i>Brachystelma gracillimum</i> R.A.Dyer	CR	Yes	Geophyte, succulent
Asphodelaceae	<i>Aloe peglerae</i> Schönland	EN	Yes	Dwarf shrub, herb, succulent
Euphorbiaceae	<i>Euphorbia perangusta</i> R.A.Dyer	EN	Yes	Dwarf shrub, succulent
Mesembryanthemaceae	<i>Delosperma macellum</i> (N.E.Br.) N.E.Br.	EN	Yes	Dwarf shrub, succulent
Orchidaceae	<i>Brachycorythis conica</i> (Summerh.) Summerh. subsp. <i>transvaalensis</i> Summerh.	EN	Yes	Geophyte, herb
Acanthaceae	<i>Dicliptera magaliesbergensis</i> K.Balkwill	VU	Yes	Herb, shrub
Anacardiaceae	<i>Searsia maricoana</i> (Baker f.) Moffett	VU	Yes	Dwarf shrub
Apocynaceae	<i>Brachystelma incanum</i> R.A.Dyer	VU	Yes	Geophyte, succulent
Apocynaceae	<i>Ceropegia stentiae</i> E.A.Bruce	VU	Yes	Geophyte, succulent
Asteraceae	<i>Rennera stellata</i> P.P.J.Herman	VU	Yes	Herb
Hyacinthaceae	<i>Ledebouria atrobrunnea</i> S.Venter	VU	Yes	Geophyte
Marsileaceae	<i>Marsilea farinosa</i> Launert subsp. <i>arrecta</i> J.E.Burrows	VU	No	Herb, hydrophyte
Rosaceae	<i>Prunus africana</i> (Hook.f.) Kalkman	VU	No	Tree

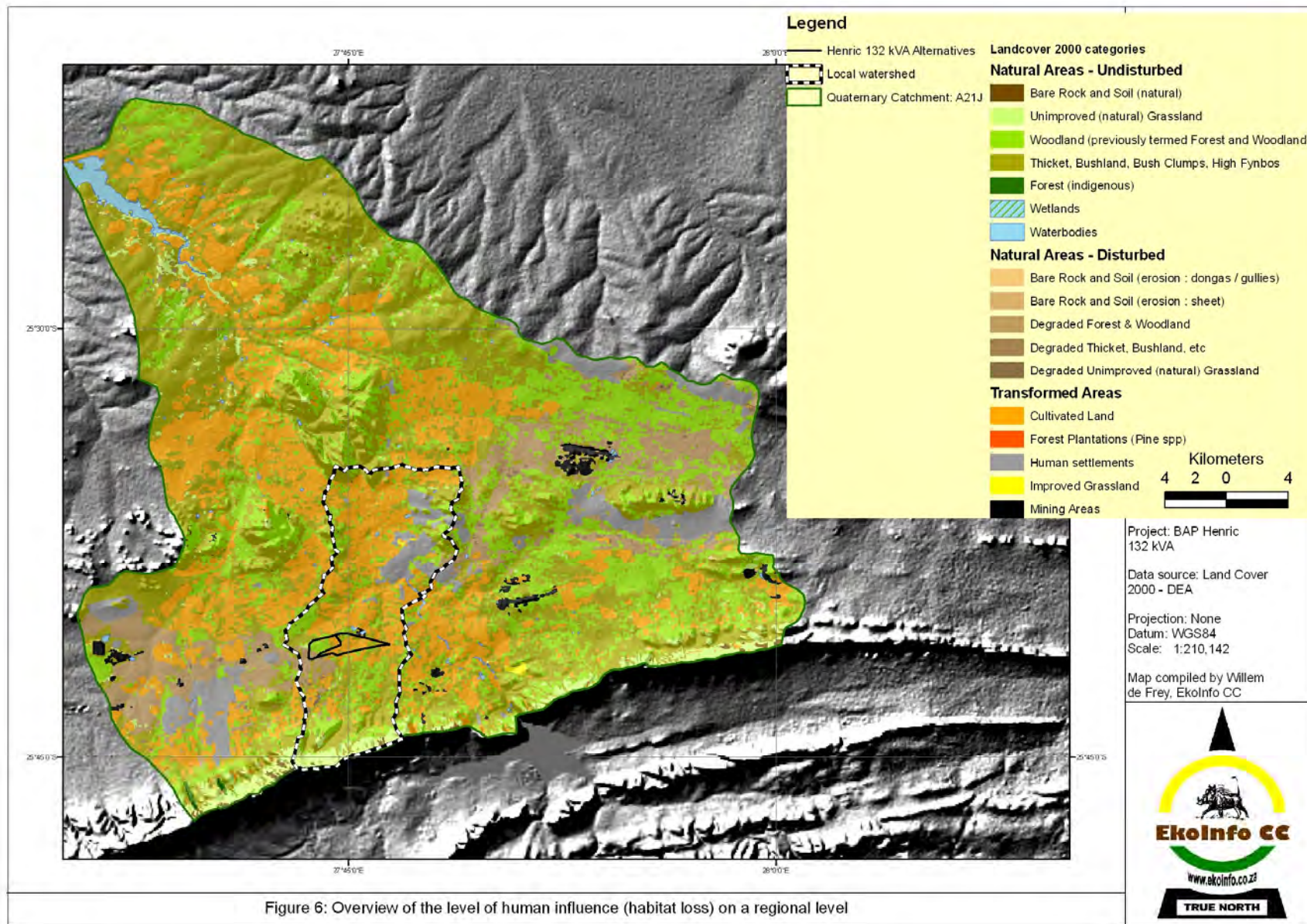


Figure 6: Overview of the level of human influence (habitat loss) on a regional level

Table 2: Overview of the levels of transformation within quaternary catchment A21J in 2000

Land Cover 2000 Categories	Surface Area (ha)	% Cover	Derived Ecological Status	
			Natural Areas	Transformed Areas
Thicket, Bushland, Bush Clumps, High Fynbos	41407	36%	41407	
Woodland (previously termed Forest and Woodland)	26888	23%	26888	
Cultivated Land	25500	22%		25500
Degraded Forest & Woodland	8962	8%	8962	
Human settlements	5678	5%		5678
Unimproved (natural) Grassland	3712	3%	3712	
Mining Areas	1064	1%		1064
Waterbodies	836	1%	836	
Bare Rock and Soil (natural)	233	0%	233	
Wetlands	201	0%	201	
Degraded Unimproved (natural) Grassland	186	0%	186	
Improved Grassland	95	0%		95
Degraded Thicket, Bushland, etc	91	0%	91	
Bare Rock and Soil (erosion : dongas / gullies)	86	0%	86	
Forest (indigenous)	81	0%	81	
Bare Rock and Soil (erosion : sheet)	8	0%	8	
Forest Plantations (Pine spp)	3	0%		3
TOTALS	115030	100%	82690	32340
			72%	28%

Table 3: Overview of the level of transformation (human influence) on a local scale

Land Cover 2000 Categories	Surface Area (ha)	% Cover	Derived Ecological Status	
			Natural Areas	Transformed Areas
Cultivated Land	4215	35%		4215
Thicket, Bushland, Bush Clumps, High Fynbos	3260	27%	3260	
Woodland (previously termed Forest and Woodland)	2467	20%	2467	
Human settlements	1022	8%		1022
Unimproved (natural) Grassland	582	5%	582	
Degraded Forest & Woodland	444	4%	444	
Degraded Unimproved (natural) Grassland	36	0%	36	
Waterbodies	26	0%	26	
Bare Rock and Soil (natural)	22	0%	22	
Mining Areas	20	0%	20	
Improved Grassland	17	0%		17
Wetlands	15	0%		15
TOTALS	12127	100%	6858	5269
			57%	43%

5.2 Local Context

This section provides an overview of the expected local drivers of vegetation diversity within the extent of the study area.

5.2.1 Ecosystem Diversity

At a larger local scale, regional vegetation units consists of a variety of vegetation communities determined by the variation in geology, climate, topography, soil and human influences.

5.2.1.1 *Terrestrial ecosystems*

From an assessment of the abiotic drivers (Figure 7), it is evident that the proposed power line alternatives (study area) transect a very homogenous landscape. The underlying geology is igneous norite, pyroxenite and anorthosite (Figure 7.A), geological units known to be a source of fine texture soils. The topography is associated with plains (slopes of less than 5° or 8%) at an altitude of 1 107 to 1 184 m above sea level (Figure 7.B). Climatic conditions within plains are homogenous. Due to influence of the geology, climate and topography, *in situ* soils belonging to the Ea land type (Figure 7.C) developed, which consists mainly of vertic soils. Therefore the study area is very homogenous and very little variation in terms of the terrestrial vegetation is expected.

5.2.1.2 *Aquatic ecosystems/ wetlands*

However in terms of wetlands, the availability of water and the movement of water in the landscape is the main driver for the distribution and extent of wetlands in the landscape (Figure 8). It is evident that all three alternatives transect riparian wetlands systems in the east. These systems are associated with well-developed channels and their presence was verified during the site visit on the 31st of January 2012 (Photo plate 1). The high to moderate potential wetland areas did not develop due to the fine textured soils which supports runoff rather than infiltration. Furthermore most of these areas had been severely impacted upon by cultivation (Figure 3) and mining (Figure 4), and therefore it is not possible to verify the wetland properties of these areas.

5.2.1.3 *Human influence/ transformation levels*

Using available small-scale datasets from governmental institutions and Google Earth, it was possible to compile an updated vegetation map (Figure 9). The vegetation map confirms the transformed nature of the landscape, which the proposed power line needs to transect. The remaining natural areas are highly fragmented and isolated, and covers only 168 ha or 14% of the area (Table 4). The human activity, which has contributed the most to habitat loss and fragmentation within the area, is cultivation, covering 703 ha or 60% of the area.

Therefore the remaining natural vegetation represents islands of diversity within the area, providing refuge area and stepping stone corridors for flora (Photo Plate 2) and fauna.

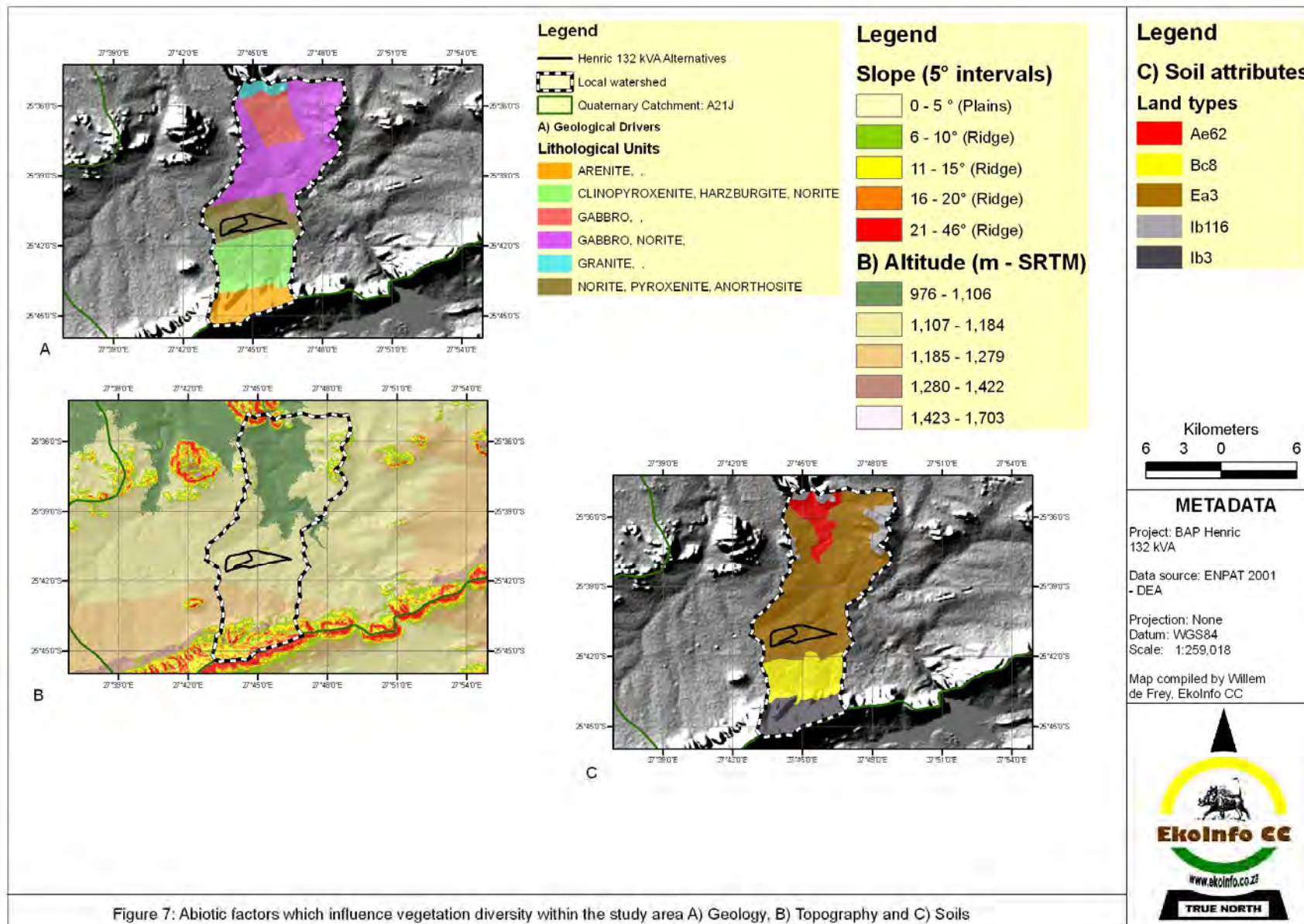


Figure 7: Abiotic factors which influence vegetation diversity within the study area A) Geology, B) Topography and C) Soils

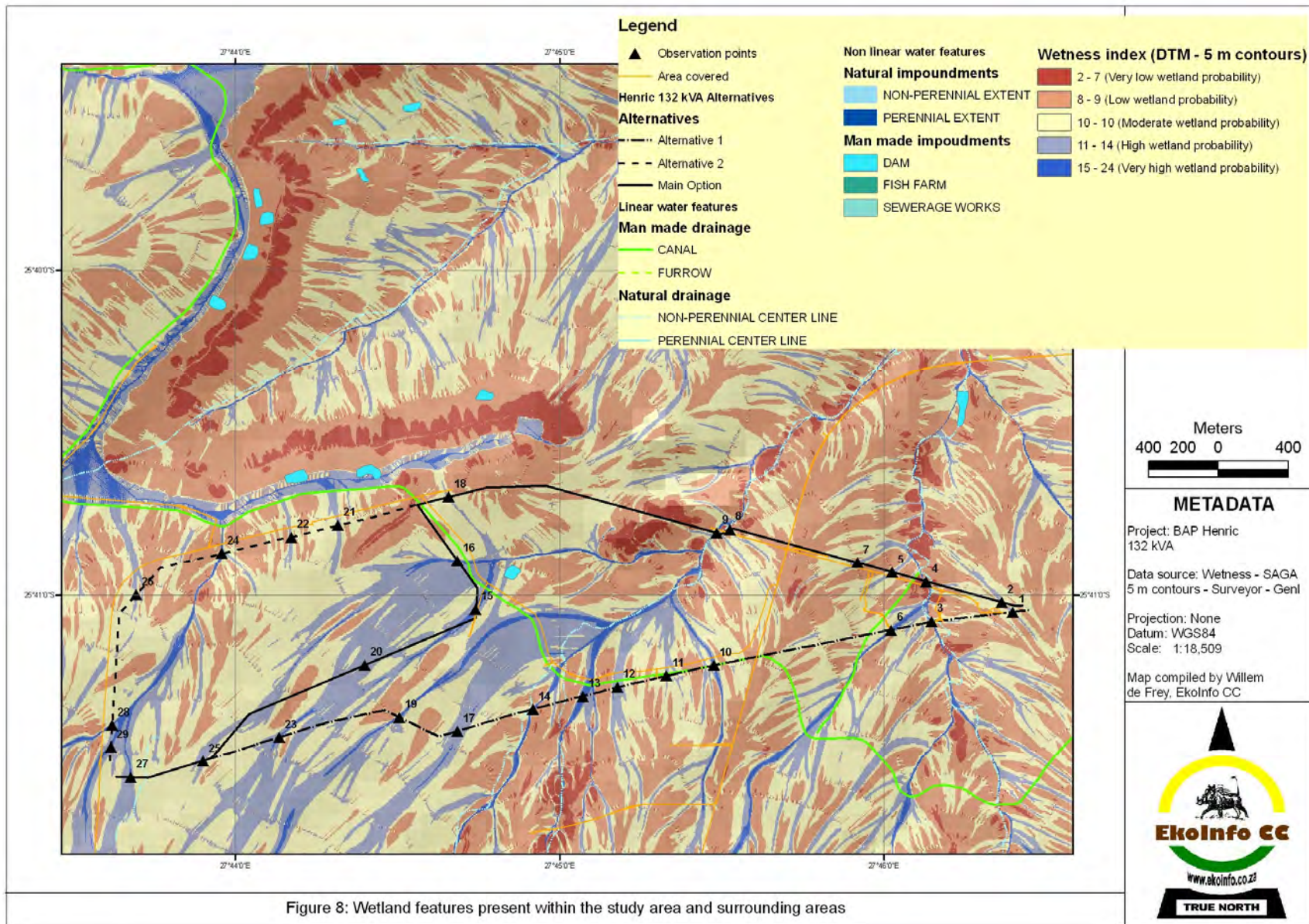


Figure 8: Wetland features present within the study area and surrounding areas



Observation point 4



Observation point 9



Photo plate 1: Overview of the ecological status of the well defined riparian wetland systems within the study area

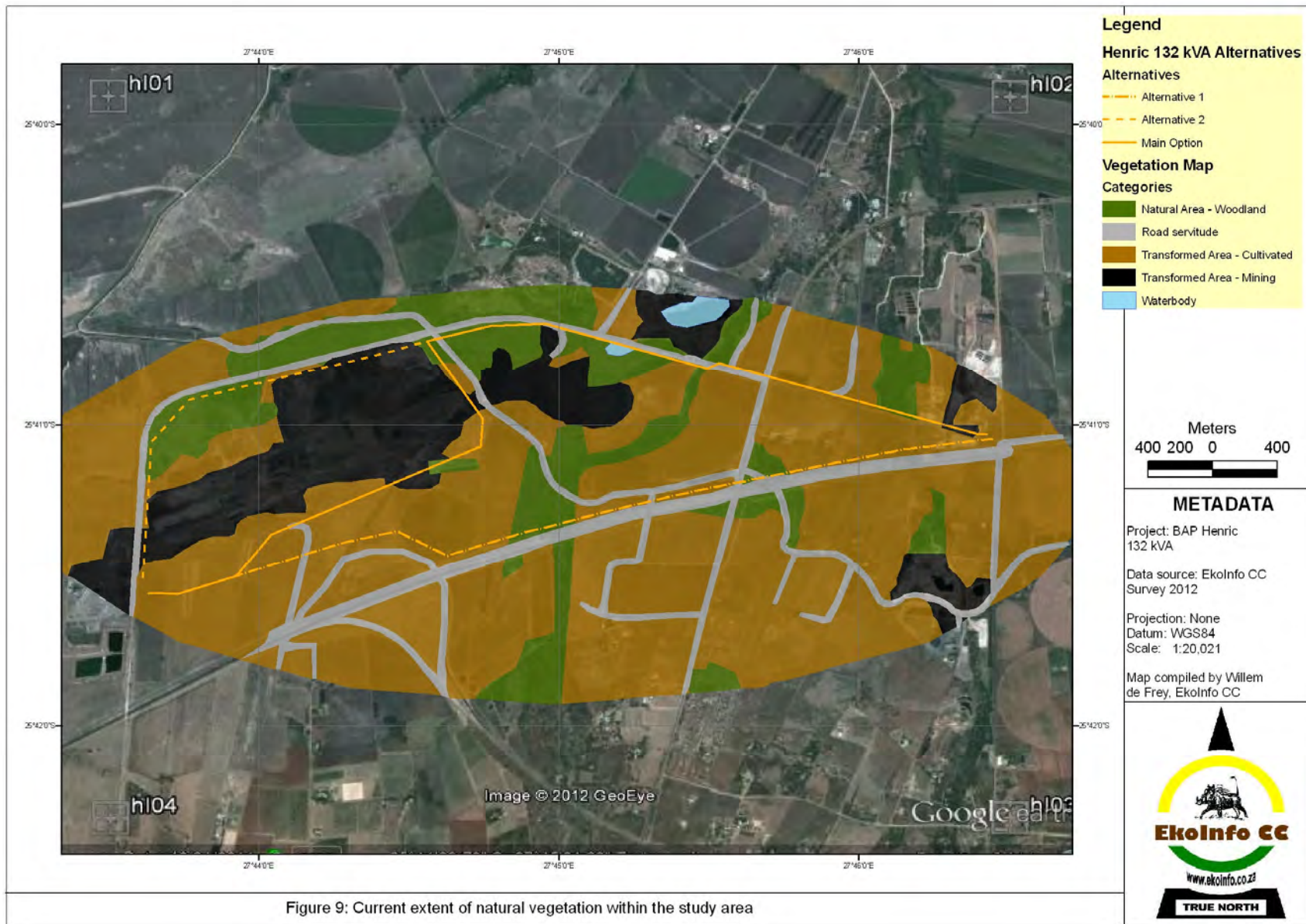


Figure 9: Current extent of natural vegetation within the study area

Table 4: Overview of the level of transformation within the study area

Vegetation categories	Surface (ha)	% Cover	Ecological Status		Weighted flora – wetland sensitivity	Motivation
			Natural	Transformed		
Natural Area - Woodland	168	14%	168		3	Wetland hydrology, protected species, medicinal species, pollinator habitat, stepping stones
Road servitude	121	10%		121	1	Hard surface, limited natural species
Transformed Area - Cultivated	703	60%		703	2	Wetland hydrology, limited natural species
Transformed Area - Mining	176	15%		176	1	All ecological process and functions disrupted
Waterbody	6	0%		6	1	Limited natural species, man made feature
TOTALS	1175	100%	168	1007		
			14%	86%		



Observation point 18 – direction south



Observation point 21 – direction north



Observation point 22 – direction south



Observation point 26 – direction west

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Photo plate 2: Remaining areas of natural vegetation representing local areas of refuge for flora and fauna

5.2.2 Species Diversity

Detailed surveys were beyond the scope of the project, and therefore a comprehensive list of the species present in the remaining natural vegetation is not provided.

5.2.2.1 *Threatened Red Data Flora*

Based on the regional scale assessment, it was determined that the study area does not present optimal habitat for the majority of threatened Red Data flora, as these species are mainly associated with coarse textured soils on sedimentary rocks. None of the species listed in Table One was noted during the site visit in January 2012.

5.2.2.2 *Nationally and provincially protected species*

During the site visit, individuals of the protected genus *Gladiolus* were observed near observation point 26. All species within the genus *Gladiolus* are protected in terms of Northwest Province Conservation Ordinance.

No nationally protected trees were observed during the site visit.

5.2.2.3 *Medicinal species*

Species with medicinal properties such as *Acacia karroo*, *Dombeya rotundifolia* and *Ziziphus mucronata* were noted. These trees occur mainly along the drainage lines as part of the riparian fringe.

5.2.2.4 *Alien invasive species*

Due to the transformed nature of the landscape various weeds and declared invasive species are present such as *Cirsium vulgare* and species from the Cactacea family (Queen of the night, prickly pear). These are category 1 which implies that they have to be controlled in terms of the Conservation of Agricultural Resources Act. Another species of concern in this area is *Nicotiana glauca* (Wild Tobacco), which is also a category species often found on mining infrastructure.

6 COMPARISON OF PROPOSED ALTERNATIVES

Using the updated vegetation map and the modelled potential wetland distribution and extent from the wetness index, it was possible to compile a flora and wetland sensitivity map (Figure 10). In spite of the extreme level of transformation present in the area due to agricultural and mining activities in the area, the most of the area qualifies as being moderately sensitive due to the wetland hydrological function, which remains in the landscape in spite of the transformation. Due to the fact that power lines can span wetlands, **and therefore need not impact on wetlands**, the present ecological status (PES) and ecological integrity status (EIS) of the wetlands were not assessed. However due to the level of transformation in the area it is not expected that these parameters would be high.

From the sensitivity analysis (Table 5), alternative 2 of the three proposed alternatives is the least sensitive. However the difference in sensitivity between the three proposed alternatives cannot be considered to be significant, which also is a function of the overall transformed state of the area. In an effort to determine which of the three is the most suitable from a flora – wetland perspective, a least environmental sensitive alignment were obtained using the least cost approach. The resulting alignment follows the start of both the main option and alternative 2 closely, but then deviates across the current mining area, which is not practical from a technical perspective. **Thus it is clear that alternative 1 is the least optimal alignment, followed by either alternative 2 or the main alternative from a flora – wetland perspective.**

7 RECOMMENDATIONS

It is recommended that irrespective if either the main alternative or alternative 2 were followed, the following aspects should be considered:

1. Section A to B (Figure 10): Keep the alignment south of the game fence within the servitude of the farm track, to prevent additional impacts on the remaining natural vegetation along this section
2. Section B to C: Keep the alignment south or along the southern edge of the road, this would reduce the need to remove vegetation along the northern section of the road.
3. From point C, whether alternative 2 (Section C to E) or the rest of the main alternative (Section C to D to E) is followed, preference should be given to already transformed areas such as cultivated lands, road reserves and mining areas
4. Prior to the construction of the power line a walk down should be completed to ensure that pylon positions are not located within the wetlands, whether their permanent zones, seasonal or temporary zones
5. During construction at least 500 mm of topsoil should be removed, placed on a separate stockpile and immediately returned once the foundations had been completed (Figure 11).
6. The area should monitored for the establishment of declared alien and invasive species, should these species germinate that should be managed according to the criteria provided in the Conservation of Agricultural Resource Act.
7. The need to obtain a permit for the destruction, removal or trade of nationally and provincially protected species has to be assessed, because provinces interpret these acts differently. However, the need for permits can be and should be avoided by keeping the proposed alignments within already transformed areas such as rehabilitated mining areas, road reserves and cultivated land.

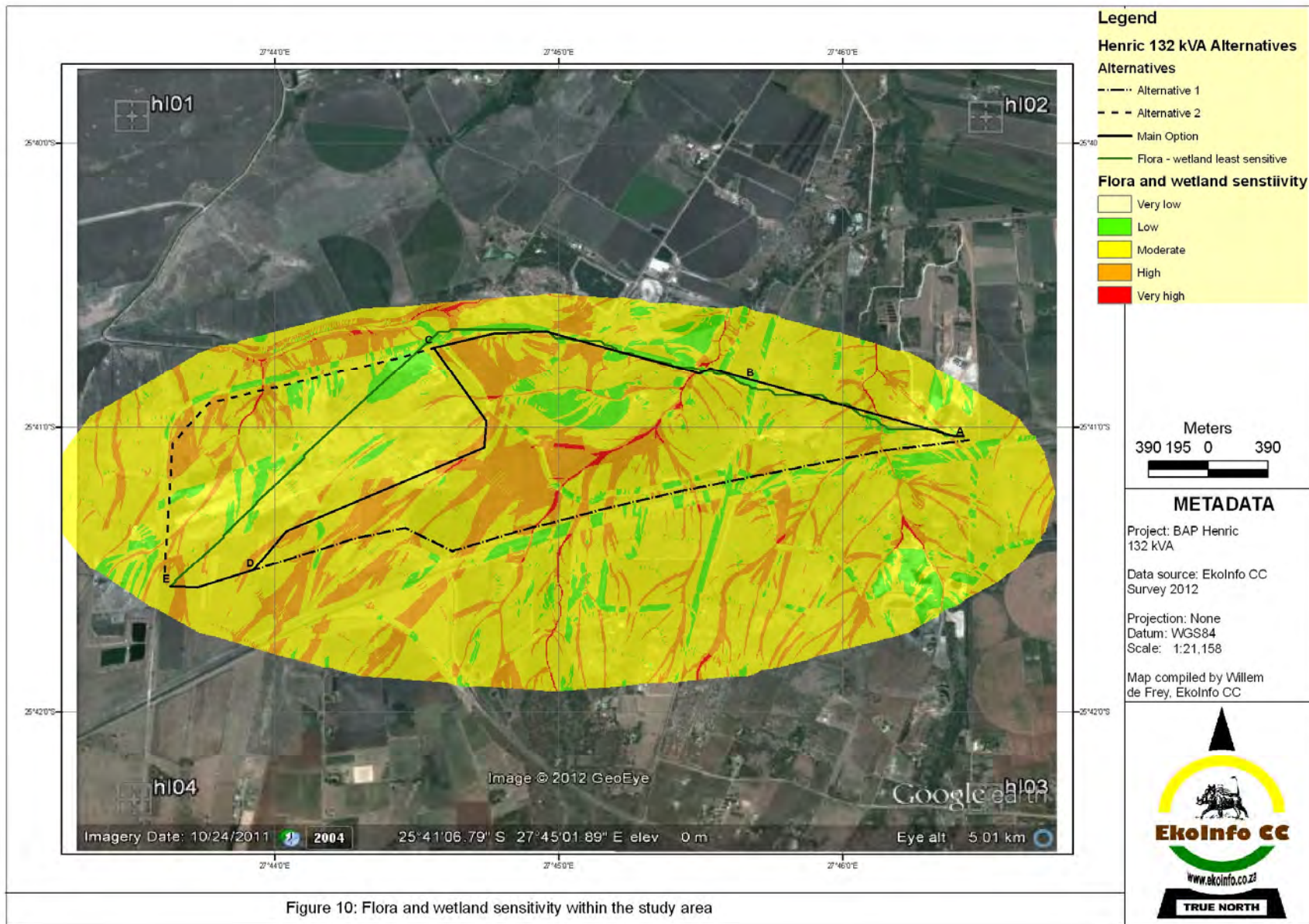


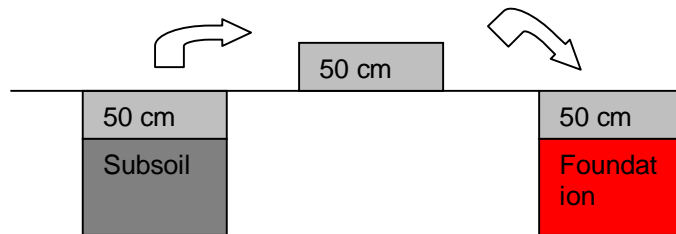
Figure 10: Flora and wetland sensitivity within the study area

Table 5: Overview of the percentage of sensitive areas per alternative and the flora-wetland least sensitive alignments within 31 m servitude

Flora - wetland sensitivity categories	Alternatives			Flora – wetland least sensitive
	Main	1	2	
	Hectares	Hectares	Hectares	Hectares
Very low	0	0	0	0
Low	2	0	3	7
Moderate	12	11	11	11
High	5	4	4	1
Very high	0	0	0	0
TOTALS	19	15	18	19
Category	% Cover	% Cover	% Cover	% Cover
Very low	0%	0%	0%	0%
Low	11%	3%	17%	37%
Moderate	64%	70%	63%	58%
High	25%	26%	20%	5%
Very high	0%	0%	0%	0%
TOTALS	100%	100%	100%	100%
Distance (km)	6.110	4.900	5.801	5.700

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Figure 11: Topsoil replacement sequence



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9 APPENDIX A – ABRIDGE CV, PRINCIPLE CONSULTANT

Name of firm: EkolInfo cc Environmental and Wildlife Management Consultancy

Name of staff: WILLEM HENDRIK DE FREY

Profession: Environmental and Wildlife Management consultant

Years with firm: Since 1995

Nationality: RSA

Membership of professional societies:

The South African Council for Natural Scientific Professions (Reg no 400100/02)

Categories: Botanical Science and Ecological Science

Currently in the process of affiliating to:

South African Association of Botanist (SAAB)

Grassland Society of Southern Africa

South African Institute of Ecologist and Environmental Scientists (SAIE)

KEY QUALIFICATIONS:

Mr W de Frey has been involved in the discipline of ecology since 1989. During this period he prepared himself for a profession in environmental and wildlife management, by attending courses in chemistry, geology, pedology and statistics, while majoring in Botany and Zoology. His working knowledge was obtained while completing projects for his post-graduate studies in wildlife management in both the Savanna and Grassland Biomes. In addition to his academic publications, he has contributed to numerous reports regarding EMPR's, EIA's, vegetation - and soil surveys and monitoring since the registration of his own consultation close corporation in 1995. He is actively involved in the management and marketing of his close corporation while completing tasks in his field of expertise namely soil, vegetation science and Geographical Information Systems. Mr W de Frey is task orientated with consideration of people's needs and safety. He believes in a holistic approach to environmental and wildlife management and has therefore established a network with individuals in related fields. He is also assisting previously disadvantaged persons in establishing a presence in the environmental industry, namely Lordwick Makhura of Baagi Environmental Consultancy CC and a joint venture company Bonolo Biodiversity And Environmental Management consisting of Baagi Environmental Consultancy CC and Disa Mphago Community Helpers CC.

EDUCATION:

1992 BSc Botany & Zoology, University of Pretoria

Course	Content	Level
Chemistry	Organic and Inorganic chemistry	1 st year
Geology	Introduction/ Geomorphology, Stratigraphy, Structural, Sedimentology Palaeontology, Crystallography	1 st and 2 nd year
Pedology	Introduction, soil classification, soil fertility, soil ecology, soil physics	1 st and 2 nd year
Botany	Morphology, Anatomy, Physiology, Taxonomy, Mycology, Ecology, Reproductive biology	1 st , 2 nd and 3 rd year
Zoology	Taxonomy (Vertebrates and Invertebrates), Physiology (mainly vertebrates), Ecology (mainly vertebrates), Animal behaviour (mainly vertebrates)	1 st , 2 nd and 3 rd year
Statistics	Sampling methods, Statistical Analysis, Probabilities	1 st year

1993 BSc (Hons) (Cum laude) Wildlife Management, University of Pretoria

Dissertation: 'N HOLISTIESE EKOLOGIESE BENADERING TOT DIE DRAKRAGBEPALING VAN 'N GEMENGDE WILD- EN BEESBOERDERY IN DIE UBOMBO DISTRIK, MET ENKELE BESTUURS AANBEVELINGS, 1993

1999 MSc (Cum laude) Wildlife Management, University of Pretoria

Thesis: PHYTOSOCIOLOGY OF THE MPUMALANGA HIGH ALTITUDE GRASSLANDS, 1999

COURSES/WORKSHOPS ATTENDED

1. Red List And Threatened Species Assessment Training Workshop, Hosted by the Conservation Breeding Specialist Group Southern Africa & Endangered Wildlife Trust, December 2003
2. National State of the Environment Workshop, Hosted by DEAT and SRK, ESKOM Convention Centre – November 2004
3. Gauteng Red Data Flora Workshop, Hosted by SANBI and GDACE – November 2005
4. Gauteng Flora Minimum Requirement Workshop, Hosted by GDACE Nature Conservation – August 2007

EMPLOYMENT RECORD:

1986 – 1987

5 Signals Regiment, SADF

1998 – 1993 – Parttime

Council of Geoscience, Palaeontology Section

University of Pretoria, Botany Department

Academy of Marksmanship, Range Officer

U Huisoppasser, Own enterprise

1994 – 1995

University of Pretoria, Botany Department, Assistant researcher

1995 – present

EkolInfo cc Environmental and Wildlife Management Consultancy, Founding member and consultant

Overall EkolInfo CC's principal consultant completed or administrated more than 58 vegetation studies as part of Environmental Impact Assessments within all of South Africa's nine provinces and adjacent countries such as Botswana and Mozambique with a focus on either terrestrial vegetation and/ or wetlands. Some projects were on provincial level such as the Mpumalanga and Gauteng Degradation Projects coordinated by the Institute for Soil, Climate and Water and sponsored by National Department of Agriculture. The majority of projects were on local scale from 5 ha to 50 000 ha or more for local developers and corporate institutions (SASOL, Anglo Coal, BHP Billington, Ingwe Coal, Deneys Rietz Attorneys, ESKOM) facilitated independently or as a subcontractor/ specialist for the following institutions: Oryx Environmental CC, African EPA, Arcuss Gibb, Digby Wells and Associates, Nature and Business Alliance and Eyethu Engineers, Strategic Environmental Focus.

COMMUNITY SERVICE

1. Substitute lecture – 2nd & 3rd year Botany Practical (Vegetation Survey Methods), University of Pretoria -1994 & 1995
2. Guest lecture – Wetland Vegetation Communities (2nd year students), Department of Landscape Architecture, University of Pretoria – 1996 & 1997
3. Guest lecture – Principles of Ecology (1st year students), Department of Landscape Architecture, University of Pretoria – 2002
4. Guest lecture – Principles of vegetation survey and mapping for EIA's (3rd year students), Department of Landscape Architecture, University of Pretoria – 2003
5. Referee – ILASA Merits Awards (Environmental Planning), Institute for Landscape Architects of South Africa - 2003

LANGUAGES:

Language Capability

English & Afrikaans Speak, Read, Write - sufficient

Sepedi (Northern Sotho) Speak, Read, Write – insufficient

10 APPENDIX B – REGIONAL VEGETATION UNIT

SVcb 6 Marikana Thornveld

VT 19 Sourish Mixed Bushveld (46%), VT 13 Other Turf Thornveld (34%) (Acocks 1953), LR 14 Clay Thorn Bushveld (60%) (Low & Rebelo 1996).

Distribution North-West and Gauteng Provinces: Occurs on plains from the Rustenburg area in the west, through Marikana and Brits to the Pretoria area in the east. Altitude about 1 050–1 450 m.

Vegetation & Landscape Features Open *Acacia karoo* woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are more dense along drainage lines, on termitaria and rocky outcrops or in other habitat protected from fire.

Geology & Soils Most of the area is underlain by the mafic intrusive rocks of the Rustenburg Layered Suite of the Bushveld Igneous Complex. Rocks include gabbro, norite, pyroxenite and anorthosite. The shales and quartzites of the Pretoria Group (Transvaal Supergroup) also contribute. Mainly vertic melanic clays with some dystrophic or mesotrophic plinthic catenas and some freely drained, deep soils. Land types mainly Ea, Ba and Ae.

Climate Summer rainfall with very dry winters. MAP between about 600 and 700 mm. Frost fairly frequent in winter. Mean monthly maximum and minimum temperatures for Brits-Agr 35.3°C and –3.3°C for January and June, respectively. Corresponding values are 35.3°C and –1.4°C for Rustenburg (November and July) and 32.8°C and –1.0°C for Pretoria University Experimental Farm (January and July). This unit has a relatively more temperate climate than the SVcb 1 Dwaalboom Thornveld. See also climate diagram for SVcb 6 Marikana Thornveld.

Important Taxa Tall Tree: *Acacia burkei*. Small Trees: *Acacia caffra* (d), *A. gerrardii* (d), *A. karoo* (d), *Combretum molle* (d), *Rhus lancea* (d), *Ziziphus mucronata* (d), *Acacia nilotica*, *A. tortilis* subsp. *heteracantha*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*. Tall Shrubs: *Euclea crispa* subsp. *crispa* (d), *Olea europaea* subsp. *africana* (d), *Rhus pyroides* var. *pyroides* (d), *Diospyros lycioides* subsp. *guerkei*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*. Low Shrubs: *Asparagus cooperi* (d), *Rhynchosia nitens* (d), *Indigofera zeyheri*, *Justicia flava*. Woody Climbers: *Clematis brachiata* (d), *Helinus integrifolius*. Herbaceous Climbers: *Pentstemon insipidum* (d), *Cyphostemma cirrhosum*. Graminoids: *Elionurus muticus* (d), *Eragrostis lehmanniana* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthra squarrosa*. Herbs: *Hermannia depressa* (d), *Ipomoea obscura* (d), *Barleria macrostegia*, *Dianthus moolensis* subsp. *moolensis*, *Ipomoea oblongata*, *Vernonia oligocephala*. Geophytic Herbs: *Ledsbouria revoluta*, *Omithogalum tenuifolium*, *Sansevieria aethiopica*.

Conservation Endangered. Target 19%. Less than 1% statutorily conserved in, for example, Magaliesberg Nature Area. More conserved in addition in other reserves, mainly in De Onderstepoort Nature Reserve. Considerably impacted, with 48% transformed, mainly cultivated and urban or built-up areas. Most agricultural development of this unit is in the western regions towards Rustenburg, while in the east (near Pretoria) industrial development is a greater threat of land transformation. Erosion is very low to moderate. Alien invasive plants occur localised in high densities, especially along the drainage lines.

Remark A few small ridges of SVcb 9 Gold Reef Mountain Bushveld in the Pretoria area have not been mapped separately from this unit.

References Van der Meulen (1979), Van Rooyen (1983, 1984), Panagos et al. (1998).



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0150

6 February 2012

CULTURAL HERITAGE RESOURCES IMPACT ASSESSMENT OF PROPOSED NEW POWER LINE 132kV AT THE BOKFONTEIN SUBSTATION MADIBENG NORTH WEST PROVINCE

1. DEFINITION

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

2. PROTECTED SITES IN TERMS OF THE NATIONAL HERITAGE ACT, Act. NO. 25 OF 1999

The following are the most important sites and objects protected by the National Heritage Act:

- 1.1 Structures or parts of structures older than 60 years.
- 1.2 Archaeological sites and objects.
- 1.3 Palaeontological sites.
- 1.4 Meteorites.
- 1.5 Ship wrecks.
- 1.6 Burial grounds.
- 1.7 Graves of victims of conflict.
- 1.8 Public monuments and memorials.
- 1.9 Structures, places and objects protected through the publication of notices in the Gazette and Provincial Gazette.
- 1.10 Any other places or object, which is considered to be of interest or of historical or cultural significance.
- 1.11 Geological sites of scientific or cultural importance.
- 1.12 Sites of significance relating to the history of slavery in South Africa.
- 1.13 Objects to which oral traditions are attached.
- 1.14 Sites of cultural significance or other value to a community or pattern of South African history.

3. METHODOLOGY

The site was visited and inspected on foot. All appropriate documents on the area were studied.

4. RESULTS

The proposed three alternatives for the route of the new power line will run through an area of intensive agricultural farming land which forms part of the Hartebeespoort Dam irrigation scheme. The dam wall was completed in 1923 and the canals in 1930. The dam and the canals were built by white labourers as part of a poverty relieve project. The eastern canal is 66 km and the western canal 58 km long. The proposed development area lies east of the western canal.

The surveys of the three alternative routs as indicated on Google Map 1 are as follows:

Red Route:

This route mainly follows an existing dirt road – see photograph.



Then it turns south between a mine dump and the canal – see photograph.



From here it runs west in a westerly direction through agricultural fields and next to mine dumps – see photograph.



All the canals in the area are older than sixty years and protected by the National Heritage Resources Act No 25 of 1999. At $S25^{\circ} 40' 58.1''$ & $E27^{\circ} 46' 9.7''$ a canal bridge was found on the first section of the route – see map page 12. This bridge is only about a meter broad and took water of the canal over a little stream. The bridge dates to the 1920's and it is not in use any more – see photograph.



Green Route:

This line runs mainly parallel to the N4 Highway. At S25° 41' 4.6" & E27° 46' 10.7" are the remains of a farm workers settlement and a cemetery. The farm workers settlement was bulldozed and only rubble remains on the site. The cemetery is large with some thirty graves. From the remains of utensils on the graves the graves most probably date to the 1960 – 80's – see photograph below and map on page 12.



Just west of the road bridge over the N4 Highway the line also runs parallel to the canal – see photograph.



At the intersection of the N4 it turns slightly northwest and then west through agricultural fields. Except for the cemetery and canal there are no heritage sites along the route.

Purple Route:

This route follows the dirt road through old agricultural fields and a mining area. No heritage sites are present along the route – see photograph.



5. EVALUATION AND RATING (FIELD RATING)

5.1 Canal system of the Hartebeespoort irrigation scheme and canal bridge

This irrigation scheme was one of the largest and most successful agricultural developments in South Africa. It also represents the poor white problem of the 1920/30's and job creation. As such it is given a field rating of at least a Grade II.

5.2 Cemetery

The cemetery is still visited and given a field rating of IV C

6. STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)

The canal system and canal bridge is important in demonstrating the solving of poor white problem of the 1920/30's as well as the technical achievement during the 1920/30's in irrigation and agricultural development.

7. RECOMMENDATIONS

It is recommended that the power line pylons should be placed in such a way as to avoid the canals, the canal bridge and the cemetery. The pylons should be at least ten meters away of the heritage sites.

8. SITE INFORMATION

<p>Owners contact details:</p> <p>Hernic Ferrochrome Ben Hefer R/E of Ptn 103 De Kroon 444 JQ, Brits, North West P.O. Box 4534, Brits 0250 (012) 381 1100 ben@hernic.co.za</p>
<p>Developers contact details:</p> <p>Hernic Ferrochrome Ben Hefer R/E of Ptn 103 De Kroon 444 JQ, Brits, North West P.O. Box 4534, Brits 0250 (012) 381 1100 ben@hernic.co.za</p>
<p>Consultants contact details:</p> <p>EkolInfo CC Sean Hutcheons or Willem de Frey PO Box 72847, Lynnwood Ridge 0040 (012) 365-2546 X 1 info@ekoinfo.co.za</p>

Type of development (e.g. low cost housing project, mining etc.)

New Hemic - Bokfontein 132kv power line and new Bokfontein substation

Whether rezoning and/or subdivision of land is involved:

Rezoning may be required or servitude will need to be registered.

Full location of Province, Magisterial District/Local Authority, property (e.g. farm, erf name and number:

Hemic Bokfontein 132-kV OHL Route list of property owners

Bokfontein 448JQ Portion 84 (A Portion of Portion 1)	Hemic F/C, P.O. Box 4534, Brits 0250 Tel: 012 3811100 Applicant
Bokfontein 448JQ Portion 85 (A Portion of Portion 1)	Hemic F/C Applicant
Bokfontein 448JQ Portion 104 (A Portion of Portion 143)	Hemic F/C Applicant
Bokfontein 448JQ Remainder of Portion 121 (A Portion of Portion 143)	Hemic F/C Applicant
Bokfontein 448JQ Portion 186 (Remainder 80) (A Portion of Portion 77)	Hemic F/C Applicant
Bokfontein 448JQ Portion 270 Remainder of Portion 166	Hemic F/C Applicant
Bokfontein 448JQ Portion 186/(185) Portion 185 (A Portion of Portion 166)	Hemic F/C Applicant
Bokfontein 448JQ Portion 187 (A Portion of Portion 25)	Mr. D. Barnard stays on the property Cell: 082 490 5552
Bokfontein 448 JQ Portion 328 (A Portion of Portion 3)	Hemic F/C Applicant
Bokfontein 448 JQ Portion 48 (A Portion of Portion 18)	Hemic F/C Applicant

Bokfontein 448 JQ Portions 123, 121, 162, 452 & 47	Mr. G v Rensburg, Van Rensburg Family Trust Cell: 082 577 6836 P.O. Box 205, Brits Owner and stays on property
Bokfontein 448 JQ Portions 40	Mr. H. Els Cell: 072 246 0499 Owner and stays on property
Bokfontein 448 JQ Remainder of Portion 18 (Portion of Portion 4)	Hernic F/C Applicant
Bokfontein 448 JQ Portion 23	Hernic F/C Applicant
Bokfontein 448 JQ Portion 18	Mr. J.M. Barnard Cell: 082 413 0640 Owner and stays on property
Krokodilgrift 446 JQ Portion 120 Portion 18	Hernic Ferrochrome Ben Hefer P.O. Box 4534, Brits, 0250 Tel: 012 381 1100 e-mail: ben@hemic.co.za

The site is located in the North West Province within the **Madibeng Local Municipality** (Brits).

Location map must have the polygon of the area to be surveyed on it and full geographical coordinates for all relevant points and where applicable indication of the area to be developed (footprint):

Attached

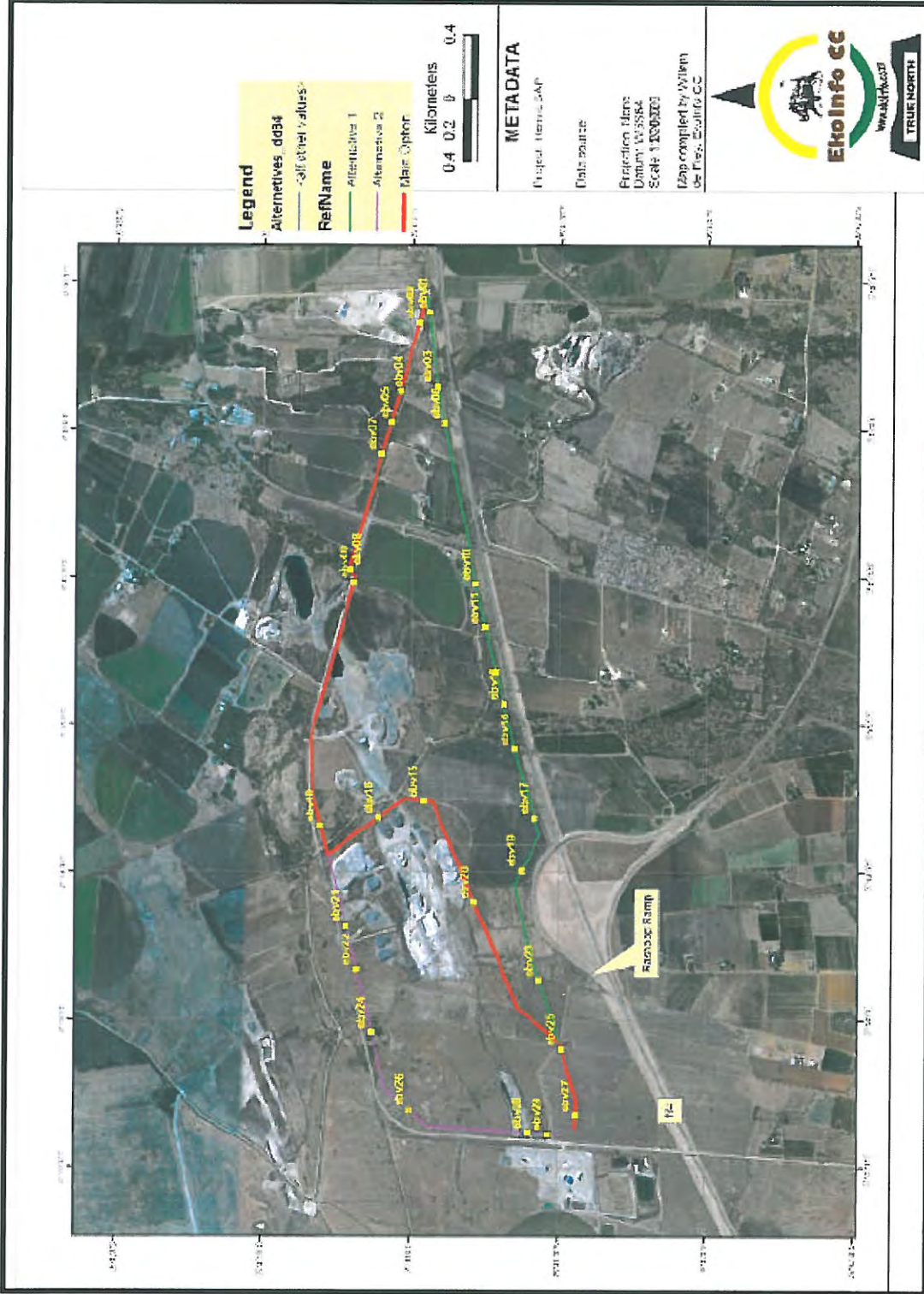
If possible an aerial photograph of the specific area showing the location of all site.

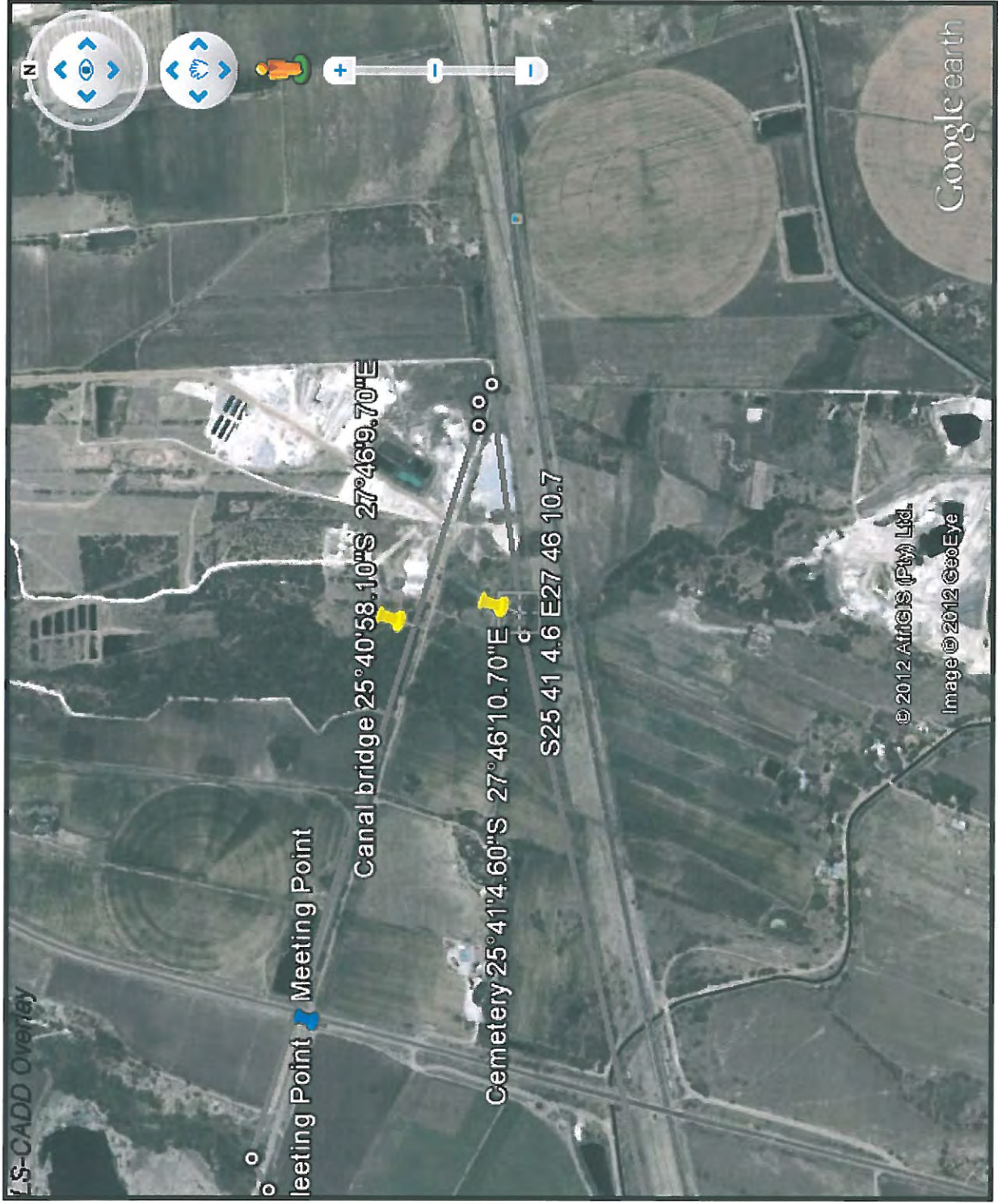
Attached

9. REFERENCES

- 1/50 000 Map 2527 DA
- Google maps
- Archaeological database of the National Cultural History Museum Pretoria

- Küsel U.S. 2008, Cultural Heritage Resources Impact Assessment of Hartebeesfontein 445JQ R/41.R51 & 48 (Ingwenys) Flower Farm (Pty) Ltd Brits North West Province
- Küsel U.S. 2009. Portion 239 (Portion of Portion 41) and Portions 29, 69, 78, 86, 89, 92, 93, 235, 77, 112 and 238 known as Ingwenys Flower Farm (Pty) Ltd. Madibeng North West Province





Appendix E

Comments Received report

Interested Parties			
Capacity	Contact	Comments	Response
Adjacent Property Krokadil drift	Mr J Els	There can be no development under the power lines once erected	The preferred alternative will follow roads and current infrastructure where development will not take place and may have limited effect agricultural development
Adjacent Property Bokfontein 187	Mr A F Barnard / Dralta Boerdery	Risk to low flying Crop Spraying aeroplane More roads will lead to more crime Proposes alternative 2	EMPR indicates warning spheres to be erected as per CAA requirements. No new roads are planned with preferred Alternative. This is the proposed alternative

From: John Lapao
Sent: 28 May 2012 04:26 PM
To: 'Cronje Wahl'; 'Lawrence Maphanga'; Nonhlanhla Miya
Cc: Albert Hartmann; Lemogang Pitsoe; Johan Swanepoel; Herman Smit
Subject: 132/88 kV line from Crocette

Cronje / Lawrence/ Nonhlanhla,

Just to confirm our discussions we held with Cronje this morning to map out the final way forward. (28th May'2012)

- Cronje updated the meeting as to the TEF's decision not to grant us a T-off point on the 88kV line due to the fact that Eskom can now supply us on a permanent basis of this line, as well as give us a 20MVA supply.
- It is further understood that they changing customers over to the 132kV power supply from the Madibeng substation, thus freeing up more power on the 88kV lines.
- Eskom have a strong suspicion that the Magalakwena 132kV line substation which is to be built at Crocodile River Mine, is not going to materialise, and thus it will impact on our supply off the 88kV line. It will therefore not be a short term solution any longer, and thus Eskom wants to give us a permanent supply and therefore a switching station to be built at Crocette, rather than at Bokfontein.
- Eskom can supply 15MVA once we have built our line and it is commissioned next year, with the balance once the capacitor banks on the 88kV line has been commissioned towards end next year.
- We have expressed and stated that we would like to construct the entire project from Crocette to Bokfontein to Eskom standards and approvals.
- That a letter from Eskom be written to Heric informing us of the decisions and discussions held.
- That Eskom prepare a quote for a self built option, with allowances for the usual Eskom permissions, quality control and overseeing costs of the project.
- That this email be sent to Lawrence and Nonhlanhla for their record and actioning whatever they need to do.
- That Heric will proceed to finalise the designs for the switching station, with a loop in and loop out, as well as a Heric supply switch. i.e. three switches.
- That Heric will contact Crocette for the use of and purchase of the property for the switching station on behalf of Eskom, for the sole use of the switching station.
- Or alternatively, if this is a problem, approach the roads department for a piece of land at the 88kV line area.
- That the deposit already paid could be sufficient, or at least cover most of the Eskom quality and approval costs.
- That a formal proposal be sent by Eskom to Heric asap but within at least three weeks.

We wish to point out that we have lost numerous months in this process and would greatly appreciate some major urgency from Eskom side as this will hamper mine development as well as ore shortages to the Smelter if we cannot obtain this power in the first half of the year.

Thanks.

Regards,

Appendix F

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAM

for the

**PROPOSED CONSTRUCTION OF 132k POWER LINE, NEW
SUB STATION and SWITCHING STATION AT BOKFONTEIN,
BRITS, NORTH WEST PROVINCE**

June 2012

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Prepared for

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DOCUMENT CONTROL

Degree of Confidentiality:	Client Confidential
Title:	Construction Environmental Management Programme For Construction of a switching station, 1X 132kv power line and a sub station on the darm Bokfontein.
Date of Issue:	June 2012
Report status:	Draft Constriction Environmental Management Programme
Consultant details: EkoInfo CC PO Box 72847 Lynwood Ridge 0040 RSA Tel: 012 365 2546 X 1 Fax: 012 365 3217 Email: public @ekoinfo.co.za	Client details: Hernic Ferrochrome P.O. Box 4534, Brits 0250 RSA Tel: 012 381 1100 Fax: 012 381 1111 Email: ben@hernic.co.za
Compiled by	Mr. S Hutcheons
Reviewed by	Mr. W de Frey
Approved by	Mr. N.L Makhura
Report Number:	01/2012
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LIST OF ABBREVIATIONS

C	Contractor
ELO	Contractor Environmental Liaison Officer
NEMA	National Environmental Management Act (Dedicated Person)
ECO	Environmental Control Officer
ELO	Environmental Liaison Officer
EMPR	Construction Environmental Management Programme
DEA	Department of Environmental Affairs
Hernic	Hernic Ferrochrome - Applicant
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resource Agency
SAMOAC	South African Manual for Outdoor Advertising Control

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A. SECTION 1: GENERAL INFORMATION

1. INTRODUCTION

EkolInfo, as Independent Environmental Consultants, were appointed by Hernic Ferrochrome (Hernic) to facilitate and compile an Environmental Management Programme for the proposed construction of a switching station, 1x132kV power line and a small sub station on the farm Bokfontein 448 -JQ, near Brits in the North West Province. Appendix A gives a full list of the farm portions involved. This EMPR forms part of the Basic Assessment Application made to the National Department of Environment Affairs (DEA) under reference number: **14/12/16/3/3/1/501**

2. BACKGROUND

It is widely accepted that any development can pose various risks to the environment as well as the inhabitants in the surrounding area. These possible risks should be taken into account during the Planning, design construction and operational phases of the development. The purpose of this document is to provide management responses that will ensure that the impacts of the development are minimised and that the requirement of DEA is taken into consideration throughout the project. This EMPR is, therefore, a stand-alone document, which must be used on the site during each phase of the development.

This document should be flexible so as to allow the contractor and Hernic to conform to the management commitments without being prescriptive. The management commitments should prove that the anticipated risks on the environment will be minimised if they are adhered to consistently. The onus set out in the EMP rests with the Applicant – Hernic, the main contractors and subcontractors, which will promote responsibility and commitment. Any parties responsible for transgression of the underlying management measures outlined in this document will be held liable for non-compliances and will be dealt with accordingly.

Furthermore, this document is considered to be a dynamic and flexible document which means that it can be amended with new issues, which arise during the entire process up to and during the operational phase.

The process that was followed in compiling the EMPR is in compliance with Regulation 34 in terms of chapter 5 of the National Environmental Management Act (Act 107 of 1998) of New Environmental Impact Assessment Regulation, 2010 promulgated on the 18 June 2012. The purpose of this EMPR is to formulate mitigation measures that should be made binding on all contractors during the construction phase as well as measures that should be implemented during the operational phase.

3. TERMS OF REFERENCE OF THE EMPR

As part of the process to acquire a Record of Decision (RoD) from DEA, a Environmental Management Programme (EMPR) must be compiled and approved by DEA. This document is also in accordance with the requirements of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations. These state that a Environmental Management Programme (EMPR) is to be implemented by the Applicant and any appointed contractor, which will ensure that environmental impacts that may occur due to construction activities are mitigated on site.

The EMPR will provide environmental management guidelines, which must be complied with by the contractor during construction of the transmission line and associated Pylon, in fulfilment of ISO 14001 requirements. The Environmental Control Officer (ECO), acting on behalf of Hernic, will monitor the implementation of the EMPR. The EMPR will form part of the contractual agreement to be entered into by Hernic and the appointed contractor/s. Compliance with the EMPR must therefore form part of all contractor's working tender documentation and be endorsed contractually. The recommendations and constraints, as set out in this document are enforceable under the general conditions.

4. OBJECTIVES OF THE EMPR

The objective of this EMPR is to ensure that:

- Environmental Management conditions and requirements are implemented from the start of the project,
- Precautions against damaged and arising from damaged are taken timeously,
- The completion date of the contract is not delayed due to problems with landowners arising during the course of construction;
- The contractor is able to and shall include any costs of compliance with this EMPR into the tender price;
- Precautions against environmental damage and claims arising from such damage are taken timeously;
- The asset created conforms to environmental standard required by ISO 14001 and Transmission Policy.
- Environmental conditions stipulated in the Environmental Authorisation, RoD are implemented;
- Resolve problems and claims arising from damaged immediately to ensure a smooth flow of operations;
- Implementation of this EMPR for the benefit of all involved; and
- Preservation of the natural environment by limiting destructive activities on site.

5. LIMITATION OF THE STUDY

The study was limited to the information provided by Hernic, which include pylon design, technical specifications and switching station and substation position and design. Any changes, after the RoD has been granted must be approved by DEA.

This EMPR report was compiled taking into consideration the specialist reports as per discipline and the applicant technical requirements.

6. LEGAL FRAMEWORK

This EMPR has been undertaken in accordance with the legislation below, but is not limited to:

- ▶ The Constitution of the Republic of South Africa, 1996
- ▶ National Environmental management Act, 1998 (Act No. 107 of 1998) (NEMA);
- ▶ NEMA: Air Quality Management Act (Act No. 39 of 2004)
- ▶ National Water Act, 1998 (Act No. 36 of 1998);
- ▶ Hazardous Substances Act, 1973 (Act No. 15 of 1973)
- ▶ Fire Brigade Resources Act, 1973 (Act No.15 of 1987)
- ▶ National Heritage Resource Act, 1999 (Act No. 25 Of 1999)
- ▶ Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
- ▶ Occupational Health and Safety Act, 1993 (Act No. 85 of 1993); and
- ▶ The white paper on integrated pollution and waste management of South Africa

7. POSSIBLE PERMITS APPLICATION

Any work or access near or in a permanent drainage system may have implications in terms of the National Water Act 1998 (Act No.36 of 1998), and therefore may well require the application for Water Use Licence. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.

As the development site does have heritage artefacts on and new once could be found on site, it would be necessary to apply for a Heritage Permit under the National Heritage Resource Act, 1999 (Act No. 25 of 1999), if any of these artefacts are to be moved or impacted during the construction phase.

8. ENVIRONMENTAL MONITORING AND AUDITING

To measure and ensure compliance to the EMPR it is imperative that a monitoring and auditing programme be established, in which monthly reports are submitted to Hernic and DEA to indicate the level of compliance. In addition, potential risks to the project will have to be identified. Where the ECO identifies a transgression or blatant disregard to the EMPR it should be reported to Hernic immediately and rectification steps undertaken.

Bearing in mind that this document is a living document and may be updated from time to time, should any amendments be considered, such amendments need to be discussed with the Applicant, ECO and Contactors, after which the ECO will then make such amendments to the EMPR, if considered to be applicable. The amended EMPR will be submitted to DEA to inform them of what changes have been implemented and the reasoning behind the changes.

9. TOWER TYPES

Monopole Self-supporting tower will be utilized in this proposed development. The figure below is a indication of the towers to be used. These towers will be at a high of about 20m.



Example of mono-pylon/tower to be usdd



Base of the mono-pylon/Tower

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B. SECTION 2: SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PROGRAMME

1. BACKGROUND

During the construction phase and maintenance of power lines, some habit destruction and alteration inevitably takes place. This can happens with the construction of access roads and the clearing of servitudes. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legal prescribed clearance gap between the ground and the conductors and to minimise the risk of fire under the line, which can result in the electrical flashover. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the servitude through habit modification. Although the proposed alignment route goes through areas that is already lined with similar infrastructure it is important to take note of possible impacts and mitigations.

Whilst the indirect impact of the power line on avifauna through habitat destruction, and disturbance, can be mitigated by generic means, the impact of bird collision is highly specialised and sites specific and therefore requires its own mitigation as indicated by the avi-fauna specialist report.

Where it is anticipated that heritage or ecological qualities of the landscape are going to be particular altered by the Pylon, it is necessary to identify those locations and to describe what mitigations are required. In this way the specific mitigation relates to an identified condition that will result in short term or long tern impacts. If this is not addressed in time and in a particular manner, persistence irreversible long-term ecological impacts will result.

2. PROJECT DESCRIPTION

The applicant requires new power infrastructure closer to there expanding mining activities. This is both for current and future needs The development of a Switching station 1X 132kv power line and a sub station close to the new mining expansion site will be required. Power will be obtained from current Eskom power infrastructure within the are at Crocette. See PP report for meeting feedback with Eskom and Hernic.

Note, the Bokfontein OHL will be constructed to 132-kV specs but operated at 88-kV. Same apply to the substation. This allows upgrad in future to 132-kV if required.

88-kV SWITCHING STATION

An 88-kV Switching station is to be established on the Crocette site, just off from the current Eskom line.

Size of switching station site will be approximately 30-m x 30-m. The switching station will be configured as follows::

- Turning in the existing 88-kV OHL into the switching station,

- Establish 2 x 88-kV feeder bays to accommodate the turned in circuits,
- Establish an 88-kV busbar, 2 Bays, equipped with busbar voltage transformers
- Establish a 3rd outgoing feeder bay to supply the 132-kV overhead (to be operated at 88-kV) line to Bokfontein.
- Each feeder bay will consist of the following, equipment nominated in sequence as seen from the busbar,
 - 88-kV Busbar Isolator, 3 phase;
 - 88-kV circuit breaker, 3 phase;
 - 88-kV current transformers, 3 x single phase units;
 - 88-kV Line isolator, 3 phase
 - 88-kV Surge arresters, 3 x single phase units;
 - Control room, brick built, size approx 6-m x 5-m
 - Entire yard fenced, surface covered with 19-mm stone.

From the switching station 1x 132kv line will run to the new sub station site as indicated in the BAP report alternatives. The pylons or tower will consist on monopole design as indicated in the BAP.

The 88(132-kV)/11-kV SUBSTATION

An 88/11-kV, 20-MVA Substation is to be established on the Bokfontein site close to proposed expansion areas of the mining activities. The site will be a substation site of approximately 70-m x 45-m. The substation will be configured as follows:

- Turning in the 132-kV OHL into the substation,
- Establish 1 x 88-kV feeder bay to accommodate the turned in circuit, consisting of
 - 88-kV Line isolator, 3 phase
 - 88-kV Surge arresters, 3 x single phase units;
- Establish an 88-kV busbar, 3 Bays, equipped with busbar voltage transformers
- Establish 2 x 88/11-kV, 10-MVA transformer bays, each bay consisting of
 - 88-kV Busbar Isolator, 3 phase;
 - 88-kV circuit breaker, 3 phase;
 - 88-kV current transformers, 3 x single phase units;
 - 88-kV Surge arresters, 3 x single phase units;
 - 88/11-kV, 10-MVA Transformer
 - 11-kV Neutral earthing compensator with 100-kVA, 11-kV/400-V auxiliary transformer (NECRT)
- Establish an Control room and 11-kV Switch house, brick built, size approx 22-m x 9-m
 - Control room equipped with protection and control panels, AC & DC DB's, Nicad battery charger and batteries
 - Switch house equipped with a 16 x 11-kV Panel metal clad switchboard

The entire substation will be fenced with palisade and the surface covered with 19-mm stone.

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3. RESPONSIBILITY OF THE ROLE PLAYERS

▪ Hernic Ferrochrome

Hernic remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMPR. Although Hernic appoints specific role players to perform functions on their behalf, this responsibility is delegated. Hernic stays responsible for ensuring that sufficient resources (time, financial, human, equipment, etc.) are available to the other role players (e.g. the ECO, ELO and contractor) to efficiently perform their tasks in terms of the EMPR. Hernic will remain liable for restoring the environment in the event of negligence leading to damage to the environment.

Hernic must ensure that the EMPR is included in the tender documentation so that the contractor who is appointed is bound to the conditions of the EMPR. An independent Environmental Control Officer (ECO) must be appointed during the construction phase to oversee all the environmental aspects relating to the development, the ECO should also be used in the project planning and design phase.

▪ Contractor

The contractor, as the Hernic's representative on site, is bound to the EMPR conditions and is responsible for ensuring that it adheres to all the conditions of the EMPR. The contractor must thoroughly familiarise itself with the EMPR requirements before coming onto site and must request clarification on any aspect of these documents, should they be unclear. The contractor must ensure they have provided sufficient budget for complying with all EMPR conditions at the tender stage.

The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site engineer in terms of the EMPR.

▪ Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is appointed by the applicant as an independent monitor of the implementation of the EMPR. ECO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. The ECO must attend relevant project meetings, conduct inspections to assess compliance with the EMPR and be responsible for providing feedback on potential environmental problems associated with the development. In addition, the ECO is responsible for:

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and

- Undertaking routine monitoring and appointing a competent person/institution to be responsible for specialist monitoring, if necessary.
- The ECO has the right to enter the site and undertake monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site (e.g. wearing of safety boots and protective head gear).

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- **Liaison with Authorities**

The ECO will be responsible for liaising with the National Department of Environment (DEA). The ECO must submit monthly environmental audit reports (every four weeks, or more often if necessary) to the authorities. These audit reports must contain information on the contractor and Hrnica's levels of compliance with the EMPR.

The audit report must also include a description of the general state of the site, with specific reference to non-compliance. The ECO is to recommend corrective action measures to eliminate the occurrence of the non-compliance incidents. In order to keep a record of any impacts, an Environmental Log Sheet (refer to Appendix 1) should be kept on a continual basis.

The ECO must report any findings to Hrnica immediately to ensure that compliance to the EMPR and to institute any action needed with the minimal time delay.

- **Liaison with Contractors**

The ECO is responsible for informing the contractors of any decisions that are taken concerning environmental management during the construction phase. This would also include informing the contractors with the necessary corrective action to be taken.

- **Environmental Liaison Officer (ELO)**

The contractor must appoint an Environmental Liaison Officer (ELO) to assist with day-to-day monitoring of the construction activities. Any issues raised by the ECO will be routed to the ELO for the contractors' attention and subsequently, ELO liaise with the main contractor for his or her attention. The ELO shall be permanently on site during the construction phase to ensure daily environmental compliance with the EMPR and should ideally be a senior and respected member of the construction crew.

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4. MITIGATION MEASURES

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Vehicles and machinery can impact on natural vegetation	Limit unnecessary driving and track 'creation' Make use of existing roads Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines No creation of roads along the servitude in pans, wetlands, seep areas, streams etc
2. Servitude clearance	Removal of vegetation, dust, noise and impact on other infrastructure	Vegetation clearance must be approved by ECO, and dust suppression must be done. Working hours must be limited to 07H00 to 17H00. No infrastructure on site must be damaged or moved and all risk areas marked by the ECO and ELO.
3. Foundation, excavation and casting of concrete	Out side required buffer areas especially close to heritage sites	No construction within 10m from any heritage area as identified in the heritage report
4. Delivery of Pylons	Vehicles and machinery can impact on natural vegetation	Make use of existing roads Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines No creation of roads along the servitude in pans, wetlands, seep areas, streams etc
5. Erection of Pylon	Public safety	Ensure the site is safe and that there are no unnecessary people close to the site during erection of the pylons. Access control must be applied.
6. Cable stringing	Public safety As soon as cables are strung they pose a collision risk to birds	Ensure the site is safe and that there are no unnecessary people close to the site during erection of the pylons. Access control must be applied. Anti collision marking devices must be installed as described below, as soon as cables are strung
7. Cable Impact on Crop Spraying	Low flying aeroplanes when doing crop spraying	The cables must be clearly marked as per Civil Aviation Authority requirements "marker spheres of a diameter of not less than 60 cm. The spheres shall be of one colour and displayed alternately orange/red and white or a colour that is in sharp contrast to the background as seen from an airborne perspective. The spacing between the spheres and between the spheres and the supporting towers shall not exceed 30m. On lines with multiple cables, the spheres shall be fitted to the highest cable.

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
		The marker spheres shall be visible from at least 1000m from an airborne perspective and 300m from the ground.”
8. Rehabilitation	Rehabilitation of pylon areas	All construction material and waste must be removed from pylon area on the day the pylon erection is completed. Areas around the pylon that may have been impacted on must be restored to their previous condition.
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of avifaunal mitigation aspects	Bird interactions with the power line may occur during the operational phase, such as collisions, nests, bird related faulting	Line monitoring must be done monthly to ensure that the bird flappers are still in place and to maintain these flappers
2. Servitude clearance	Removal of vegetation	Clearing of the servitude may not digress onto adjacent areas

4.1. Ecology

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and Construction	Erosion can become a problem especially during and after rain	No unnecessary off-road driving, keep to existing road infrastructure. Pylons listed with additional access roads or access problems must be subjected to the following criteria: 1. Access to the pylon must be achieved from the nearest road access point 2. Construction sites/camps need a detailed ecological assessment prior to construction 3. Plant rescue operations are needed prior to access roads being constructed
2. Foundation, excavation and casting of concrete	Disruption of soil and seedbed, removal of woody component	1.Top soil should be removed and used for top soiling after construction had been completed
3. Delivery of steel for Pylon	Erosion can become a problem especially during and after rain	No unnecessary off-road driving, keep to existing road infrastructure. Pylons listed with additional access roads or access problems must be subjected to the following criteria: 1. Access to the pylon must be achieved from the nearest road access point 2. Construction sites/camps need a detailed ecological assessment prior to construction 3. Plant rescue operations are needed prior to access roads being constructed
6. Cable stringing	Impact of cables and cable roll on areas	All stringing activities must take place within the construction site

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
	close to the stringing activity	
7. Rehabilitation	Disturbed soil potentially colonised by weeds and invaders	Use stored topsoil for top soiling and the introduction of local, indigenous species
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of ecological mitigation aspects	Increase in weeds and invader species, erosion of the maintenance road	Pylon and servitude should be monitored for the sprouting and establishment of declared weeds and invaders, especially in areas that have been disturbed during the construction phase. The current procedure i.e. not driving the maintenance road (servitude) after rains, unless in case of emergency, should be continued
2. Invasive alien plant species	Introduction and spread of invasive alien plant species	Eradicate all declared alien invasive plant species through use of a specialist group, such as Working for Water

4.2. Wetland and Surface water

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Concentration of surface flow patterns	Changes to the hydrological regime (e.g. duration, frequency, timing, volume and/or velocity of flows) and hence spatial extent of watercourses and/or hydrological cues for aquatic biota.	Pylons that overlap with surface watercourses need to be moved to avoid negative impacts and legislative transgressions
Loss of vegetation cover (e.g. through vegetation clearing) and erosion.	Loss in watercourse habitat, change in vegetation cover, potential increase in turbidity and hence decrease in water quality.	Only areas approved by the ECO, within water courses, may be cleared as indicated by the ECO
Pylon construction, roads, stockpiles, fences and other infrastructure.	Modifies watercourse habitat, change flow patterns and surface ponding.	NO pylons or construction activities may take place within any watercourse
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Servitude clearance	Loss in watercourse habitat, change in vegetation cover, potential increase in turbidity and hence decrease in water quality	ECO must design a maintenance plan for clearing of watercourse areas within the servitude.

4.3. Heritage

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Damage to artefact found within the area. Damage to old grave sites	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as the span will be big enough to not effect the graves found on site
2. Foundation, excavation and casting of concrete	Damage to current heritage sites Buried archaeological material may be accidentally unearthed during the course of construction	All activities to take place outside the 10m buffer zone around the heritage sites If this occurs, all construction activities are to be halted immediately and SAHRA must be informed
3. Delivery of steel for Pylon	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery Buffer zone of 10m is applicable
4. Assembly of Pylon	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur Buffer zone of 10m is applicable
5. Erection of Pylon	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur Buffer zone of 10m is applicable
6. Cable stringing	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery Buffer zone of 10m is applicable
7. Rehabilitation	Surface scatters of artefacts will be moved	No mitigation required, unless damage has occurred in which case a specialist must be consulted to assist with rehabilitation
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Maintenance of heritage/archaeological mitigation aspect	Damage of sites by maintenance teams	Any damage to be reported to SHARA

4.4. Avi-Fauna

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection	Access roads Clearing vegetation produces a visible scar in the landscape	Use existing roads and tracks as far as possible Select road alignments that minimise the need for habitat destruction including trees and bush clumps.
2. Construction camp	Habitat destruction	Place on currently impacted area where vegetation clearings is not required or limited.
3. Rehabilitation	General damage to the land surface will have an effect on habitat	Any temporary disturbance should be rehabilitated as soon as possible to reduce the effects of erosion
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION
1. Maintenance	New Habitat destruction	Quarterly inspection of all rehabilitated areas Immediate remedial action in areas that show ineffective rehabilitation Monitor the progress of the rehabilitation measures and apply different techniques were necessary until acceptable rehabilitation has been achieved Clearing under power lines to be limited to sensual clearing only
2. Bird collision monitoring	Effectiveness of bird flappers	Set up of a collision monitoring program for at least 2 years to monitor the effectiveness of the bird flappers. Results tom determine the management changes if required

4.5. Visual

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection	Access roads on sloping landforms form long term visual scars in the landscape Clearing vegetation produces a visible scar in the	Use existing roads and tracks as far as possible Select road alignments that minimise the need for cut and fill sections.

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
	landscape Erosion	A major part of the study is prone to contain dispersive soils which are highly erodible – special attention to erosion control is important as erosion tends to develop long term scars in the landscape. If the existing line is decommissioned, bringing in big machinery to remove the concrete foundation can cause more damage than leaving the foundations and covering them with suitable soil and vegetation.
2. Construction camp	The concrete foundations, especially on sloping landforms, appear as visual marks.	Clear vegetation must be limited to the essential only All waste shall be disposed of in an adequate manner Use vegetation as screen as far as possible.
3. Foundations	The concrete foundations, especially on sloping landforms, appear as visual marks	After construction, spread the excavated material such as to prevent erosion. Shape the placed material to blend in with surrounding landforms (e.g. no sharp edges) Remove all surplus concrete. Surplus excavated material to be used for erosion diversion in the access roads and for filling borrow pits
4. Rehabilitation	General damage to the land surface will increase with erosion, resulting in long term visual scars.	Any temporary disturbance should be rehabilitated as soon as possible to reduce the effects of erosion
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION
1. Maintenance of visual intrusion mitigation aspects	Effectiveness of mitigation measures applied during and after construction Closely linked to landscape management – failure has a negative visual implication (e.g. erosion)	Quarterly inspection of all rehabilitated areas Immediate remedial action in areas that show ineffective rehabilitation Monitor the progress of the rehabilitation measures and apply different techniques were necessary until acceptable rehabilitation has been achieved

1. GENERAL ENVIRONMENTAL SPECIFICATIONS FOR THE CONSTRUCTION PHASE OF THE DEVELOPMENT

Environmental Specification	Responsible Individual	Frequency
<ul style="list-style-type: none"> ❖ The RoD and ECO records must be kept on site for review if required The documentation shall be signed by all parties to ensure that such documents are legal. The following documentation shall be kept on site: <ol style="list-style-type: none"> 1. Complaints register; 2. Site daily dairy; 3. Records of all remediation / rehabilitation activities; 4. Copies of two-weekly reports by the ECO; 5. Copy of the Environmental Management Programme; 6. Environmental Incident Log; 7. ECO inspection audit reports; and 8. The record of decision issued for the project. 	Contractor ECO ELO	Continuous
<ul style="list-style-type: none"> ❖ The site camp and or construction sites will be audited on two weekly basis by the ECO 	ECO	Monthly
<ul style="list-style-type: none"> ❖ All records relating to monitoring and auditing must be made available for inspection to any relevant authority and the applicant 	Contractor ECO ELO	As necessary
<ul style="list-style-type: none"> ❖ DEA reserves the right to monitor and audit the development throughout its full life cycle to ensure compliance with the RoD as well as mitigation measures in the final scoping report and this EMPR. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ The landowners shall always be kept informed about any changes to the construction programme should they be involved. 	ECO ECO	As necessary
<ul style="list-style-type: none"> ❖ The rights of landowners shall be respected at all times and all staff shall be sensitized to the fact that they are working on the private property. ❖ The contacts numbers of the contractor’s ECO officer and the Hernic project manager shall be made available to the landowner as this will ensure open channels of communication and prompt response to queries and claims. 	ECO ELO	As necessary
<ul style="list-style-type: none"> ❖ An initial environmental awareness training session is required prior to any work commencing. 	ECO ELO	When new staff are contracted and before the start of construction
<ul style="list-style-type: none"> ❖ The contractor must ensure that all site staff are aware of, and understand the 	Contractor	As necessary

Environmental Specification	Responsible Individual	Frequency
contents and condition of EMPR, the key environmental issues and the consequences of non-compliance.	ECO	
❖ The ECO will provide the contractor with the course content for the environmental awareness-training course, and the contractor shall communicate this information to his employees on the site, to any new employees coming onto the site, to his subcontractor, casual labourers and to the suppliers.	Contractor ECO	As necessary
❖ All site staff must attend induction training on the EMPR and records must be kept of all attendees.	Contractor	As necessary
<ul style="list-style-type: none"> • Induction training must be undertaken in a language that is understood by site staff and must include the following topics: • Key potential or actual environmental construction related impacts on site related environmental precautions, which need to be taken to avoid or mitigate these impacts, • Key mitigation measures to be implemented during construction activities; • Emergency responses to issues on site; • Roles and responsibilities of all staff on site; and • The benefits of achieving conformance with, and consequences of transgressions of environmental specifications or requirements of the EMPR. 	Contractor ECO	As necessary
❖ All work must be undertaken in an environmentally sensitive manner.	Contractor	Continuous
❖ A precautionary approach must be adopted with any works deviating from specifications being approved by both the Applicant, Contractor and ECO.	Applicant Contractor ECO	Prior to construction As necessary
❖ No construction camp site is allowed. Only a storage facility site is allowed. This site may not house any people and only security guards is allowed on site after hours and during weekends.	Contractor ECO	Continuous
❖ The campsite is to be located on an area that has already been impacted by mining activities and approved by the ECO, a minimum horizontal distance of 200m from any watercourse or above the 1:10 year flood line or 32 m from the bank.	Contractor ECO ELO	As necessary
❖ Operation of heavy machinery and construction equipment known to produce high noise levels shall be limited. Silent compressors must be used. Noise generated by employees shouting or whistling must also be limited.	Contractor	Continuous
❖ Appropriate safety and precaution signs shall be erected prior to the start of construction at all access points to and from the site and all areas in close proximity to the public.	Contractor	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ Installation of amenities, such as ablution facilities, shall take place prior to construction activities commencing.	Contractor	Prior to construction
❖ The necessary ablution facilities with chemical toilets shall be provided at the construction camp. ❖ The Contractor shall supply a wastewater management system that will comply with legal requirements. The ECO and Hernic must approve this.	Applicant Contractor ECO	Prior to construction
❖ Storm water control berms (trench and/or earth barriers) shall be constructed to divert rainwater around the campsite and to contain any dirty water running from the campsite.	Contractor	Prior to and throughout construction
❖ The construction campsite shall be fenced and working areas secured before construction can proceed.	Contractor ECO	Once off
❖ "No-go" areas shall be demarcated by fences steel standards and four strands of wire, and personnel and equipment shall not be permitted within these areas. Danger tape may not be used due to the risk of it being eaten by livestock.	Contractor ELO	Continuous
❖ An area of the campsite shall be dedicated to the storage of materials and plant equipment.	Contractor	Once off
❖ All earthworks and excavations must be undertaken in such a manner so as to minimize the extent of any impacts caused by such activities.	Contractor ECO	Continuous
❖ Disturbance of vegetation must be limited to areas of construction.	Contractor ECO	Continuous
❖ The removal or picking of any protected or unprotected plants shall not be permitted and no horticultural specimens (even within the demarcated working area) shall be removed, damaged or tampered with unless agreed to by the ECO.	Contractor ELO ECO	Continuous
❖ Impacts on surrounding farms and servitudes shall be avoided at all costs.	Contractor ECO	Continuous
❖ The topsoil (i.e. the top 10-20 cm of soil, depending on the landscape position) must be stockpiled in a suitable place in order to be replaced on top of the exposed subsoil during rehabilitation.	Contractor ELO	As necessary
❖ Soil stockpiles should not exceed 2 m in height and no traffic should be allowed on top of the stockpiles.	Contractor ELO	As necessary
❖ Erosion damage to soil stockpiles should be prevented with soil conservation works such as deflection berms etc.	Contractor ECO	As necessary
❖ Topsoil stockpiles older than 6 months should be upgraded/enriched before use to	Contractor	As necessary

Environmental Specification	Responsible Individual	Frequency
ensure the effectiveness of the topsoil.	ELO	
❖ After completion of construction, the site should be properly cleared of all excavated material (rocks, excess soil etc.) and construction rubble, waste, litter etc. and properly rehabilitated/revegetated.	Contractor ECO	On completion of construction
❖ The site and associated infrastructure and equipment shall be off-limits to the public.	Contractor ECO	Continuous
❖ All construction vehicles using public roads shall be in a roadworthy condition.	Contractor ECO	Continuous
❖ Vehicle speeds shall not exceed 40km/h along gravel roads on private property or when traversing unconsolidated and non-vegetated areas. Where necessary, speed limits must be indicated on the roads.	Contractor	Continuous
❖ Access routes shall be planned in conjunction with the Contractor, Hernic and other Landowners. All agreements reached shall be documented in writing and no verbal agreements should be made.	Contractor Hernic	Prior to construction
❖ Hernic shall, together with a representative of the Contractor, negotiate with each landowner the access route to reach the servitude and each tower position if required. The access agreement will be formalized in the form – Access to Farms” and signed by the three parties. ❖ The Contractor will mark the proposed route and/or a competent representative will accompany the equipment when opening the access. ❖ Any deviation from the written agreement shall be closed and re-vegetated immediately.	Contractor ELO ECO	As necessary
❖ The Contractor shall signpost the access roads to the tower positions, immediately after the access has been negotiated.	Contractor ECO	Once access has been negotiated.
❖ Maximum use of both the existing servitudes and the existing roads shall be made. In circumstances where private roads must be used, the condition of the said roads must be recorded prior to use (e.g. photographed) and the condition thereof agreed by the landowner and the Contractor.	Contractor ECO	Prior to use of roads
❖ All private roads used for access to the servitude shall be maintained by the Contractor and upon completion of the <i>works</i> , be left in the original condition.	Contractor	Continuous
❖ Existing water diversion berms are to be maintained during construction and upon completion be repaired as instructed by the ECO	Contractor ELO ECO	Continuous
❖ Access is to be established by vehicles passing over the same track on natural ground.	Contractor	Prior to construction

Environmental Specification	Responsible Individual	Frequency
Multiple tracks are not permitted. Access roads shall only be constructed where necessary at watercourses, on steep slopes or where boulders prohibit vehicular traffic. The ECO would need to determine if any other passing would be required in such cases.	ECO	
❖ The Contractor must inform the ECO before entering any of the following areas: i) Naturally wet areas: vleis, swamps, etc; and iii) Any environmentally sensitive area.	Contractor ECO	As necessary
❖ Where construction of a new road has been agreed, the road width shall be determined by need, such as equipment size, and shall be no wider than necessary.	Contractor ECO	Prior to construction
❖ Water diversion berms shall be built immediately after the opening of the new access road. In addition, water outlets shall be made at intervals where berms are installed, and suitably stone pitched if instructed by the ECO.	Contractor ECO	Upon completion of new roads
❖ No cutting and filling shall be allowed in areas of 4% side slope and less.	Contractor ECO	As necessary
❖ Existing drainage systems shall not be blocked or altered in any way.	Contractor ECO ELO	Continuous
❖ No painting or marking of rocks or vegetation to identify locality or other information shall be allowed as it will disfigure the natural setting. Marking shall be done by steel stakes with tags, if required.	Contractor ELO	As necessary
❖ The cutting down of bushes and trees to gain line of sight must be minimised as it will damage the visual character of the site.	Contractor ELO ECO	As necessary
❖ Alignments of roads must be selected to minimize adjacent landform change such as cut and fill sections.	Contractor ELO	As necessary
❖ In cut sections strip the top layer of soil (minimum 100 mm), stockpile upslope of the cut area in windrows or in separate areas. This soil will include rock and vegetation.	Contractor ELO	As necessary
❖ No trees or shrubs shall be cut for survey purposes. Offset stations or points shall be set to get around the line of site obstacle.	Contractor/ ELO ECO	As necessary
❖ The installation of concrete pipes and drifts, to facilitate access, shall be at the discretion of the ECO on site. All structures shall be properly designed and drawings shall be available for reference purposes.	Contractor ECO	As necessary
❖ Any dangerous crossings shall be marked as such and where necessary, speed limits shall be enforced.	Contractor ECO	Prior to construction

Environmental Specification	Responsible Individual	Frequency
❖ Upon completion all construction roads will be closed and rehabilitated	Contractor ECO	Upon completion
❖ A photographic record of the condition of existing access / private roads to be used shall be made prior to their use for comparison purposes at the end of the construction period.	Contractor ELO ECO	Prior to construction
❖ All roads that are not to be used shall be marked with a "NO ENTRY " sign.	Contractor ECO	As necessary
❖ Where berms are installed on severe slopes the outflow shall be suitably stone pitched to prevent erosion from starting at the base of the berm.	Contractor ECO	As necessary
❖ Water diversion berms, if required, shall be installed from the start of the contract.	Contractor ECO	As necessary
❖ Water diversion berms shall be spaced according to the ground slope and actual soil conditions, but no greater than the following: <ul style="list-style-type: none"> • Where the track has a slope of less than 2% : 50m apart • Where the track has a slope of 2% - 10% : 25m apart • Where the track has a slope of 10% - 15% : 20m apart • Where the track has a slope of more than 15% : 10m apart 	Contractor ELO ECO	As necessary
❖ Berms shall be suitably compacted to a minimum height of 350mm.	Contractor ELO ECO	As necessary
❖ The breadth of the water diversion berm shall be 4m at the base, and extend beyond the width of the road for 2m on the outlet side to prevent water flowing back into the road. It shall be angled to a gradient of 1% to enable the water to drain off slowly.	Contractor ELO ECO	As necessary
❖ Berms shall be constructed so that a canal is formed at the upslope side.	Contractor ELO ECO	As necessary
❖ Where the <i>in-situ</i> material is unsuitable for the construction of water diversion berms, alternative methods of construction must be investigated and proposed by the Contractor and submitted to the PM for acceptance.	Contractor ECO PM	As necessary
❖ The above water diversion berms shall be maintained at all times and be repaired at the end of the contract.	Contractor ELO ECO	Upon completion
❖ Surface runoff water from the road shall be managed by not allowing its concentration.	Contractor	

Environmental Specification	Responsible Individual	Frequency
<ul style="list-style-type: none"> ❖ Provide diversion berms across the road to deflect water to undisturbed vegetated areas as necessary. ❖ The frequency, form and size of the berms will depend on the slope and material available. ❖ Material from the excavation for the foundations shall be used to create the berms where possible. ❖ The excavation of material alongside the road for the berm formation shall not be allowed. 	ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ Disturbance of topsoil on tower sites with severe slopes shall be minimised at all costs. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ The Applicant and Contractor shall select a suitable level area free of rock and large bushes for tower assembly. ❖ Cut vegetation (grass and shrubs), if required. No clearing of vegetation or soil by grading machinery shall be undertaken. 	Applicant Contractor ELO	As necessary
<ul style="list-style-type: none"> ❖ At any tower sites where foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation of such tower sites. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ During backfilling operations, the Contractor shall ensure that topsoil is replaced at the surface. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ Re-seeding shall be done on disturbed areas as directed by the ECO. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Other methods of rehabilitation of tower sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Cut and fill slopes shall be shaped to blend with the adjacent landform by rounding off the top edge of each. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ Re-spread stockpiled soil and pack rock on slopes to protect surface against erosion. This shall occur in all instances at the tower foundations. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ All waste concrete must be removed from the site 	Contractor ELO	As necessary

Environmental Specification	Responsible Individual	Frequency
❖ Attention is drawn to the Fencing Act No. 31 of 1963, in particular with regard to the leaving open of gates and the dropping of fences for crossing purposes, climbing, and willful damage or removal of fences.	Contractor ECO	Continuous
❖ At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, the Contractor must install a servitude gate as detailed in the relevant drawing, based on the design instruction and Landowner agreement. The Contractor shall mark these crossing points when the tower positions are being pegged.	Contractor ECO	Prior to tower construction
❖ All vehicles shall pass through gates when crossing fences and the Contractor shall not be allowed to drop fences temporarily for the purpose of driving over them.	Contractor ECO	Prior to Construction
❖ The Contractor shall ensure that all servitude gates used are kept closed and locked at all times.	Contractor	As necessary
<ul style="list-style-type: none"> ❖ The Contractor shall provide locks for all servitude gates, and when responsibility of the transmission line is taken over by the Employer, these locks shall be recovered by the Contractor and replaced by locks supplied by the Employer. ❖ The Contractor shall also ensure that all existing farm gates used are kept closed. ❖ The Contractor shall provide the landowners with keys for the above locks. No keys shall be provided to landowners to avoid conflict situations between neighboring landowners. 	Contractor ECO	As necessary
❖ All foundation excavations shall be kept covered or barricaded	Contractor ELO ECO	Continuous
<ul style="list-style-type: none"> ❖ Material removed from the excavation, which is not suitable or not required for backfill shall be spread evenly over or adjacent to the tower position. ❖ Spreading of subsoil and topsoil will not be permitted. ❖ All excavated soil suitable for backfill will be returned to the excavation by backfilling with the subsoil first and the topsoil last. 	Contractor ELO ECO	Continuous
❖ All other construction waste, nuts, bolts, surplus concrete, etc. shall be removed from the tower sites and servitude. Plastic, litter and conductor off cuts etc. shall be removed immediately from site to avoid injury to farm animals and wildlife.	Contractor ELO ECO	Continuous
<ul style="list-style-type: none"> ❖ No surplus concrete or concrete washing shall be allowed to be dumped on the servitude, at tower locations, anywhere on site or on neighbouring properties. ❖ No concrete washing is allowed in or near watercourses or wetlands. 	Contractor ELO	Continuous
❖ The sitting of winch and tensioner stations shall be done in conjunction with the landowner, the ecologist/botanist and archaeologist that participated in the compilation of the EMPR, where necessary. The Contractor shall identify sites in	PM ECO ELO	As necessary

Environmental Specification	Responsible Individual	Frequency
advance for approval of the specialists.		
<ul style="list-style-type: none"> ❖ Once the stringing of conductor has been completed in a certain area, the winch- and tensioner stations shall be rehabilitated where necessary. These areas may not be left to rehabilitate on their own. ❖ If the area was badly damaged, re-seeding shall be done and fencing in of the area shall be considered and carried out. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Fencing (with four strands of wire) of the storage areas for drums on site shall take place, as this will keep out animals and prevent injury. ❖ Should the Contractor want to leave guards on site, this shall be discussed and negotiated with the Landowner. Proper facilities must be provided to ensure sanitation standards are met. Mobile chemical toilets shall be installed at such sites where a large number of the workforce is concentrated. 	Contractor PM ECO	Prior to construction
<ul style="list-style-type: none"> ❖ The disruption of services must be prevented. All structures supplying services such as telephone and smaller power lines, as well as main roads and farms, must therefore be safeguarded. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ All fences shall be protected against damage during stringing operations. ❖ "Rugby" posts to protect roads and telephone lines shall be made as necessary. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ The entire footprint of the stringing storage areas shall be monitored. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ Visual degradation of areas where stringing machinery is operated shall be avoided as this may result in severely disturbed vegetation, as traction of machines tear up grass and vegetation. ❖ Disturbed areas shall be repaired as soon 100m of stringing operation is complete. This to be done by cable stringing crew. 	Contractor ECO	After every 100m of stringing is complete
<ul style="list-style-type: none"> ❖ Abluting anywhere other than in the toilets shall not be permitted. Under no circumstances shall use of the veld be permitted. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ Toilets must be secured to prevent them from blowing over. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ A registered service provider shall be appointed and shall empty toilets regularly. 	Contractor ECO	Prior to construction
<ul style="list-style-type: none"> ❖ Chemical and waste from toilet cleaning operations should not be spilled on the ground at anytime. 	Contractor ELO ECO	Continuous
<ul style="list-style-type: none"> ❖ Storm water must be effectively captured and led well away from structures. 	Contractor	As necessary

Environmental Specification	Responsible Individual	Frequency
	ELO ECO	
❖ No mechanical plant or equipment shall be washed on site, unless in an area equipped for such a purpose.	Contractor ELO ECO	Continuous
❖ Pollutants such as cement, concrete, lime, chemicals and fuels shall not be discharged into any water source or wetland.	Contractor ELO ECO	Continuous
❖ Water from ablution facilities and the Contractor's camp shall be discharged into a sewer, or where such sewer is not available (as if predominantly the case for this 765kV line) into a conservancy tank for removal from the site.	Contractor ELO ECO	Continuous
❖ The production of dust from areas cleared of vegetation and soil stockpiles shall be avoided.	Contractor ELO ECO	Continuous
❖ Stockpiles shall be located in areas where they are exposed to the minimum erosive effects of wind.	Contractor ELO ECO	As necessary
❖ Excavation, handling and transport of erodable materials must be avoided under high wind conditions.	Contractor ELO ECO	As necessary
❖ Dust-suppression measures must be used on stockpiles and exposed areas.	Contractor ELO	As necessary
❖ All machinery and equipment to be used on site shall be properly serviced and in good working order to avoid excessive smoke and exhaust fumes.	Contractor	Continuous
❖ Areas susceptible to erosion shall be protected by installing temporary and permanent drainage works.	Contractor ELO ECO	As necessary
❖ Cleared areas must be stabilized and managed to prevent and control erosion. The method of stabilization shall be determined in consultation with the ECO.	Contractor ELO ECO	As necessary
❖ Measures must be implemented to protect the construction site from erosion by stormwater.	Contractor ECO	Continuous
❖ Vehicular traffic shall not be allowed in permanently wet areas.	Contractor ECO	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ No damage shall be caused to wet areas.	Contractor ECO	Continuous
❖ Where necessary, alternative methods of construction shall be used to avoid damage to wet areas.	Contractor ECO	Continuous
❖ Any work or access near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998), and therefore may well require the application of a Water Use License. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.	Contractor ECO	As necessary
❖ Stream and river crossings shall be avoided as far as practicable as they may cause erosion and downstream siltation.	Contractor ELO ECO	As necessary
❖ Existing drifts and bridges may be used at the consent of the landowner. However, such structures must be examined for strength and durability before being used.	Contractor ECO	As necessary
❖ Where necessary, crossing of dongas and eroded areas shall be thoroughly planned.	Contractor ELO ECO	As necessary
❖ Water diversion berms shall be installed at donga crossings to ensure water runoff from the power line servitude does not run into dongas and cause or exacerbate an erosion hazard.	Contractor ELO ECO	As necessary
❖ Suitable erosion containment structures shall be constructed at donga crossings where required and viable.	Contractor ELO ECO	As necessary
❖ All structures shall be properly designed and drawings shall be available for reference purposes.		As necessary
❖ No unplanned / improperly planned cutting of donga embankments are allowed as this leads to further erosion and degradation of the environment.	Contractor ELO ECO	Continuous
❖ In general, soil disturbance should be kept to a minimum. The disturbance of land contour banks or other erosion control structures shall be avoided.	Contractor ECO	As necessary
❖ General disturbance of land surface will degrade by erosion. Permanent visual scarring will result. ❖ The Contractor shall rip all areas compacted by machinery, smooth off and integrate disturbed areas visually into surrounding landform using spoil rock and stockpiled top	Contractor ECO	As necessary

Environmental Specification	Responsible Individual	Frequency
<ul style="list-style-type: none"> ❖ layer of soil. ❖ The Contractor shall fence the area (with four strands of wire) for a period of two years or until vegetation has been re-established to ensure that game and livestock do not have access to areas that are on slopes and on erodible soils. The fencing aspect shall be agreed with the landowner prior to erection. 		
<ul style="list-style-type: none"> ❖ The removal or picking of any protected or unprotected indigenous plants is not permitted. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ Areas where soils have been compacted shall be rehabilitated once construction is completed. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ All declared aliens shall be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ The establishment and regrowth of alien vegetation must be controlled after the removal of grass. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ No damage shall be caused to any farms unless both the landowner, Contractor, Applicant and the ECO, prior to the work commencing agree upon the extent of the intended damage. ❖ While the presence of crops was not apparent at the time of the site visit, farms may change to crops at a later stage, either during construction or operation. 	Contractor ECO Applicant	As necessary
<ul style="list-style-type: none"> ❖ Exposed slopes and/or destabilized areas should be landscaped to blend in with the surrounding area. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ In exposed areas with slopes steeper than 1:3, re-vegetation should not be used as the primary means of stabilization. Such slopes should rather be stabilized by suitable structures agreed to by the ECO which can be enhanced by re-vegetation to facilitate blending with the environment. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Erosion of rehabilitated areas shall be prevented. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ Exposed areas with slopes less than 1:3 should be rehabilitated with a grass mix that blends in with the surrounding vegetation. ❖ The grass mix should consist of a mix of <i>Cynodon dactylon</i> (50 %; <i>Eragrostis curvula</i> (30 %) and the remainder should consist of other pioneer grass species suitable for the area (20%). The introduction of forbs from the Fabaceae family is also recommended. 	Contractor ELO ECO	As necessary
<ul style="list-style-type: none"> ❖ The revegetated areas should be temporarily fenced for two years (with four strands of wire) to prevent damage by grazing animals. 	Contractor ELO	As necessary

Environmental Specification	Responsible Individual	Frequency
	ECO	
❖ Re-vegetated areas should be monitored every 4 months for the first 12 months and once a year thereafter for the maintenance period of two years.	Contractor	Continuous
❖ Re-vegetated areas showing inadequate surface coverage (less than 30% coverage, 8 months after re-vegetation) should be prepared and re-vegetated from scratch.	Contractor ELO ECO	As necessary
❖ Damage to re-vegetated areas should be repaired promptly.	Contractor ECO	As necessary
❖ Exotic weeds and invaders that might establish on the re-vegetated areas should be controlled to allow the grasses to properly establish.	Contractor ECO	As necessary
❖ Weed control methods should be confirmed with the PM to prevent any undesirable secondary impacts.	Contractor ECO	As necessary
❖ It is illegal to interfere with any wildlife or other fauna. All fauna occurring on-site shall be protected. Hunting and snaring must not be permitted.	Contractor ECO	Continuous
❖ Tower excavations and construction camps must be fenced off to prevent wildlife from entering the sites.	Contractor ELO ECO	Prior to construction
❖ A buffer zone of 10m around identified heritage areas must be maintained ❖ If any work done within the identified heritage areas these areas must be clearly marked and no trespassing is allowed		
❖ If any heritage/archaeological sites/objects are discovered during the construction or operational processes, the ECO or other relevant person on site should note the location of and ensure that such sites/objects are not disturbed/destroyed and contact the ECO and South African Heritage Resources Association (SAHRA) at (021) 462-4502.	Contractor ECO	As necessary
❖ In the event that any heritage/archaeological sites are discovered during construction they shall be demarcated with wire fencing with a radius of at least 30 m. Construction teams shall not be allowed access to these sites. ❖ No construction camps shall be allowed within 50 m of any known archaeological sites. ❖ The collection of heritage/archaeological objects/artefacts at identified sites shall not be allowed.	Contractor ECO	As necessary
❖ Any destruction of a heritage site can only be allowed once a permit is obtained from SAHRA and the site has been mapped and noted. ❖ Permits shall be obtained from the SAHRA should the proposed line affect any heritage sites.	Contractor ECO	As necessary

Environmental Specification	Responsible Individual	Frequency
<ul style="list-style-type: none"> ❖ Where pipelines are found along the route, the depth of the pipes under the surface shall be determined to ensure that proper protection is afforded to such structures. ❖ All pipelines shall be clearly marked and protected. ❖ Any damage to pipe lines shall be repaired immediately and the cost will be for the contractors account. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ It is probable that the use of private roads for construction purposes would lead to damage due to heavy equipment and frequent use. The Contractor shall be responsible to repair roads if damaged. Photographs must be taken of the road prior and post use to prove the extent of the damage caused by construction activities. ❖ All existing private access roads used for construction purposes, shall be maintained at all times. This will ensure that the local people have free access to and from their properties. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Some Landowners use electrically driven farming activities such as irrigation. Power cuts to facilitate construction and especially stringing shall therefore be carefully planned. ❖ Disruptions shall be kept to a minimum. They should be well advertised and communicated to the Landowners prior to it the power being cut. ❖ Care must be taken not to damage irrigation equipment, lines, channels and crops. The position of all pipelines and irrigation lines must be obtained from the Landowners and be shown on the access plans. 	Contractor ELO ECO	Prior to power cuts
<ul style="list-style-type: none"> ❖ Procedures for material handling shall be discussed with and approved by the ECO. 	Contractor ECO	Once-off
<ul style="list-style-type: none"> ❖ Relevant national, regional and local legislation regarding the transport, use and disposal of hazardous waste must be adhered to at all times. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ An emergency procedure to deal with accidents and incidents (e.g. spills) arising from hazardous substances shall be compiled and implemented. 	Contractor ECO	Once-off
<ul style="list-style-type: none"> ❖ All mechanical equipment used in construction activities shall be clean and free of oil, petrol, and diesel leaks. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ Spills of hazardous substances, in excess of one litre shall be reported to the ECO immediately and the appointed Tx Services Environmental Advisor (Tx Key Performance Indicator requirement). 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ A register for spills and incidents involving hazardous materials shall be maintained. ❖ Soil or yard stone, which has been contaminated, shall be removed and disposed of at an approved waste disposal site. ❖ Alternatively, contaminated soil can be treated on site through bioremediation. Should 	Contractor ELO ECO	As necessary

Environmental Specification	Responsible Individual	Frequency
<p>a person experienced in bioremediation not be available on site, a specialist contractor shall be used.</p> <ul style="list-style-type: none"> ❖ Such spills must be cleaned and remediated to the satisfaction of the ECO. ❖ A method statement is required from the Contractor that details the procedure to be followed in dealing with leaks or spills. 		
<ul style="list-style-type: none"> ❖ A complete emergency spill kit shall be available on site at all times. The Contractor must also ensure that relevant staff members are trained to use the emergency spill kit and on the manner in which to deal with spills of hazardous substances (oils, diesel or petrol). 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ A concrete platform with a bund wall must be allocated to accommodate fuel, oil paint, bitumen, herbicide and insecticides to guard against infiltration of hazardous substances into the soil. Fuel tanks must be bunded to hold 110% of the contents of the tank. The tanks shall be housed in a roofed area so that no water will collect within the bund wall. It is recommended that the most preferable site for these activities may be at one of the existing substations. 	Contractor ECO	Once-off
<ul style="list-style-type: none"> ❖ All staff handling hazardous waste must be trained accordingly. 	Contractor ECO	Once-off
<ul style="list-style-type: none"> ❖ All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ Areas of fuels storage and other flammable materials shall comply with standard fire safety regulations and will require the approval of the ECO and the local Fire Prevention Officer. 	Contractor ECO	As necessary
<ul style="list-style-type: none"> ❖ No smoking shall be allowed in the vicinity of the stores and adequate fire-fighting equipment shall be accessible at fuel storage area and areas in the vicinity of the storage area. NO smoking” and “Danger” signs shall be erected at hazardous substance storage areas. 	Contractor	Continuous
<ul style="list-style-type: none"> ❖ All empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected. 	Contractor	Continuous
<ul style="list-style-type: none"> ❖ Concrete shall not be mixed directly on the ground. 	Contractor ECO	Continuous
<ul style="list-style-type: none"> ❖ The concrete batching activity shall be located in an area of low environmental sensitivity. The site for the batch plant shall be indicated on the site layout plan. 	Contractor ECO	Once-off
<ul style="list-style-type: none"> ❖ All wastewater resulting from batching of concrete shall be disposed of via the wastewater management system. 	Contractor	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ Bags of cement shall be stored in an area protected from the weather.	Contractor	Continuous
❖ The Contractor shall be responsible for negotiating the site of his batching plant (if required) and the conditions under it may be established, with the landowner. The Contractor shall be responsible for the proper management of the batching plant.	Contractor ELO	As necessary
❖ The use of local water for concrete must first be negotiated with the landowner if required and the appropriate authorities. Such water is to be analyzed and accepted by the PM before use.	Applicant Contractor ECO	Prior to batching
❖ Upon completion of works, the ground of the batching plant area shall be rehabilitated and the site cleaned and left as it was found and to the satisfaction of the ECO and landowner.	Contractor /ECO	Upon completion
❖ Servicing of vehicles in the veld is strictly prohibited.	Contractor ECO	Continuous
❖ Only emergency repairs shall be allowed on site and a drip tray shall be used to prevent oil spills.	Contractor ECO	As necessary
❖ In the event of a breakdown in the veld, any oil spills shall be cleaned up and the following shall apply: <ul style="list-style-type: none"> • <input type="checkbox"/> All contaminated soil shall be removed and be placed in containers. • Contaminated soil can be taken to one central point at the Contractors campsite where bioremediation can be done. • Smaller spills can be treated on site. • A specialist Contractor shall be used for the bio-remediation of contaminated soil. • The area around the fuel storage drum at the Contractor’s campsite shall also be re-mediated upon completion of the contract • All oil spills must be reported to the ECO. 	Contractor ECO	As necessary
❖ No open fires shall be allowed on site under any circumstance either than for that of cooking in the manner indicated below (The Forest Act, No 122 of 1984).	Contractor ELO ECO	Continuous
❖ Accidental fires in natural grassland should be prevented through proper sensitization of the contractors and their workers towards the associated risks, dangers and damage of property.	Contractor ECO	Continuous
❖ The Contractor shall have fire-fighting equipment, for each construction team readily available on site, especially during the winter months. The firefighting equipment shall be regularly checked and shall be approved by the ECO / Safety and Health Officer on site.	Contractor ECO	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ An emergency preparedness plan should be in place in order to fight accidental veld fires, should they occur. The adjacent land owners/users/managers should also be informed and/or involved.	Contractor ECO	Continuous
❖ The use of open fires for cooking of food etc. by construction and maintenance personnel should be strictly prohibited. Temporary enclosed areas (windshield) for food preparation should be provided specifically for this reason. The Contractor shall supply alternative cooking facilities.	Contractor	Continuous
❖ Use of branches of trees and shrubs for fire making purposes must be strictly prohibited. Penalties for the unnecessary removal and/or destruction of any plant for any reason (firewood, medicinal use, collector's value etc) should be agreed upon beforehand and be included in the contract.	Contractor ECO	Prior to construction
❖ Emergency procedures shall be set up prior to the commencement of work. It must include but not be limited to fires, spills, and contamination of ground and surface water, accidents to employees and damage to services.	Contractor ECO	Once-off
❖ Key staff shall be trained in emergency response and all staff made aware of the emergency procedures.	Contractor ECO	As necessary
❖ A register of all incidents, accidents, etc. must be maintained, which includes the action taken after the event has occurred. The ECO must be informed of the event.	Contractor ELO ECO	Continuous
❖ The site and all operations shall comply with all National Health and Safety Standards and other relevant national, regional and local regulations. Hernic shall appoint a Health and Safety (H&S) Officer. See the Contract documentation for the specifications of the H&S Officer that will be present on site for the duration of the works.	Contractor ECO	Continuous
❖ The Contractor is liable for any expenses incurred by any organizations called to assist with fighting fires and any cost relating to the rehabilitation of burnt areas/and/or properties and persons should the fire be the cause of the Contractor's activities on site.	Contractor ECO	As necessary
❖ All equipment shall be user safe and vehicles shall be roadworthy.	Contractor ECO	Continuous
❖ No site staff other than security personnel shall be housed on site.	Contractor ECO	Continuous
❖ Potable water and washing facilities shall be made available for all personnel.	Contractor ECO	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ Public access to the construction site shall be prevented at all times.	Contractor ECO	Continuous
❖ Portable toilets shall be provided on site. The toilets must be cleaned regularly and the number of toilets shall be based on a minimum ratio of 15 people per toilet.	Contractor ECO	Continuous
❖ Designated eating areas shall be allocated.	Contractor ECO	Continuous
❖ Staff must wear the necessary personal protective equipment.	Contractor ECO	Continuous
❖ All the necessary precautions against the spreading of disease, especially in farms with livestock and game, shall be taken.	Contractor ECO	Continuous
❖ An on-site waste management plan to prevent the spread of refuse within and beyond the site shall be developed and implemented.	Contractor ELO ECO	Once-off
❖ Sufficient bins with secure lids for waste disposal purposes shall be provided. These bins must be emptied regularly. The waste must be disposed at a registered/ permitted waste disposal site.	Contractor ECO	Continuous
❖ A daily clean-up of the site must be maintained.	Contractor ECO	Continuous
❖ No waste shall be buried or burned on site. All solid waste collected on site shall be disposed of offsite at an appropriate permitted landfill site. Where a permitted landfill site is not available in proximity to the construction site, the Contractor must provide a method statement with regard to waste management.	Contractor ECO	Continuous
❖ Covered waste bins shall be supplied by the contractor.	Contractor ECO	As necessary
❖ The site office and materials storage area must be kept neat and tidy and free of litter.	Contractor ECO	Continuous
❖ Littering by the employees of the Contractor shall not be allowed.	Contractor ECO	Continuous
❖ The Contractor shall collect all litter and dispose thereof in terms of the approved waste management plan.	Contractor ECO	Continuous
❖ Refuse generated from the campsite, construction area, storage area or any other area shall be collected and placed in a skip on a daily basis.	Contractor ECO	Continuous
❖ A litter patrol around the construction camp and work areas along the alignment are to take place every day to collect any litter that may have been strewn around.	Contractor ECO	Continuous

Environmental Specification	Responsible Individual	Frequency
❖ A skip, with a cover, must be used to contain refuse from campsite bins, rubble and other construction material.	Contractor ECO	Continuous
❖ Once full and on a regular basis, the contents of the skip must be disposed of at a permitted landfill site.	Contractor ECO	Continuous
❖ Material that may harm humans or animals must not be left on site.	Contractor ECO	Continuous
❖ Any broken insulators shall be removed and all shards picked up. Broken, damaged and unused nuts, bolts and washers must be picked up and removed from site.	Contractor ECO	Continuous
❖ The piling of any material that could rot and release unpleasant smells into the air will not be permitted.	Contractor ECO	Continuous
❖ Surplus concrete may not be dumped indiscriminately on site, but must be disposed of at a licensed landfill site, or in designated areas agreed by the Landowner and ECO.	Contractor ECO	Continuous
❖ Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately.	Contractor ELO ECO	Continuous
▪ Bird Flight Diverters		
❖ In areas where there is a potential for bird collisions (especially rare or endangered species) with new overhead lines or where there are actual collisions on existing lines it is advisable to install bird flappers or bird flight diverters on the earth wires.	PM ECO Contractor	As necessary
❖ double loop flight diverters at 5 metre intervals on lines traversing all water bodies as well as within a 150 metre buffer zone.	PM ECO Contractor	As necessary
❖ Installation of the bird flight diverters must be: • Installed on both earth wires, staggered	PM ECO Contractor	As necessary
❖ Vehicular movement beyond the property boundaries should be limited during peak hour. Access to the site must follow current and established routes. ❖ It must be ensured that a backlog of traffic does not develop at the access points during peak hours, through the implementation of an efficient and effective access control system.	ECO Contractor	As a Necessary
❖ Illegal occupants on the property must be removed to ensure no uncontrolled fires, cutting down of vegetation and littering ❖ The site and crew are to be managed in strict accordance with the Occupational Health	ECO Contractor	Continuous

Environmental Specification	Responsible Individual	Frequency
<ul style="list-style-type: none"> and Safety Act, 1993 (Act No.85 of 1993) and the National Building Regulations. ❖ Ensure the contacts details of the police or security company and ambulance services are available on the site. ❖ Ensure that the handling of equipments and materials is supervised and adequately instructed. ❖ Do not allow the movement of public within the development site by posting notices at the entrance gates, and where necessary on the boundary fence. ❖ Appropriate notification signs must be erected, warning the residents and visitors about the hazards around the construction site and presence of heavy vehicles. 		
<ul style="list-style-type: none"> ❖ Dust production must be controlled by regular watering of roads and works area, should the need arise. ❖ Points of ingress and egress onto the site must be regularly cleaned for dust and mud. ❖ No refuse wastes are burnt on the premises or on surrounding premises. ❖ All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin, and speed limits of 30 km/h must be adhered to. ❖ Vehicles to be used during the construction phase are to be kept in good working condition so as not to be the source of excessive fumes and nuisance. 	ECO Contractor	As a necessary
<ul style="list-style-type: none"> ❖ Contractor will be encouraged to employ local people on work that does not requires specialized skills ❖ Contractor must clearly emphasize to the general public that some work requires specialized skills and therefore contractor will bring skilled personnel for such work. ❖ Local community shall be informed about possible employment opportunities arising within the development in order to conflict between contractor and community 	Contractor	As a necessary

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Appendix G

1. MITIGATION MEASURES

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Vehicles and machinery can impact on natural vegetation	Limit unnecessary driving and track 'creation' Make use of existing roads Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines No creation of roads along the servitude in pans, wetlands, seep areas, streams etc
2. Servitude clearance	Removal of vegetation, dust, noise and impact on other infrastructure	Vegetation clearance must be approved by ECO, and dust suppression must be done. Working hours must be limited to 07H00 to 17H00. No infrastructure on site must be damaged or moved and all risk areas marked by the ECO and ELO.
3. Foundation, excavation and casting of concrete	Out side required buffer areas especially close to heritage sites	No construction within 10m from any heritage area as identified in the heritage report
4. Delivery of Pylons	Vehicles and machinery can impact on natural vegetation	Make use of existing roads Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines No creation of roads along the servitude in pans, wetlands, seep areas, streams etc
5. Erection of Pylon	Public safety	Ensure the site is safe and that there are no unnecessary people close to the site during erection of the pylons. Access control must be applied.
6. Cable stringing	Public safety As soon as cables are strung they pose a collision risk to birds	Ensure the site is safe and that there are no unnecessary people close to the site during erection of the pylons. Access control must be applied. Anti collision marking devices must be installed as described below, as soon as cables are strung
7. Cable Impact on Crop Spraying	Low flying aeroplanes when doing crop spraying	The cables must be clearly marked as per Civil Aviation Authority requirements "marker spheres of a diameter of not less than 60 cm. The spheres shall be of one colour and displayed alternately orange/red and white or a colour that is in sharp contrast to the background as seen from an airborne perspective. The spacing between the spheres and between the spheres and the supporting towers shall not exceed 30m. On lines with multiple cables, the spheres shall be fitted to the highest cable. The marker spheres shall be visible from at least 1000m from an airborne perspective and 300m from the ground."
8. Rehabilitation	Rehabilitation of pylon areas	All construction material and waste must be removed from pylon area on the day the pylon erection is completed. Areas around the pylon that may have been impacted on must be restored to their previous condition.
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of avifaunal mitigation aspects	Bird interactions with the power line may occur during the operational phase, such as collisions, nests, bird related faulting	Line monitoring must be done monthly to ensure that the bird flappers are still in place and to maintain these flappers
2. Servitude clearance	Removal of vegetation	Clearing of the servitude may not digress onto adjacent areas

1.1. Ecology

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and Construction	Erosion can become a problem especially during and after rain	No unnecessary off-road driving, keep to existing road infrastructure. Pylons listed with additional access roads or access problems must be subjected to the following criteria: 1. Access to the pylon must be achieved from the nearest road access point 2. Construction sites/camps need a detailed ecological assessment prior to construction 3. Plant rescue operations are needed prior to access roads being constructed
2. Foundation, excavation and casting of concrete	Disruption of soil and seedbed, removal of woody component	1.Top soil should be removed and used for top soiling after construction had been completed
3. Delivery of steel for Pylon	Erosion can become a problem especially during and after rain	No unnecessary off-road driving, keep to existing road infrastructure. Pylons listed with additional access roads or access problems must be subjected to the following criteria: 1. Access to the pylon must be achieved from the nearest road access point 2. Construction sites/camps need a detailed ecological assessment prior to construction 3. Plant rescue operations are needed prior to access roads being constructed
6. Cable stringing	Impact of cables and cable roll on areas close to the stringing activity	All stringing activities must take place within the construction site
7. Rehabilitation	Disturbed soil potentially colonised by weeds and invaders	Use stored topsoil for top soiling and the introduction of local, indigenous species
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of ecological mitigation aspects	Increase in weeds and invader species, erosion of the maintenance road	Pylon and servitude should be monitored for the sprouting and establishment of declared weeds and invaders, especially in areas that have been disturbed during the construction phase. The current procedure i.e. not driving the maintenance road (servitude) after rains, unless in case of emergency, should be continued

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
2. Invasive alien plant species	Introduction and spread of invasive alien plant species	Eradicate all declared alien invasive plant species through use of a specialist group, such as Working for Water

1.2. Wetland and Surface water

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Concentration of surface flow patterns	Changes to the hydrological regime (e.g. duration, frequency, timing, volume and/or velocity of flows) and hence spatial extent of watercourses and/or hydrological cues for aquatic biota.	Pylons that overlap with surface watercourses need to be moved to avoid negative impacts and legislative transgressions
Loss of vegetation cover (e.g. through vegetation clearing) and erosion.	Loss in watercourse habitat, change in vegetation cover, potential increase in turbidity and hence decrease in water quality.	Only areas approved by the ECO, within water courses, may be cleared as indicated by the ECO
Pylon construction, roads, stockpiles, fences and other infrastructure.	Modifies watercourse habitat, change flow patterns and surface ponding.	NO pylons or construction activities may take place within any watercourse
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Servitude clearance	Loss in watercourse habitat, change in vegetation cover, potential increase in turbidity and hence decrease in water quality	ECO must design a maintenance plan for clearing of watercourse areas within the servitude.

1.3. Heritage

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Damage to artefact found within the area. Damage to old grave sites	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as the span will be big enough to not effect the graves found on site
2. Foundation, excavation and	Damage to current heritage sites	All activities to take place outside the 10m buffer zone around the heritage

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
casting of concrete	Buried archaeological material may be accidentally unearthed during the course of construction	sites If this occurs, all construction activities are to be halted immediately and SAHRA must be informed
3. Delivery of steel for Pylon	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery Buffer zone of 10m is applicable
4. Assembly of Pylon	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur Buffer zone of 10m is applicable
5. Erection of Pylon	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur Buffer zone of 10m is applicable
6. Cable stringing	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery Buffer zone of 10m is applicable
7. Rehabilitation	Surface scatters of artefacts will be moved	No mitigation required, unless damage has occurred in which case a specialist must be consulted to assist with rehabilitation
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
Maintenance of heritage/archaeological mitigation aspect	Damage of sites by maintenance teams	Any damage to be reported to SHARA

1.4. Avi-Fauna

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection	Access roads Clearing vegetation produces a visible scar in the landscape	Use existing roads and tracks as far as possible Select road alignments that minimise the need for habitat destruction including trees and bush clumps.
2. Construction camp	Habitat destruction	Place on currently impacted area where vegetation

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
		clearings is not required or limited.
3. Rehabilitation	General damage to the land surface will have an effect on habitat	Any temporary disturbance should be rehabilitated as soon as possible to reduce the effects of erosion
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION
1. Maintenance	New Habitat destruction	<p>Quarterly inspection of all rehabilitated areas</p> <p>Immediate remedial action in areas that show ineffective rehabilitation</p> <p>Monitor the progress of the rehabilitation measures and apply different techniques were necessary until acceptable rehabilitation has been achieved</p> <p>Clearing under power lines to be limited to sensual clearing only</p>
2. Bird collision monitoring	Effectiveness of bird flappers	Set up of a collision monitoring program for at least 2 years to monitor the effectiveness of the bird flappers. Results tom determine the management changes if required

1.5. Visual

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection	<p>Access roads on sloping landforms form long term visual scars in the landscape</p> <p>Clearing vegetation produces a visible scar in the landscape</p> <p>Erosion</p>	<p>Use existing roads and tracks as far as possible</p> <p>Select road alignments that minimise the need for cut and fill sections.</p> <p>A major part of the study is prone to contain dispersive soils which are highly erodible – special attention to erosion control is important as erosion tends to develop long term scars in the landscape. If the existing line is decommissioned, bringing in big machinery to remove the concrete foundation can</p>

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
		cause more damage than leaving the foundations and covering them with suitable soil and vegetation.
2. Construction camp	The concrete foundations, especially on sloping landforms, appear as visual marks.	Clear vegetation must be limited to the essential only All waste shall be disposed of in an adequate manner Use vegetation as screen as far as possible.
3. Foundations	The concrete foundations, especially on sloping landforms, appear as visual marks	After construction, spread the excavated material such as to prevent erosion. Shape the placed material to blend in with surrounding landforms (e.g. no sharp edges) Remove all surplus concrete. Surplus excavated material to be used for erosion diversion in the access roads and for filling borrow pits
4. Rehabilitation	General damage to the land surface will increase with erosion, resulting in long term visual scars.	Any temporary disturbance should be rehabilitated as soon as possible to reduce the effects of erosion
OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION
1. Maintenance of visual intrusion mitigation aspects	Effectiveness of mitigation measures applied during and after construction Closely linked to landscape management – failure has a negative visual implication (e.g. erosion)	Quarterly inspection of all rehabilitated areas Immediate remedial action in areas that show ineffective rehabilitation Monitor the progress of the rehabilitation measures and apply different techniques were necessary until acceptable rehabilitation has been achieved

Appendix H



EkoInfo CC
Environmental & Wildlife Management Consultancy

CC 95/34111/23

ASSESSING YOUR ENVIRONMENT

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PUBLIC PARTICIPATION REPORT
Basic Assessment Process

PROPOSED CONSTRUCTION OF 132k POWER LINE AND NEW SUB
STATION AT BOKFONTEIN, BRITS, NORTH WEST PROVINCE

PROJECT APPLICANT:
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June 2012



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Environmental & Wildlife Management
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CC 95/34111/23

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BACKGROUND

EkolInfo cc, as independent Environmental Consultants have been appointed by Hercul Ferrochrome, to facilitate the application for Basic Assessment, to obtain environmental approval for the proposed new 1 X 132kv power line, including a switching station and a new sub station.

The required approval is required under The National Environmental Management Act listing Notice no 33306 Rn 544, 18 June 2010,1(i)The construction of facilities or infrastructure for the generation of electricity where:(i) The electricity output is more than 10 megawatts but less than 20 megawatts
and

544, 18 June 2010,10 (i)The construction of facilities or infrastructure for the transmission and distribution of electricity:(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;

The linear activity will take place on the farm Bokfontein 448 – JQ. See appendix A for full list of properties involved..

An application for a Basic Assessment was filed with the National Department of Environmental Affairs (DAE) and the following reference number **14/12/16/3/3/1/501** was given to the project.

PUBLIC PARTICIPATION

1. INTRODUCTION

Public participation plays an important role in the compilation of a the Basic Assessment Report as well as the planning, design and implementation of the project.

Public participation is a process leading to informed decision-making, through joint effort by the:

- Proponent;
- Technical experts;
- Governmental authorities; and
- Interested and Affected Parties (I&APs).

Public participation is a vehicle for public input, which achieves the following:

- Facilitates negotiated outcomes;
- Creates trust and partnership;
- Minimises negative effects;
- Maximises positive effects;
- Provides an indication of issues, which may:
 - Prevent the project from continuing;
 - Cause costly delays later; and
 - Result in enhanced and shared benefits.

Through the public participation process, EkolInfo cc endeavoured to involve as many potential I&APs as possible. The issues arising from the public participation process have been incorporated into the Basic Assessment Report and will be used in determining the mitigation measures for the project.

2. PUBLIC PARTICIPATION PROCESS

The following process was undertaken to facilitate the public participation for this proposed project. Initially the public was informed under reference number 14/12/16/3/3/1/501, which commenced on Friday 16 March 2012. The public was given until Monday 26 April 2012 in which to comment, voice their concerns and put forward suggestions.

Newspaper advertisement

An advertisement, notifying the public of the basic assessment process and requesting I&APs to register their comments with EkolInfo cc, was placed in the Kormorant and the Brits Pos newspapers, which appeared in the week of 13 March 2012.

Site notice

In order to inform surrounding communities and adjacent landowners of the proposed project, site notices were placed, on 15 and 16 March 2012, at the following locations :

- Four on Site
- Crn R566 and R512
- Both ways (2) on the crn R566 and side road at GPS coordinates S2540 51.31 E27 45 42.31
- Crn of side road and farm road at GPS coordinates S25 40 41.59 E27 44 34.60

Basic information Documents were delivered to adjacent land owners up until 19 March 2012 and other I&AP's in the vicinity.

Landowners who have been at a meeting with the mine regarding the project was notified via fax or email.

Based on experience and as legally required, knock & drop as well as the placement of site notices proved a very effective way to ensure the local community was made aware of the proposed development.

Only one I&AP registered to be included in this process

Direct notification of identified interested and affected parties and potentially affected land owners

Key stakeholders, including the following sectors, were directly informed of the proposed project via e-mail between the 15 to 20 March 2012:

- Authorities;
- Service Providers

- Non-governmental Organisations

None of the key stakeholders has responded to date. They will however be included in the distribution of the DRAFT BAP report to enlist response.

I&AP correspondence

I&AP comments and or concerns were acknowledged and included in an Issues and Response Report. These issues and queries will be taken into account when the Department of Environment issues a Record of Decision. Also included is a summary of discussions between Hercul and Eskom see appendix 5.

Public Review

The public and other authorities will now be given the opportunity to review the BAP report and give feedback. The review period is from 22 June 2012 to 26 July 2012.

3. CONCLUSION

All measures to inform the public of the proposed project were successfully implemented. The process has thus far been open and transparent. In accordance with the legislation, Interested and Affected Parties were identified and notified of the proposed development.

DRAFT

LIST OF APPENDICES FOR PUBLIC PARTICIPATION PROCESS
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Appendix 1: Site notice text

Appendix 2A & B: BID and cover letter sent to Interested and Affected Parties

Appendix 3: Communications to and from local authority and service providers.

Appendix 4: Minutes of any public or stakeholder meetings. (Currently not applicable)

Appendix 5: Comments and Responses Report

Appendix 6: Copy of the register of I&AP's

Appendix 7: Comments from I&AP's on the Basic Assessment Report

Appendix 8: Comments from I&AP's on amendments to the Basic Assessment Report (Currently not applicable)

Appendix 9: Newspaper advertisements

Appendix 10: Registrations from I&AP's and Knock and Drop Proof

Appendix 1: Site notice text

**Project: Basic Assessment Process for two new power lines
and a new substation for Hernic Ferrochrome on the farm
Bokfontein 448-JQ, Brits, Madibeng Local Municipality, North
West Province
DEA Ref. 14/12/16/3/3/1/501**

EkolInfo cc gives notice in terms of the National Environmental Management Act, in conjunction with Regulation 54 the Environmental Impact Regulations published in the Government Gazette no 33306, 18 June 2010, listed activity #:

- 1 The construction of facilities or infrastructure for the generation of electricity where:
 - (i) The electricity output is more than 10 megawatts but less than 20 megawatts and
- 10 The construction of facilities or infrastructure for the transmission and distribution of electricity:
 - (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;

Hernic Ferrochrome, proposes the construction of two new power lines and a new substation on the Farm Bokfontein 448-JQ

The area is situated South West of Brits in the Madibeng Local Municipality, North West Province. The site is North of the N4 Highway at the Rashoop turn off.

Geïntereseerde en / of Geaffekteerde Partye wat wil deelneem aan die proses of diegene wat meer inligting verlang oor die proses, moet registreer voor of op Donderdag 26 April 2012:

Ekoinfo, Aandag Sean Hutcheons

Posbus 72847, **LYNNWOOD RIDGE, 0040**, Telefoon: **(011) 782-7487**, Faks: **(012) 365-3217** or **086 515-5337**

Vonkpos: public@ekoinfo.co.za

(Date pleasing van kennisgewing: 16 Maart 2012)

**Project: Basic Assessment Process for two new power lines
and a new substation for Hernic Ferrochrome on the farm
Bokfontein 448-JQ, Brits, Madibeng Local Municipality, North
West Province
DEA Ref. 14/12/16/3/3/1/501**

EkolInfo cc gives notice in terms of the National Environmental Management Act, in conjunction with Regulation 54 the Environmental Impact Regulations published in the Government Gazette no 33306, 18 June 2010, listed activity #:

- 1 The construction of facilities or infrastructure for the generation of electricity where:
 - (i) The electricity output is more than 10 megawatts but less than 20 megawatts and
- 10 The construction of facilities or infrastructure for the transmission and distribution of electricity:
 - (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;

Hernic Ferrochrome, proposes the construction of two new power lines and a new substation on the Farm Bokfontein 448-JQ

The area is situated South West of Brits in the Madibeng Local Municipality, North West Province. The site is North of the N4 Highway at the Rashoop turn off.

In order to ensure that you are identified as an Interested or Affected Party (I&AP) and receive information on this project, please submit your name and contact details and interest in the proposed project to EkoInfo cc between the 16 March 2012 and 26 April 2012.

To register as an I&AP and/or to obtain any further project information please contact EkoInfo:

Attention: Sean Hutcheons

PO Box 72847, LYNNWOOD RIDGE, 0040

Telephone: (011) 782-7487, Facsimile: (012) 365-3217 or or 086 515-5337, E-mail: public@ekoinfo.co.za

(Date of placement of site notice: 16 March 2012)



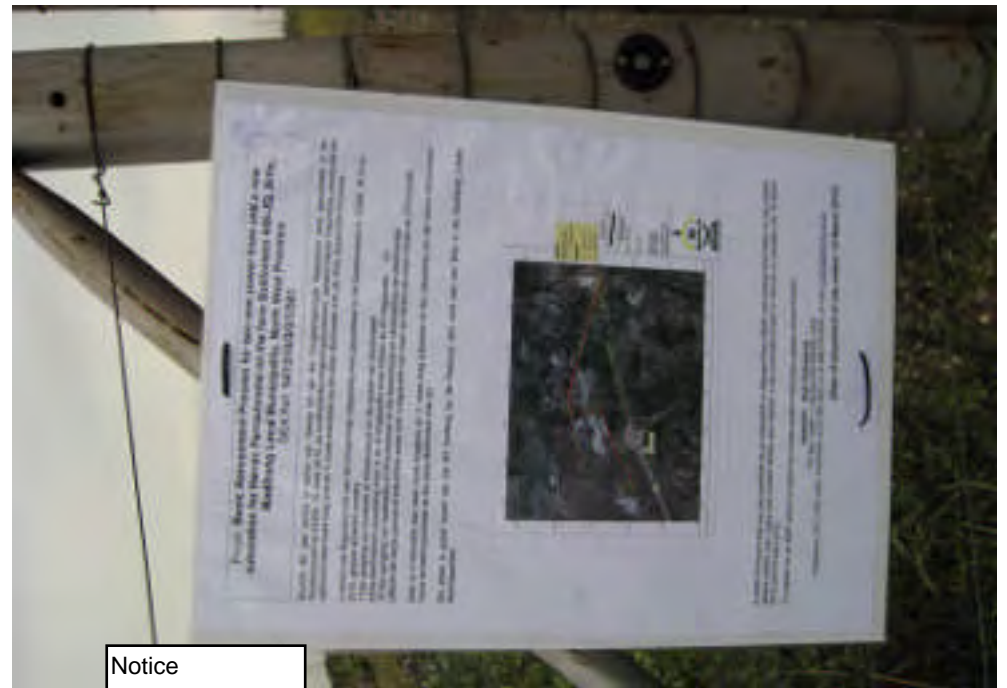
On Site



Crn R566



Crn R566 and R512



Notice



Crn Farm road
and Side Road



On Site



On Site



On Site



On Site

0 8:04:08 am

8:49 am

Crn of side road and farm road at GPS coordinates S25 40 41.59 E27 44 34.60

2nd On Site

Both ways on the crn R566 and side road at GPS coordinates S2540 51.3

On Site

002

3rd On Site

4th On Site

R566

R512

Tro N4 Rd

Crn of R104 and side road at GPS coordinates S25 43 18.5 E27 43 27.6

© 2012 AfriGIS (Pty) Ltd
Image © 2012 GeoEye

0/24/2011 2004

25°41'42.40" S 27°46'52.86" E elev 1155 m

Google

R27

Eye at

Appendix 2A & B: BID and cover letter sent to Interested and Affected Parties



EkolInfo CC

Environmental & Wildlife Management Consultancy

CC 95/34111/23

Assessing your Environment

West Dune Properties 131 Pty (Ltd)
88 Rubida Street
Murrayfield X 1
Pretoria
Gauteng, RSA

P.O. Box 72847
Lynwood Ridge
Pretoria
0040

Tel: 012-365-2546
Fax: 012-365-3217
Inter: +2712-365-2546
E-mail: wdefrey@ekoinfo.co.za
Http://www.ekoinfo.co.za

15 Maart 2012

Heil die Leser

Geagte Mnr., Mej. of Mev.

Basiese Evaluerings Proses vir twee nuwe Kraglyne en 'n nuwe krag substasie op die plaas Bokfontein 448 - Besoedelingskontrole Dam op die oorblywende gedeelte van die plaas Hartogshoop 410-JS, Middelburg, Mpumalanga

Hernic Ferocrome benodig twee nuwe krag lyne en 'n nuwe krag substasie as deel van hulle myn bedrywighede. Die nuwe elektrisiteit infrastruktuur sal die applikant help om toekomstige produksie te optimaliseer. Die gebied wat betrokke is by die proses is oorblywende gedeelte van gedeelte 18 en gedeeltes, 33,34,36, 40, 48, 84,85,104,121,131,132,133,162,171,186,198,210,223, 270, 186, 187, 328 van Bokfontein 448-JQ. Die are is geleë noord van die N4 hoofweg, by die Rashoop afrit.

Die doelwitte van Geïntegreerde Omgewingsbestuur sluit in dat die ontwikkeling nie die omgewing se integriteit in gevaar stel nie en dat belanghebbende, geïnteresseerde en geaffekteerde partye genoeg tyd gegun moet word om kwessies en bekommernisse uit te lig en kommentaar te lewer op die voorgestelde ontwikkeling

EkolInfo BK is as onafhanklike omgewingskonsultant en impak assessors aangestel om inligting saam te stel vir die Basiese Omgewingsimpak verslag. Die verslag sal aan die Nasionale Departement Omgewings Sake voor gelê word vir goedkeuring. Die doel van die verslag is om te verseker dat die uitwerking op die omgewing in ag geneem word, om openbare deelname te verseker, en besluitnemers te voorsien met voldoende inligting om 'n ingeligte besluit oor die voorgestelde aktiwiteite te maak.

Lees asseblief deur die kort projek-uiteensetting, Basiese inligting dokument, en maak 'n lys van enige bekommernisse wat u mag hê op die aangehegte registrasievorm. Ons sal ook waardeur indien besonderhede van ander geïnteresseerde en geaffekteerde partye wat u dink geraadpleeg moet word, voorsien word. Stuur asseblief die vorm per pos, faks of e-pos teen 26 April 2012 na die address hier onder.

U is welkom om ons te kontak indien u enige navrae het in verband met die voorgestelde ontwikkeling.

Kontakbesonderhede:

Sean Hutcheons

PO Box 72847

Lynnwood Ridge, 0040

Telefoon: 084 702-7780

Faks: (012) 365-3217 of 086 515-5337 of 086 582-7427

E-pos: public@ekoinfo.co.za

Die uwe

Sean Hutcheons

EkolInfo BK

0847027780

EkolInfo's services:

Environmental Impact Assessments
Environmental Management Program Reports
Environmental Monitoring/ Auditing
Game or Livestock Management Reports
Geographic Information Analysis/ Management

EkolInfo's products:

Soil surveys
Flora surveys
Fauna surveys
Natural Resource Maps
Natural Resource Data

BASIESE INLIGTINGS DOKUMENT

Basiese Evaluerings Proses vir twee nuwe kraglyne en een nuwe krag substasie op die plaas Bokfontein 448 by Brtis, Noord Wes provinsie.

Verw No 14/12/16/3/3/1/501

DOEL VAN DIE BID

U word uitgenooi om deel te neem aan die goed keurings proses, soos vereis deur die Nasionale Omgewings Wet, vir die voldoening aan die behoefte vir goedkeuring van twee nuwe kraglyne en 'n nuwe krag substasie vir Hernic Ferrochrome myn.

AREA / GEBIED

Die eiendom wat betrokke kan wees is geleë, Suid Wes van die Brits in die Noord Wes provinsie. Die plaas Bokfontein 448-JQ. Die volgende gedeeltes kan betrokke wees, oorblywende gedeelte van gedeelte 18 en gedeeltes, 33,34,36, 40, 48, 84,85,104,121,131,132,133,162,171,186,198,210,223, 270, 186, 187, 328 van Bokfontein 448. Die gebied val binne die Madibeng lokale Municipaliteit. Die area is noord van die N4 hoofweg by die Rashoop afrit

PROJEK BESKRYWING

Hernic Ferrochrome benodig twee nuwe krag lyne en a nuwe krag substasie as deel van hul myn bedrywighede. Die nuwe elektrisiteits infrastruktuur sal die applikant help om toekomstige produksie te optimaliseer. Volgens die National Omgewings wet moet goed keuring vir die nuwe infrastuktuur aktiwiteit verkry word van Die Nasionale Departement van Omgewings Sake (DOS).

TOEPASLIKE WETGEWING

In terme van regulasie 54 van die Omgewingsimpak Regulasies soos gepubliseer in die Staatskoerant no 33306, 18 Junie 2010, gee die EkoInfo BK, as onafhanklike omgewingskonsultant kennis dat hulle 'n Basiese Evaluerings Proses aansoek ingedien het, om goedkeuring te verkry vir die volgende gelyste aktiwiteit in term van regulasie 544 van die Nasionale Omgewingsbestuurswet no 8 van 2004, soos gewysig. Gelyste Aktiwiteit no 1 (i) en 10 (i) is van toepassing

1 Die oprigting van fasiliteite of infrastruktuur vir die opwek van elektrisiteit:

(i)Die elektrisiteit opwekking meer is as 10 megawatts maar minder as 20 megawatts.

En

10 Die oprigting van fasiliteite of infrastruktuur vir die transmissie en verspreiding van elektrisiteit:

(i)Buite die dorps grense of industriële areas met 'n kapasiteit van meer as 33kilovolts maar minder as 275 kilovolts

Hierdie aktiwiteite vereis 'n Basiese Evaluerings proses met 'n Basiese Impak bepalings verslag.

PROSES

EkoInfo BK, is besig met die opstel van 'n Basiese Omgewingsimpakstudie. Die verslae het ten doel om die departement van die nodige inligting, soos wetlik vereis, te voor sien om 'n indigte besluit te neem oor die goed keuring al dan nie van die aktiwiteite. Die goedkeuringsowerheid sal vegewis word, deur die verslae, van die impakte op die omgewing insluitende biologies, ssiale en finaseele omgewings. Die departement sal dan 'n ingeligte besluit te neem oor die goedkeuring van die aktiwiteite soos aangedui. Inligting ontvang, van die publiek, sal deel uitmaak van die verslag en sal 'n invloed hê op die besluit wat geneem gaan word. Dit is dus van uiterste belang dat u deel word van die proses.

PROSES STAPPE

Die Projek is geregistreer by DOS met vewysings No. **14/12/12/16/3/3/1/501**;

- Geïnteresseerde en geïmpakteerde partye, insluitende aangrensende grond eienaars sal in kennis gestel word;
- Advertensies sal in die **Brits Pos** en **Kormrant** in die week van 22 **Maart 2012** verskyn;
- Kennisgewingsborde sal op die eiendom en op strategiese punte om die eiendom op gesit word; en
- Geïnteresseerde en geïmpakteerde partye **het tot en met 26 April 2012 om te registreer om deel uit te maak van die proses**

KONTAK BESONDERHEDE

Stuur asseblief die aangehegde registrasie vorm terug na Mr Sean Hutcheons as u deel wil wees van die proses. As u nog inligting wil bekom kan u Ashleigh kontak of as u wil 'n bydrae lewer by:

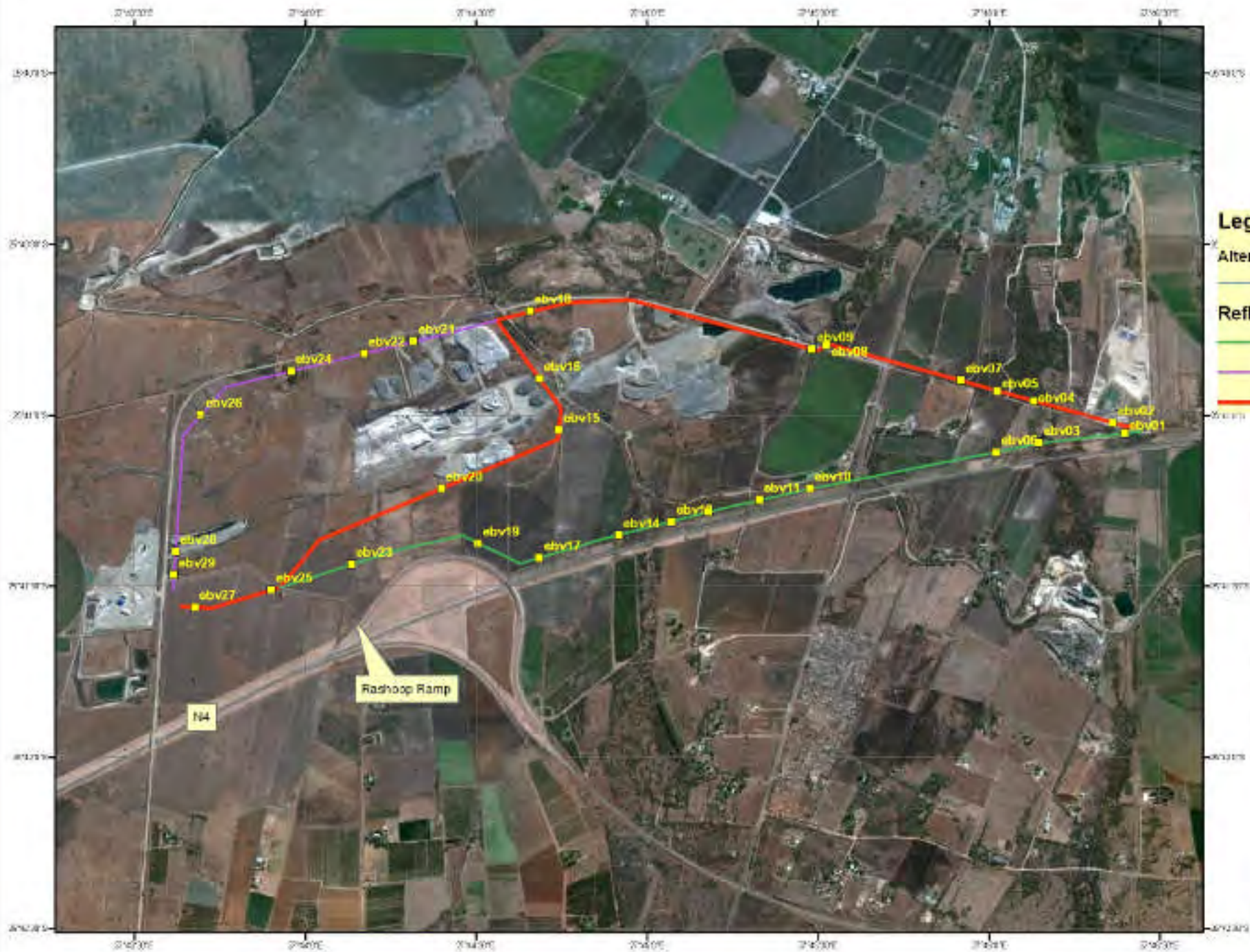
Posbus 72847, Lynnwood Ridge, 0040

Tel: 084 702-7780,

Faks: (012) 365-3217 of 086 515-5337 of 086 582-742

Vonkpos: public@ekoinfo.co.za





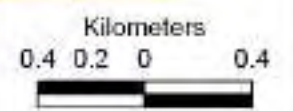
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Alternatives_dd84

— <all other values>

RefName

- Alternative 1
- Alternative 2
- Main Option



METADATA

Project: Hemic BAP

Data source:

Projection: None
 Datum: WGS84
 Scale: 1:200000

Map compiled by Willem de Frey, Ekoinfo CC

Ekoinfo CC

www.ekoinfo.co.za

TRUE NORTH



INTERSTED AND AFFECTED PARTIES REGISTRATION FORM

DEA Ref: 14/12/16/3/3/1/501

Basic Assessment Process: Proposed two New Power line a.a. new substation for Heric Ferrochrome on the farm Bokfontein 448 - JQ, Brits, Madibeng Local Municipality, North West Province

Title _____ Name _____

Surname _____

Company Name / Interest _____

Postal or Residential Address _____

Area _____ Area code _____

Tel (_____) _____

Mobile _____

Fax (_____) _____

e mail address _____

Comments on the proposed development (separate sheets can be used)

Environmental issues

Socio-economic issues (e.g. crime/job creation)

Cultural / Historical issues

Any other comments / issues

Details of other I&APs to be consulted

Title _____ Name _____

Surname _____

Company name _____

Tel (_____) _____

e mail _____

Please return this registration form **on or before 26 April 2012**, by one of the following communication methods:

Sean Hutcheons

PO Box 72847, LYNNWOOD RIDGE, 0040

Facsimile: (012) 365-3217 or 086 515-5337 or 086 582 7427

E-mail: public@ekoinfo.co.za

If required you can contact Sean Hutcheons on 084 702-7780

Your comments are highly appreciated, and will form part of the final documents to be submitted to the decision-making authority. Thank you



EkolInfo CC
Environmental & Wildlife Management
Consultancy

CC 95/34111/23

Assessing your Environment

West Dune Properties 131 Pty (Ltd)
88 Rubida Street
Murrayfield X 1
Pretoria
Gauteng, RSA

P.O. Box 72847
Lynwood Ridge
Pretoria
0040

Tel: 012-365-2546
Fax: 012-365-3217
Inter: +2712-365-2546
E-mail: wdefrey@ekoinfo.co.za
Http://www.ekoinfo.co.za

15 March 2012

To whom it may concern

Dear Sir / Madam

Basic Assessment Process: Proposed for two new power lines and a new substation for Hernic Ferrochrome on the farm Bokfontein 448-JQ, Brits, Madibeng Local Municipality, North West Province

Hernic Ferrochrome, proposes the construction of two new power lines and a new substation on the Farm Bokfontein 448-JQ. The area is situated South West of Brits in the Madibeng Local Municipality, North West Province. The site is North of the N4 Highway at the Rashoop off ramp.

The objectives of Integrated Environmental Management include that the development must not compromise the environmental integrity of the site and that interested and affected parties must have sufficient opportunity to raise issues of concern.

EkolInfo CC as independent environmental managers and impact assessors has been appointed to compile the information for the Basic Assessment report, to manage the assessment process and to inform the public of the proposed development. The aim of the report is to ensure that the environmental impacts are taken into consideration, to ensure public participation, and provide decision makers with sufficient information to make an informed decision on the proposed activities.

Please read through the brief project outline and list any concerns you may have on the attached registration form. We would also appreciate details of other interested and affected parties you think should be consulted. Please return the form by post, fax or email by 26 April 2012.

You are welcome to contact us should you have any queries regarding the proposed development.
Contact Details:

Sean Hutcheons
PO Box 72847
LYNNWOOD RIDGE, 0040
Telephone: 084 702-7780
Facsimile: (012) 365-3217 or 086 515-5337 or 086 582-7427
E-mail: public@ekoinfo.co.za

Yours sincerely

Sean Hutcheons
EkolInfo CC
0847027780

EkolInfo's services:
Environmental Impact Assessments
Environmental Management Program Reports
Environmental Monitoring/ Auditing
Game or Livestock Management Reports
Geographic Information Analysis/ Management

EkolInfo's products:
Soil surveys
Flora surveys
Fauna surveys
Natural Resource Maps
Natural Resource Data

Member: W.H. de Frey (MSc Wildlife Management – UP, Pr.Sci.Nat.)

BACKGROUND INFORMATION DOCUMENT

Basic Assessment Process for two new power lines and a new substation for HERNIC FERROCHROME on the farm Bokfontein 448-JQ, Brits, Madibeng Local Municipality, North West Province
DEA Ref. 14/12/16/3/3/1/501

PURPOSE OF BID

An invitation to participate in the NEMA process two new power lines and a new substation for HERNIC FERROCHROME on the farm Bokfontein 448-JQ, Brits, Madibeng Local Municipality, North West Province.

LOCATION

The site of the proposed development is on the remainder of portion 18 and portions 33, 34, 36, 40, 48, 84, 85, 104, 121, 131, 132, 133, 162, 171, 186, 198, 210, 223, 270, 186, 187, 328 of the farm van Bokfontein 448 – JQ. The site is South West of Brits within the Madibeng local municipality, North West Province. The site is north of the N4 highway at the Rashoop off ramp.

PROJECT DESCRIPTION

HERNIC FERROCHROME, proposes the construction of two new power lines and a new substation. The development is part of future production requirements and to ensure that the optimal utilization of their resources. **Authorisation from the Department of Environmental Affairs (National) is required before construction can commence.** A Basic Assessment Process will be followed to obtain authorisation

APPLICABLE LEGISLATION

Notice is given in terms of Section 54 of NEMA and the Environmental Impact Regulations published in the Government Gazette no 33306, 18 June 2010, listed activity number 1 (i): The construction of facilities or infrastructure for the generation of electricity where:

- (i) The electricity output is more than 10 megawatts but less than 20 megawatts and
10 The construction of facilities or infrastructure for the transmission and distribution of electricity:

- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;

PROCESS

EkoInfo CC, an independent Environmental Consultants, will inform the public and stakeholders of the proposed development, in the form of a public participation process. This will ensure stakeholder engagement and that all Interested and Affected parties are informed.

DESCRIPTION OF TASKS TO BE PERFORMED

The project has been registered with DEA: **Ref: 14/12/16/3/3/1/501**

- Stakeholders, including adjacent landowners and the relevant authorities, will be notified of the proposed development;
- Advertisements will be placed in the **Kormorant** newspaper and the **Brits Pos** on the **week of 22 March 2012** to notify the public of the proposed development;
- Notice boards advertising the application will be placed at visible locations on the site, as well as in close proximity to the site; and
- Interested and/or Affected Parties have the opportunity to register their interest in the project between **16 March and 26 April 2012.**

CONTACT DETAILS

Please return the attached registration form or contact Mr Sean Hutcheons if you wish to register as a interested and affected party or if you have any comments regarding this project at:

PO Box 72847, Lynnwood Ridge, 0040

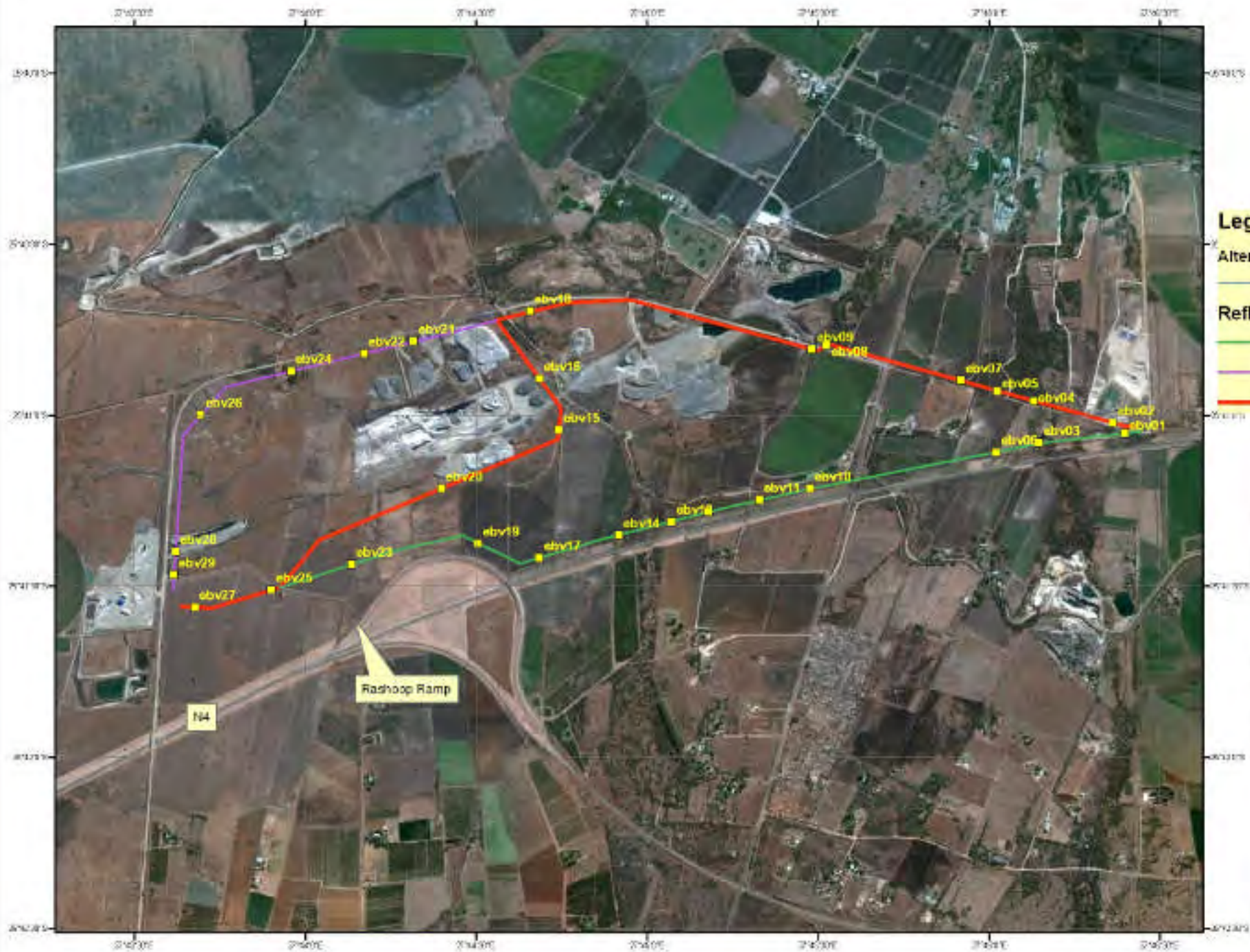
Tel: 084 702-7780,

Fax: (012) 365-3217 or 086 515-5337 or

086 582-7427

E-mail: public@ekoinfo.co.za





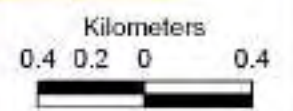
Legend

Alternatives_dd84

— (call other values)

RefName

- Alternative 1
- Alternative 2
- Main Option



METADATA

Project: Hemic BAP

Data source:

Projection: None
 Datum: WGS84
 Scale: 1:200000

Map compiled by Willem de Frey, Ekoinfo CC

Ekoinfo CC

www.ekoinfo.co.za

TRUE NORTH



INTERSTED AND AFFECTED PARTIES REGISTRATION FORM

DEA Ref: 14/12/16/3/3/1/501

Basic Assessment Process: Proposed two New Power line a.a. new substation for Heric Ferrochrome on the farm Bokfontein 448 - JQ, Brits, Madibeng Local Municipality, North West Province

Title _____ Name _____

Surname _____

Company Name / Interest _____

Postal or Residential Address _____

Area _____ Area code _____

Tel (_____) _____

Mobile _____

Fax (_____) _____

e mail address _____

Comments on the proposed development (separate sheets can be used)

Environmental issues

Socio-economic issues (e.g. crime/job creation)

Cultural / Historical issues

Any other comments / issues

Details of other I&APs to be consulted

Title _____ Name _____

Surname _____

Company name _____

Tel (_____) _____

e mail _____

Please return this registration form **on or before 26 April 2012**, by one of the following communication methods:

Sean Hutcheons

PO Box 72847, LYNNWOOD RIDGE, 0040

Facsimile: (012) 365-3217 or 086 515-5337 or 086 582 7427

E-mail: public@ekoinfo.co.za

If required you can contact Sean Hutcheons on 084 702-7780

Your comments are highly appreciated, and will form part of the final documents to be submitted to the decision-making authority. Thank you

Appendix 3: Communications to and from local authority and service providers.

None received to date awaiting feedback as the DRAFT BAP report is currently out on review

Appendix 4: Minutes of any public or stakeholder meetings. (Currently not applicable)

Appendix 5: Comments and Responses Report

Comments Received report

Interested Parties			
Capacity	Contact	Comments	Response
Adjacent Property Krokadil drift	Mr J Els	There can be no development under the power lines once erected	The preferred alternative will follow roads and current infrastructure where development will not take place and may have limited effect agricultural development
Adjacent Property Bokfontein 187	Mr A F Barnard / Dralta Boerdery	Risk to low flying Crop Spraying aeroplane More roads will lead to more crime Proposes alternative 2	EMPR indicates warning spheres to be erected as per CAA requirements. No new roads are planned with preferred Alternative. This is the proposed alternative

Appendix 6: Copy of the register of I&AP's



INTERESTED AND AFFECTED PARTIES REGISTRATION FORM
DEA Ref: 14/12/16/3/3/1/501

Basic Assessment Process: Proposed two New Power line a.a. new substation for Hemic Ferrochrome on the farm Bokfontein 448 - JQ, Brits, Madibeng Local Municipality, North West Province

Title MV Name Johannes van (Hans)
Surname Ekke
Company Name / Interest Koekemmerdijk 448
Ekke
Postal or Residential Address Lesbos 350 Brits
Area Area code 0850
Tel (013) 2620143
Mobile 0722460499
Fax () _____
e mail address j.m.ekke@ekoinfo.co.za

Comments on the proposed development (separate sheets can be used)

Environmental issues _____
Socio-economic issues (e.g. crime/job creation) _____

Cultural / Historical issues _____
Any other comments / issues Wetland Soek probleme
aanwysing doen nie onder by
offisiel maar moet nie
Details of other I&APs to be consulted _____
Title Name _____
Surname _____
Company name _____
Tel () _____
e mail _____

Please return this registration form on or before 26 April 2012, by one of the following communication methods:
Sean Hutcheons
PO Box 72847, LYNWOOD RIDGE, 0040
Facsimile: (012) 365-3217 or 086 515-5337 or 086 582 7427
E-mail: public@ekoinfo.co.za
If required you can contact Sean Hutcheons on 084 702-7780

Your comments are highly appreciated, and will form part of the final documents to be submitted to the decision-making authority. Thank you



INTERESTED AND AFFECTED PARTIES REGISTRATION FORM
DEA Ref: 14/12/16/3/3/1/501

Basic Assessment Process: Proposed two New Power line a.a. new substation for Hemic Ferrochrome on the farm Bokfontein 448 - JQ, Brits, Madibeng Local Municipality, North West Province

Title M/F Name A F (DRIES)
Surname BARNARD
Company Name / Interest DRALTA BOERDERY
owner of portion 187 Bokfontein
Postal or Residential Address Bokfontein P.O. Box 1979
Area BRITS Area code 0250
Tel () _____
Mobile 082 490 5552
Fax (0866 036 941) _____
e mail address dries@dralta.co.za

Comments on the proposed development (separate sheets can be used)

Environmental issues
Risk to see flying aircraft
fluct weed to spray crops.

Socio-economic issues (e.g. crime/job creation)
More roads, more crime

Cultural / Historical issues

Any other comments / issues

I think alternative 2 is
the best option hence a bypass,
an existing road

Details of other I&APs to be consulted

Title _____ Name _____
Surname _____
Company name _____
Tel () _____
e mail _____

Please return this registration form on or before 26 April 2012, by one of the following communication methods:

Sean Hutcheons
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Your comments are highly appreciated, and will form part of the final documents be submitted to the decision-making authority. Thank you

Appendix 7: Comments from I&AP's on the Basic Assessment Report

Awaiting comments as the DRAFT report is currently out on review

Appendix 8: Comments from I&AP's on amendments to the Basic Assessment Report (Currently not applicable)

Appendix 9: Newspaper advertisements

Awaiting news paper testsheets

Appendix 10: Registrations from I&AP's and Knock and Drop Proof

Appendix I

HERNIC BOKFONTEIN, 132-kV OHL ROUTE LIST OF PROPERTY OWNERS AND 21 DIGIT SERVAIOR GENERALE CODE

Property Description	Owner		Surveyor-general 21 digit
Bokfontein 448 JQ Ptn 84 (A Ptn of Ptn 1)	Hemic F/C	Applicant	TOJQ 0000 00000448 0084
Bokfontein 448 JQ Ptn 85 (A Ptn of Ptn 1)	Hemic F/C	Applicant	TOJQ 0000 00000448 00085
Bokfontein 448 JQ Ptn 104 (A Ptn of Ptn 143)	Hemic F/C	Applicant	TOJQ 0000 00000448 00104
Bokfontein 448 JQ Re Of Ptn 121 (A Ptn of Ptn 143)	Hemic F/C	Applicant	TOJQ 0000 00000448 00121
Bokfontein 448 JQ Ptn 186/(Re 80) (A Ptn of Ptn 77)	Hemic F/C	Applicant	TOJQ 0000 00000448 186
Bokfontein 448 JQ Ptn 270 R/E Of Ptn 166	Hemic F/C	Applicant	TOJQ 0000 00000448 00270
Bokfontein 448 JQ Ptn 186/(185) Ptn 185 (A Ptn of Ptn 166)	Hemic F/C	Applicant	TOJQ 0000 00000448 00186
			TOJQ 0000 00000448 00185
Bokfontein 448 JQ Ptn 187 (A Ptn of Ptn 25)	See Attached owners completed document		TOJQ 0000 00000448 00187
Bokfontein 448 JQ Ptn 328 (A Ptn of Ptn 3)	Hemic F/C	Applicant	TOJQ 0000 00000448 00328
Bokfontein 448 JQ Ptn 48 (A Ptn of Ptn 18)	Hemic F/C	Applicant	TOJQ 0000 00000448 00048
Bokfontein 448 JQ Ptn 123, 121,162,452 and 47	See Attached owners completed document		TOJQ 0000 00000448 00162
	See Attached owners completed document		TOJQ 0000 00000448 00040
Bokfontein 448 JQ R/E Of Ptn 18 (Ptn of Ptn 4)	Hemic F/C	Applicant	TOJQ 0000 00000448 00018
			-
Bokfontein 448 JQ Ptn 187 Bokfontein 448 JQ Ptn 23	See Attached owners completed document		TOJQ 0000 00000448 00187
	See Attached owners completed document		TOJQ 0000 00000448 00023
Bokfontein 448 JQ Ptn 18	See Attached owners completed document		TOJQ 0000 00000448 00018
Krokodilgrift 446 JQ pnt 120 Ptn 18	See Attached owners completed document		TOJQ 0000 00000446 00120

