forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

APPLICATION FORM FOR ENVIRONMENTAL AUTHORISATION – AUGUST 2023

Application submitted for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE (This must include local municipality and/or district municipality and province)

THE PROPOSED HIGHVELD NORTH-WEST AND LOWVELD STRENGTHENING PROJECT: EQUIPPING OF EXISTING BORUTHO AND SILIMELA SUBSTATIONS AND DEVELOPMENT OF BORUTHO-SILIMELA 150KM 400KV TRANSMISSION LINE AND ASSOCIATED INFRASTRUCTURE, WITHIN THE CAPRICORN, SEKHUKHUNE AND WATERBERG DISTRICT MUNICIPALITIES, LIMPOPO PROVINCE.

Indicate if the DRAFT report accompanies the application	(tick/select one box)	YES ✓
		NO

PRE-APPLICATION CONSULTATION

Was a pre-application meeting held	YES	NO ✓
Date of the pre-application meeting	N/A	
Reference number of pre-application meeting held	2024-02-0008	
Were minutes compiled and submitted to the Department for approval	YES	NO ✓
A copy of the approved pre-application meeting minutes must be appended to this application as APPENDIX 1.		

IMPORTANT INFORMATION BEFORE COMPLETING THIS APPLICATION FORM:

1. General:

1.1. The appointed environmental assessment practitioner (EAP) must be registered with Environmental Assessment Practitioners Association of South Africa (EAPASA) in terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016, as amended. Proof of such valid registration must be appended to this Application form. (APPENDIX 6B). This will be confirmed by the Competent Authority (CA) on the EAPASA website.

1.2. The EAP candidate may only assist the registered EAP and work under the supervision of a registered EAP (Regulation 14(6) in the S24H Registration Authority Regulations, 2016, as amended). The registered EAP takes full responsibility for the work conducted.

1.3. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Assessment Reporting where the Department of Forestry, Fisheries and the Environment (DFFE) is the Competent Authority (CA).

1.4. The required information must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing. A legible font type and size must be used when completing the form. The font size should not be smaller than 10pt (e.g. Arial 10).

1.5. Unless protected by law, all information contained in and attached to this application, will become public information on receipt by the Competent Authority. Upon request during any stage of the application process, the Applicant / EAP must provide any registered interested and affected party with the information contained in and attached to this application.

1.6. This application form is current as of August 2023. It is the responsibility of the Applicant/Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are accessible at https://www.dffe.gov.za/documents/forms/legal

1.7. The onus is on the Applicant/EAP to confirm whether DFFE is the Competent Authority to which this application must be submitted (Section 24C of NEMA) and to determine all applicable listed activities that would require Environmental Authorisation prior to the commencement of the construction activities. Should any revision of your development comprise any other activities that constitute a listed activity/ies as defined in Listing Notice 1, 2, or 3 of the EIA Regulations, 2014 as amended, it must also form part of the Application for Environmental Authorisation.

1.8. An application for Environmental Authorisation lapses if the applicant fails to meet any of the timeframes prescribed in terms of the EIA Regulations, 2014, as amended.

1.9. An application for environmental authorisation must be accompanied by a report generated by the web based environmental screening tool (in APPENDIX 14). This has been stipulated as a requirement for the submission of applications for environmental assessment in the Environmental Impact Assessment Regulations. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

1.10. If applicable, written confirmation that the CA has granted permission for the combination of application(s) for an environmental authorization in terms of the provisions of sub-regulation 11(1) of the EIA Regulations, 2014, as amended, must be attached to this application form (under APPENDIX 15).

2. Administrative Requirements:

2.1. An application fee is applicable (refer to 2. FEES). Proof of payment must accompany this application and be paid prior to the submission of this Application form (APPENDIX 2). The application will not be processed without proof of payment unless one of the exclusions provided for in the Fee Regulations is applicable AND such information in the exclusion section of this application form has been confirmed by this Department.

2.2. A cover letter on your company letterhead indicating the nature of this application must be appended to this form for e.g. new application for Environmental Authorisation, revised updated application for Environmental Authorisation etc.

2.3. An electronic copy of the signed application form must be submitted of both the Applicant and EAP and the signature should not be older than 4 months. The relevant form(s) can be found on our website https://www.dffe.gov.za/documents/forms/legal

2.4. This form must be submitted to the CA in the format as prescribed in the process to upload documents form. Note, that this CA does not accept hard copy documents since June 2020.

2.5. The use of the phrase "not applicable" in the form must be done with circumspection. Where it is used in respect of material information that is required by the Competent Authority for assessing the application, this may result in the application being considered as incomplete as provided for in the EIA Regulations.
2.6. 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 and declaration of interest of the specialist must also be submitted. The form can be found on our website https://www.dffe.gov.za/documents/forms/legal
2.7. Please note that this form must be copied to the relevant Provincial Environmental Department(s). Ensure that correct details are found/confirmed/provided.

Competent Authority Details

Online Submission only:
https://sfiler.environment.gov.za:8443/.

Click **https://www.dffe.gov.za/documents/forms/legal** for guidance document which must be complied with in order to upload/submit files to this Competent Authority.

Physical address:
Department of Forestry, Fisheries and the Environment
Attention: Chief Director: Integrated Environmental Authorisations Environment
House
473 Steve Biko Road Arcadia

For Submission enquiries: Contact the Directorate: IEA Strategic Support, Coordination and Reporting at: Email: EIAApplications@dffe.gov.za

For EIA related implementation queries:
Email: EIAAdmin@dffe.gov.za

For EIA Related Interpretation queries in terms of the Listed Activities: Email:
IQ@dffe.gov.za

For SIP confirmation, please contact the SIP coordinator at the below contact details:

- Mr Alvino Wildschutt-Prins
  Programme Manager: Infrastructure Pipeline Development & Management SIP
  Programme Management Office
  Cell: 072 650 2249
  Email: alvino@presidency.gov.za
- Mr Avik Singh, Infrastructure Project pipeline (SIP Support)
  AvikS@idc.co.za

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1. COMPETENT AUTHORITY

Identified Competent Authority to consider the application:	Department of Forestry Fisheries and the Environment
Reason(s) in terms of S24C of NEMA:	In terms of S24C(2)(d)(iii) The minister must be identified as the competent authority if the activity is undertaken by a statutory body performing an exclusive competence of the national sphere or government. The applicant for this application is NTCSA and the competent authority for this application will be the National Department of Forestry, Fisheries and the Environment.
Attach proof of Section 24 C (3) agreement, where applicable	Proper motivation must be attached to the application (APPENDIX 15)

2. FEES

Applicants are required to tick the appropriate box below to indicate that either proof of payment is attached or that, in the applicant's view, an exclusion applies. Proof of payment or a motivation for exclusions must be attached as APPENDIX 2 of this application form.

Proof of payment attached	**YES**	**NO ✓**
Payment Reference Number	Click or tap here to enter text.	
Exclusion in terms of Regulation 2(a) or 2(b) of GNR 141 of 28 February 2014 (Fee Regulations)	**YES ✓**	**NO**

An applicant is excluded from paying fees if:

- The activity is a community based project funded by a government grant; or
- The applicant is an organ of state.

TYPE OF EXCLUSION	Tick where applicable. Proper motivation must be attached to the application (APPENDIX 2)	
The activity is a community based project funded by a government grant		
The applicant is an organ of state	✓	
FEE AMOUNT	Fee – N/A	
Application for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations.	R2 000	N/A
Application for an environmental authorisation, for which S&EIR is required in terms of the Environmental Impact Assessment Regulations.	R10 000	N/A

Department of Forestry, Fisheries and the Environment banking details for the payment of application fees:

Payment/Refund Eı quiries:
Email: EIAAdmin@ dffe.gov.za

Banking details:

Bank	ABSA Bank
Branch code	632005
Account number	1044 2400 72

Account Type Current account **Reference number: Reference number to be provided in the specific format indicating centre point coordinates of site in decimal degrees to 5 or 6 decimal places: latitude/longitude** e.g. -33.918861/18.423300 **Status:** Tax exempted

3. GENERAL INFORMATION

PROJECT TITLE (This must include local municipality and/or district municipality and Province)

THE PROPOSED HIGHVELD NORTH-WEST AND LOWVELD STRENGTHENING PROJECT: EQUIPPING OF EXISTING BORUTHO AND SILIMELA SUBSTATIONS AND DEVELOPMENT OF BORUTHO-SILIMELA 150KM 400KV TRANSMISSION LINE AND ASSOCIATED INFRASTRUCTURE, WITHIN THE CAPRICORN, SEKHUKHUNE AND WATERBERG DISTRICT MUNICIPALITIES, LIMPOPO PROVINCE.

Title	Not Applicable
Name of the Applicant	National Transmission Company of South Africa
Surname of the Applicant	National Transmission Company of South Africa
Name of contact person for applicant (name and surname) (if other)	Madinare Mukhuba
Company/ Trading name (if any)	National Transmission Company of South Africa
Company Registration Number	2002/015527/30
Physical address	1 Maxwell Drive, Megawatt Park, Sunninghill, Sandton, 2157
Postal address	P.O. Box 1091
Postal code	2000
Telephone	011 516 7350
Cellphone	082 469 1336
E-mail	mukhubdm@ntcsa.co.za

Name of the Landowner	Refer to Appendix 3
Surname of the Landowner	Refer to Appendix 3
Postal address	Refer to Appendix 3
Postal code	Refer to Appendix 3.
Telephone	Refer to Appendix 3

Cellphone	Refer to Appendix 3
E-mail	Refer to Appendix 3

Name of the Person in control of the land	Refer to Appendix 3
Surname of the Person in control of the land	Refer to Appendix 3
Postal address	Refer to Appendix 3
Postal code	Refer to Appendix 3
Telephone	Refer to Appendix 3
Cellphone	Refer to Appendix 3
E-mail	Refer to Appendix 3

In instances where there is more than one landowner, please attach a list of those landowners with their contact details as APPENDIX 3.

Unless the application is in respect of linear activities or Strategic Infrastructure Projects as contemplated in the Infrastructure Development Act (Act No. 23 of 2014) and Regulation 39 of the EIA Regulations, 2014, as amended, written consent of landowner/s must be submitted in APPENDIX 3.

The signed declaration undertaking by the applicant must be submitted as APPENDIX 4 (must not be older than 4 months).

Provincial Environmental Authority:	Limpopo Department of Economic Development, Environment and Tourism
Name of contact person in Environmental Section (name and surname)	Mr Rhulani Mthombeni
Postal address	20 Hans Van Rensburg Street, Polokwane Central
Postal code	0700
Telephone	015 293 8300
Cellphone	N/A
E-mail	mthombeniRV@ledet.gov.za

Local Municipality	Refer to Appendix 5
Name of contact person in Environmental Section (name and surname)	Refer to Appendix 5
Postal address	Refer to Appendix 5
Postal code	Refer to Appendix 5
Telephone	Refer to Appendix 5
Cellphone	Refer to Appendix 5
E-mail:	Refer to Appendix 5

In instances where there is more than one Local/Provincial Authority involved, please attach a list of those Local/ Provincial Authorities with their contact details as APPENDIX 5. Ensure that the details provided above are verified and valid.

4. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

Company of Environmental Assessment Practitioner (EAP)	NTC Group (Pty) Ltd
EAP name and surname	Ms Rendani Rasivhetshele
EAP Qualifications and Professional affiliations	B.Sc. Environmental Science B.Sc. (Hons) Environmental Management Environmental Assessment Practitioners Association of South Africa (EAPASA) – 2019/1729
Physical address	AMP Building, 17 Eaton Avenue, Bryanston, 2192
Postal address	P.O. Box 2027, Northriding
Postal code	2169
Telephone	011 462 2022
Cellphone	072 721 4835/ 072 738 3836
E-mail	projects@ntcgroup.co.za / tebogo@ntcgroup.co.za

In terms of section 24H of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the S24H Regulations as amended:

Are you a registered environmental assessment practitioner, registered with EAPASA in terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016, as amended.	**YES*** ✓	**NO**
If "No**" provide proof of appointment letter clearly depicting appointment before the 08 August 2022 as per GNR 1733, Amendment of Section 24H Registration Authority Regulations, 2016, 7 February 2022. If you do not attach this proof, you may not commence further with the application, kindly refer to Section 24H Registration Authority Regulations, 2016, as amended.	Attached as APPENDIX 6A	
If "Yes*" please provide a valid certificate of registration (Please attach under APPENDIX 6B) Note that this will be verified with EAPASA.	Attached as APPENDIX 6B	
Please provide valid EAPASA Registration number.	2019/1729	

The appointed EAP must meet the requirements of Regulation 13 of the EIA Regulations, 2014 as amended and Regulation 15(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended. The declaration of independence of the EAP and undertaking under oath or affirmation that all the information submitted or to be submitted for the purposes of the application is true and correct must be submitted as APPENDIX 6C.

5. PROJECT DESCRIPTION

Please provide a detailed description of the project. Ensure to include all associated infrastructure related to the main facility (note that the box will expand based on the text included):

The National Transmission Company of South Africa (NTCSA), a subsidiary of Eskom Holdings SOC Limited, has appointed NTC Group (Pty) Ltd as an Independent Environmental Consultants to undertake a Basic Assessment Process for the proposed construction of the Borutho- Silimela 400kV power line and its associated infrastructure.

NTCSA is proposing to construct the 400kV powerline that is approximately 150 kilometres in length. The proposed power line is located between the existing Borutho Substation on farm Gillimberg 861 in Mokopane and runs south to the existing Silimela Substation on farm Loskop Noord 12, near Marble Hall within the Lepelle-Nkumpi, Mogalakwena, Modimolle-Mookgophong and Ephriam Mogale Local Municipalities, Limpopo Province.

The purpose of the construction of the powerline is to connect power stations and substations in transmitting large amounts of electric power at a very high voltage without loss. Powerlines, therefore, play a very crucial role in providing electricity. NTCSA network has reached capacity and cannot handle anticipated future demand, the construction of the proposed power line is now required. Thus, to fortify the supply network in the area and thereby meet future demand driven by mines and rural development in the area, NTCSA intends to reinforce the current network by building a 400kV 150km power line and related substation works.

The scope of work entails:

- Equip 1 x 400kV feeder bay at Borutho Substation for Silimela Line 1;
- Equip 1 x 400kV feeder bay at Silimela Substation for Borutho Line 1;
- Build approximately 150km 400kV line from Borutho Substation to Silimela Substation, with associated extensions at the terminal substations; and

The powerline study route/area is 250m wide and the servitude within the route will not be more than 90m wide.

It is important to note that Silimela and Borutho Substations have already been approved for construction under other Environmental Authorisations and as such, exist. Therefore, the proposed equipping works entail accommodation of 1 x 400kV feeder bay for Silimela Line 1 and 1 x 400kV feeder bay for Borutho Line 1. There will be no expansion of the existing terrace or substation boundaries.

5a. RENEWABLE ENERGY DEVELOPMENT ZONES:

Does the project form part of a Renewable Energy Development Zone (REDZ) as per GN 114 ?	**YES**	**NO ✓**
If "YES*"		
• Confirm Technology	Large Scale Wind ☐	Large Scale Solar PV ☐
• Confirm Zone as per GNR 114 and GNR 142 and 144	Click or tap here to enter text.	
• A map showing the proposed development (100% of the proposed footprint) within the	YES ☐	Attached as APPENDIX 7A

boundary of the zone mentioned above must be generated using the screening tool. Use the "Print Map" feature available in the Screening tool to create a map as required.		

5b. ELECTRICITY GRID INFRASTRUCTURE (EGI):

Does the project form part of an Electricity Grid Infrastructure (EGI) as per GN 113?	**YES***	**NO**
If "YES*"		
• Confirm Strategic Transmission Corridor (STC) as per GNR 113	Project falls within the Electricity Grid Infrastructure (EGI) Corridor referred to as the International Corridor.	
• A map showing the proposed development (greater than 50% of the proposed footprint) within the boundary of the STC mentioned above. Use the "Print Map" feature available in the Screening tool to create a map as required.	**YES ✓**	Attached as APPENDIX 7B
• Attach a pre-negotiated route with the landowner(s) as per Reg 5 of GNR 113. (See template attached to this Application form)	**YES ✓**	Attached as APPENDIX 7C
Does the project form part of the Standard as per GNR 2313	**YES**	**NO****
If "YES*" please complete the procedure for following the Standard to apply for registration.		
If "NO", see below and provide motivation (written and illustrative using maps and/or photographic evidence, to confirm why the Standard and the exclusions therein do not apply) as APPENDIX 7D.		
• Where any part of the infrastructure occurs on an area for which the environmental sensitivity for any environmental theme is identified as being very high or high by the national web based environmental screening tool and confirmed to be such through the application of the procedures set out in the Standard	**YES ✓**	**NO**
• Where the site sensitivity verification for a specific theme identifies that the low or medium sensitivity rating of the national web based environmental screening tool is in fact high or very high;	**YES ✓**	**NO**
• Where the greater part of the proposed Infrastructure falls outside any strategic transmission corridor.	**YES**	**NO**
Motivation for the development not falling within the Standard supplied as APPENDIX 7D	**YES**	**NO**

Regulation 7 of GNR 2313 states: 'Where this Standard does not apply, either the requirements of the EIA Regulations or Government Notice No. 113, read with the EIA Regulations, where relevant, apply to the relevant theme for which the very high or high sensitivity has been identified in respect of the portion of the development or expansion which occurs on the area where the environmental sensitivity is confirmed to be very high or high, or to the entire development or expansion where the greater part of the infrastructure falls outside of the strategic transmission corridor.

N/A

Does the project form part of the Electricity Grid Infrastructure (EGI) in a REDZ as per GN 145?	**YES**	**NO**
If "YES*":		
• Confirm Zone as per GNR 145	Click or tap here to enter text.	
• A map showing the proposed development (greater than 50% of the proposed footprint) within the boundary of the zone mentioned above must be generated using the screening tool. Use the "Print Map" feature available in the Screening tool to create a map as required.	**NO**	Attached as APPENDIX 7E
• Attach a pre-negotiated route with the landowner(s) as per Reg 5 of GNR 145. (See template attached to this Application form)	**YES**	Attached as APPENDIX 7F

5c. GAS TRANSMISSION PIPELINE INFRASTRUCTURE:

Does the project form part of a Gas Transmission Pipeline Infrastructure as per GN 143?	**YES**	**NO ✓**
If "YES*"		
• Confirm Strategic Gas Pipeline Corridor (SGPC) as per GNR 143	Click or tap here to enter text.	
• A map showing the proposed development (greater than 50% of the proposed footprint) within the boundary of the SGPC mentioned above. Use the "Print Map" feature available in the Screening tool to create a map as required.	YES ☐	Attached as APPENDIX 7G
• Attach a pre-negotiated route with the landowner(s) as per Reg 3 of GNR 411. (See template attached to this Application form)	YES ☐	Attached as APPENDIX 7H

5d. STRATEGIC INFRASTRUCTURE PROJECTS:

Does the project form part of any of the Strategic Infrastructure Projects (SIPs) as described in the National Development Plan, 2011?	**YES* ✓**	**NO**
If "YES*" attach the confirmation of SIP obtained from the relevant sector representative (SIP Coordinators) and not a motivation from an EAP as APPENDIX 8B. For a SIP project, kindly indicate which SIPs are applicable in APPENDIX 8A and attach the confirmation of SIP applications from the relevant sector representative in APPENDIX 8B. Should no proof be provided, the application will be considered as a normal EIA Application with associated timeframes.	Attached as APPENDIX 8A and APPENDIX 8B	

6. NATIONAL SECTOR CLASSIFICATION

Table 6.1. Please indicate which sector the project falls under by selecting the relevant block in the table below:

No.	Sector Classification		No.	Sector Classification	
1	Infrastructure /Transport Services/Roads – Public	☐	42	Services/Waste Management Services/Disposal facilities - General	☐
2	Infrastructure /Transport Services/Roads – Private	☐	43	Services/Waste Management Services/Treatment facilities - Hazardous	☐
3	Infrastructure /Transport Services/Rail – Public	☐	44	Services/Waste Management Services/Treatment facilities - General	☐
4	Infrastructure /Transport Services/Rail – Private	☐	45	Services/Waste Management Services/Storage Facilities - General	☐
5	Infrastructure /Transport Services/ Airport/Runways/Landing Strip/Helipad - Commercial	☐	46	Services/Waste Management Services/ Storage Facilities - Hazardous	☐
6	Infrastructure /Transport Services/ Airport/Runways/Landing Strip/Helipad - Private	☐	47	Services/Waste Management Services/Storage Facilities - Nuclear	☐
7	Infrastructure /Transport Services/ Airport/Runways/ Landing Strip/Helipad - Public Services	☐	48	Services/Burial and cemeteries - Cemeteries	☐
8	Infrastructure /Transport Services - Ports	☐	49	Services/Burial and cemeteries - Cremators	☐
9	Infrastructure /Transport Services - Inland Waterways	☐	50	Services/Water services/Storage - Dams	☐
10	Infrastructure /Transport Services - Marina	☐	51	Services/Water services/Storage - Reservoirs	☐
11	Infrastructure /Transport Services - Canal	☐	52	Services/Water services - Desalination	☐
12	Infrastructure /Localised infrastructure - Infrastructure in the Sea/Estuary/Littoral Active Zone/ Development Setback/ 100M Inland/ or coastal public property.	☐	53	Services/Water services - Treatment & Waste Water	☐
13	Infrastructure /Localised infrastructure - Zip Lines & Foefie Slides	☐	54	Services - Hospitality	☐
14	Infrastructure /Localised infrastructure - Cableway or Funiculars	☐	55	Mining - Prospecting rights	☐
15	Infrastructure /Localised infrastructure – Billboards		56	Mining - Mining Permit	
16	Infrastructure /Localised infrastructure/ Storage/Dangerous Goods/Hydrocarbon - Gas		57	Mining - Mining Right	
17	Infrastructure /Localised infrastructure/ Storage/Dangerous Goods/ Hydrocarbon - Petroleum		58	Mining/Exploration Right - Gas or Oil Marine	
18	Infrastructure /Localised infrastructure/ Storage/Dangerous good – Chemicals		59	Mining/Exploration Right - Gas or Oil Terrestrial	

19	Utilities Infrastructure/Pipelines/water - Fresh/Storm Water	☐	60	Mining/Production Right - Gas or Oil Marine	☐
20	Utilities Infrastructure/ Pipelines/water - Waste Water	☐	61	Mining/Production Right - Gas or Oil Terrestrial	☐
21	Utilities Infrastructure/ Pipelines/ Dangerous Goods - Chemicals	☐	62	Mining/Underground gasification of coal - Oil	☐
22	Utilities Infrastructure/Pipelines/ Hydrocarbon – Petroleum	☐	63	Mining/Beneficiation - Hydrocarbon	☐
23	Utilities Infrastructure/Pipelines/ Hydrocarbon - Gas	☐	64	Mining/Beneficiation - Mineral	☐
24	Utilities Infrastructure/ Telecommunications/ Radio Broadcasting - Tower	☐	65	Agriculture/Forestry/ Fisheries - Crop Production	☐
25	Utilities Infrastructure/ Telecommunications/ Radio Broadcasting - Mast	☐	66	Agriculture/Forestry/ Fisheries - Animal Production	☐
26	Utilities Infrastructure/ Telecommunications/ Radio Broadcasting - Receivers	☐	67	Agriculture/Forestry/ Fisheries - Afforestation	☐
27	Utilities Infrastructure - Marine Cables	☐	68	Agriculture/Forestry/ Fisheries/Aquaculture/Inland-Alien	☐
28	Utilities Infrastructure/Electricity /Generation/ Non Renewable/ Hydrocarbon – Petroleum	☐	69	Agriculture/Forestry/ Fisheries/Aquaculture/Inland-Indigenous	☐
29	Utilities Infrastructure/Electricity /Generation/ Non Renewable/ Hydrocarbon – Coal	☐	70	Agriculture/Forestry/ Fisheries/Aquaculture/Marine - Alien	☐
30	Utilities Infrastructure/Electricity /Generation/ Non Renewable - Nuclear	☐	71	Agriculture/Forestry/ Fisheries/Aquaculture/Marine - Indigenous	☐
31	Utilities Infrastructure/Electricity /Generation/ Renewable - Hydro	☐	72	Agriculture/Forestry/ Fisheries - Agro-Processing	☐
32	Utilities Infrastructure/Electricity /Generation/Renewable/Solar - PV	☐	73	Transformation of land - Indigenous vegetation	☐
33	Utilities Infrastructure/Electricity /Generation/Renewable/Solar - CSP	☐	74	Transformation of land - From open space or Conservation	☐
34	Utilities Infrastructure/Electricity /Generation/Renewable - Wind	☐	75	Transformation of land - From agriculture or afforestation	☐
35	Utilities Infrastructure/Electricity /Generation/Renewable - Biomass/ biofuels	☐	76	Transformation of land - From mining or heavy industrial areas	☐
36	Utilities Infrastructure/Electricity /Generation/Renewable - Wave	☐	77	Any activities within or close to a watercourse	☐
37	Utilities Infrastructure/Electricity /Distribution and Transmission - Power line	✓	78	Any activity in an estuary, on the seashore, in the littoral active zone, or in the sea.	☐
38	Utilities Infrastructure/Electricity /Distribution and Transmission – Substation	✓	79	Activity requiring permit or license in terms of National or Provincial legislation governing the release or generation of emissions - Emissions	☐
39	Utilities Infrastructure/Gas /Distribution and Transmission – Compressor Station	☐	80	Activity requiring permit or license - Marine Effluent	☐
40	Services/Waste Management Services/Disposal facilities - Hazardous	☐	81	Activity requiring permit or license - Fresh Water Effluent	☐
82	Release of Genetically Modified Organisms	☐			☐

Table 6.2.

Does the listed activity/ies applied for form part of a larger project which is not a listed activity itself e.g., a road that is a listed activity that is needed to access a drilling site where the drilling does not constitute a listed activity	**YES**	**NO ✓**
If indicated yes above, please provide a brief description on how the activity/ies relate to the larger project that form's part there of	Click or tap here to enter text.	

SITE DESCRIPTION

Provide a detailed description of the site involved in the application.

Province/s	Limpopo Province
District Municipality/ies	Greater Sekhukhune, Capricorn, and Waterberg District Municipalities
Local Municipality/ies	Lepelle-Nkumpi, Mogalakwena, Modimolle-Mookgopong and Ephraim Mogale Local Municipality
Ward number/s	Lepelle-Nkumpi Ward 9 Mogalakwena Wards 12, 13,16,18,20 and 32 Modimolle-Mookgopong Ward 14 Ephraim Mogale Ward 5
Nearest town/s	Mokopane and Marblehall
Farm name/s and number/s	Farm Ga Puka Farm Gillimberg 861 LR Farm Uitloop 3 Farm Uitloop 3 Farm Piet Potgietersrust KS Farm De Hoop Farm Klavervalley Farm Ceres Farm Geluksfontein Farm Weltevrede Farm Haarde Kraal Farm Klavervalley Farm Doornlaagte Farm Mooigelegen Farm Doornstock Farm Rondeberg Farm Conterberg Farm De Bults Punt Farm Springhaa Nslaagte Farm De Hoop Farm Springhaa Nslaagte Farm Oranjefon Tein Farm Conterberg Farm Springhaa Nslaagte Farm Klavervalley Farm Doornstock Farm Conterberg Farm Ceres Farm Hartebeest Fontein Farm Haakdoorn Kuil

	Farm Rondom Farm Klipgat Portion 0 of Farm Knoppiesdo Ornboom Farm Zoetfontein Farm Haardekraal Farm Klavervalley Farm Doornlaagte Farm Geluksfontein Farm Conterberg Farm Mooigelegen Farm Rondom Farm Gegund Farm Doelen Farm Blinkwater
Portion number/s	Portion 0 of Farm Ga Puka Portion 0 of Farm Gillimberg 861 LR Portion 7 of Farm Gillimberg 861 LR Portion 9 of Farm Gillimberg 861 LR Portion 17 of Farm Gillimberg 861 LR Portion 8 of Farm Gillimberg 861 LR Portion 6 of Farm Gillimberg 861 LR Portion 30 of Farm Gillimberg 861 LR Portion 10 of Farm Gillimberg 861 LR Portion 29 of Farm Gillimberg 861 LR Portion 47 of Farm Gillimberg 861 LR Portion 1521 of Farm Piet Potgietersrust KS Portion 1489 of Farm Piet Potgietersrust KS Portion 1567 of Farm Piet Potgietersrust KS Portion 1435 of Farm Piet Potgietersrust KS Portion 1566 of Farm Piet Potgietersrust KS Portion 1486 of Farm Piet Potgietersrust KS Portion 1443 of Farm Piet Potgietersrust KS Portion 1446 of Farm Piet Potgietersrust KS Portion 1533 of Farm Piet Potgietersrust KS Portion 1491 of Farm Piet Potgietersrust KS Portion 1517 of Farm Piet Potgietersrust KS Portion 1481 of Farm Piet Potgietersrust KS Portion 1482 of Farm Piet Potgietersrust KS Portion 1539 of Farm Piet Potgietersrust KS Portion 1529 of Farm Piet Potgietersrust KS Portion 1474 of Farm Piet Potgietersrust KS Portion 1568 of Farm Piet Potgietersrust KS Portion 1438 of Farm Piet Potgietersrust KS Portion 1432 of Farm Piet Potgietersrust KS Portion 1427 of Farm Piet Potgietersrust KS Portion 1426 of Farm Piet Potgietersrust KS Portion 1520 of Farm Piet Potgietersrust KS Portion 1537 of Farm Piet Potgietersrust KS Portion 1483 of Farm Piet Potgietersrust KS Portion 1440 of Farm Piet Potgietersrust KS Portion 1439 of Farm Piet Potgietersrust KS Portion 48 of Farm Piet Potgietersrust KS Portion 52 of Farm Piet Potgietersrust KS Portion 17 of Farm Piet Potgietersrust KS Portion 98 of Farm Piet Potgietersrust KS Portion 100 of Farm Piet Potgietersrust KS Portion 144 of Farm Piet Potgietersrust KS Portion 41 of Farm Piet Potgietersrust KS

	Portion 40 of Farm Piet Potgietersrust KS Portion 58 of Farm Uitloop 3 Portion 46 of Farm Gillimberg 861 LR Portion 59 of Farm Uitloop 3 Portion 55 of Farm Uitloop 3 Portion 62 of Farm Piet Potgietersrust KS Portion 35 of Farm Piet Potgietersrust KS Portion 175 of Farm Uitloop 3 Portion 57 of Farm Piet Potgietersrust KS Portion 140 of Farm Piet Potgietersrust KS Portion 80 of Farm Piet Potgietersrust KS Portion 75 of Farm Piet Potgietersrust KS Portion 73 of Farm Piet Potgietersrust KS Portion 47 of Farm Piet Potgietersrust KS Portion 49 of Farm Piet Potgietersrust KS Portion 2 of Farm Weltevrede Portion 9 of Farm De Hoop Portion 1 of Farm De Hoop Portion 6 of Farm Klavervalley Portion 2 of Farm Ceres Portion 7 of Farm Geluksfontein Portion 5 of Farm Springhaan Slaagte Portion 0 of Farm Rondeberg Portion 7 of Farm Conterberg Portion 17 of Farm Conterberg Portion 1 of Farm Weltevrede Portion 9 of Farm Conterberg Portion 11 of Farm Haarde Kraal Portion 5 of Farm Klavervalley Portion 1 of Farm Doornlaagte Portion 2 of Farm Rondeberg Portion 2 of Farm Mooigelegen Portion 3 of Farm De Hoop Portion 3 of Farm Doornstock Portion 1 of Farm Rondeberg Portion 23 of Farm Conterberg Portion 3 of Farm De Bults Punt Portion 4 of Farm De Bults Punt Portion 3 of Farm Springhaa Nslaagte Portion 8 of Farm De Hoop Portion 0 of Farm Springhaa Nslaagte Portion 2 of Farm Oranjefon Tein Portion 3 of Farm Oranjefon Tein Portion 5 of Farm Conterberg Portion 12 of Farm Springhaa Nslaagte Portion 7 of Farm Klavervalley Portion 1 of Farm Doornstock Portion 10 of Farm Conterberg Portion 3 of Farm Ceres Portion 4 of Farm Hartebeest Fontein Portion 1 of Farm Haakdoorn Kuil Portion 0 of Farm Rondom Portion 3 of Farm Klipgat Portion 0 of Farm Knoppiesdo Ornboom Portion 0 of Farm Zoetfontein Portion 0 of Farm Haardekraal Portion 4 of Farm Klavervalley Portion 0 of Farm Doornlaagte Portion 8 of Farm Geluksfontein

	Portion 16 of Farm Conterberg Portion 1 of Farm Mooigelegen Portion 1 of Farm Rondom Portion 0 of Farm Gegund 322 KR Portion 2 of Farm Gegund 322 KR Portion 4 of Farm Gegund 322 KR Porthion 0 of Farm Doelen 327 KR Portion 8 of Farm Blinkwater 331 KR

Surveyor General 21 digit code:
(If there are more than 4, please attach a list with the rest of the codes as APPENDIX 9. Where the 21-digit SGID and farm name are not available, the coordinates of the boundary of the property or properties must be provided in APPENDIX 9.

1	2			3				4								5				

Coordinates of Property/ies boundary (corner points or start, middle, end)
Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system.

FEATURE	LATITUDE (S)			LONGITUDE (E)		
	DEG	MIN	SEC	DEG	MIN	SEC
Start Point 1	23°	54´	11.44˝	28°	58´	38.38˝
Middle Point 2	24°	31´	21.87˝	28°	57´	43.26˝
End Point 3	25°	5´	9.01˝	29°	17´	52.40˝

N.B. This template/table must be used to provide additional coordinates for relevant infrastructure which must be included in APPENDIX 9.

Locality map and Project Plan:

Locality map:	A locality map must be attached to the application form, as APPENDIX 10. The scale of the locality map must be 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 be legible and of high resolution. The map must include the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • scale indicator; • a legend (which explains all symbols used on the map; • site sensitivities, including but not limited to vegetation, wetlands, watercourses, heritage sites, critical biodiversity area/s, World Heritage Site, etc. and it must be overlaid by the study area; and • GPS co-ordinates (Indicate the position of the proposed activity with the latitude and longitude at the centre point for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The seconds should be to at least two decimal places. The projection that must be used in all cases is the WGS-84 spheroid in a national or local projection).

Project Plan (e.g. Gantt chart)	A project schedule must be submitted as APPENDIX 11, and must include relevant milestones for: • public participation (dates for advertisements, workshops and other meetings, obtaining comment from organs of state including state departments); • the commencement of parallel application processes required in terms of other statutes and where relevant, the alignment of these application processes with the EIA process; • the submission of the key documents (e.g. Basic Assessment Report, Scoping Reports, EIA Reports and Environmental Management Programmes). Note: All the above dates must take into account the statutory timeframes for authority responses that are stipulated in the 2014 NEMA EIA Regulations, as amended. Possible appeals may impact on project timeframes/milestones. Regulation 45 states that "An application in terms of these Regulations lapses, and a competent authority will deem the application as having lapsed, if the applicant fails to meet any of the time-frames prescribed in terms of these Regulations, unless extension has been granted in terms of regulation 3(7)." It is recommended that the Competent Authority be approached for guidance on the process to be followed, prior to submitting an application.

7. ACTIVITIES APPLIED FOR

For an application for environmental authorisation that involves more than one listed activity that, together, make up one development proposal, all the listed activities pertaining to this application must be provided below.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
12	GN R. 983 (as amended) Activity 12: The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more, where such development occurs (a) within a watercourse; and (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The proposed project will require the placement of linear infrastructure (i.e., power line) with a combined physical footprint of more than 100m^2. As the site consists of a number drainage lines and watercourses, the road and/or powerline will cross these watercourses or drainage lines or be within 32m thereof.
19(i)(a)	GN R. 983 (as amended) Activity 19: The infilling or depositing of any materials of more than 10 cubic metres into, or the dredging excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse;	The topsoil used within the facility will be removed from the identified areas within the site. This includes areas identified within wetlands. The powerline traverses watercourses and will require infilling and depositing of materials of more than 10 cubic meters into/from watercourses.
28(ii)	GN R. 983 (as amended) Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The proposed powerline will transverse land used for agricultural purposes. The powerline and associated infrastructure is located outside an urban area and will cover an area over one hector or more
30	GN R. 983 Activity 30: Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).	The proposed 400kV power line will transverse the Witvinger Nature Reserve, Palmer Nature Reserve and the Potgietersrus Nature Reserves which

		triggers the requirement to request for permission for the power line to be located within the nature Reserve.
Activity No(s):	Provide the relevant Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
9	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 Kilovolts or more, outside an urban area or industrial complex.	The proposed project entails the development of a 400kV powerline and associated infrastructure outside the urban area or industrial complex. It should be noted that this project triggers Basic Assessment process since the project is located in an Electricity Grid Infrastructure (EGI) Corridor.
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
4(e)(i) (ee)	GN R. 985 (as amended) Activity 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres— e. Limpopo (i) Outside urban area. (aa) A protected area identified in terms of NEMPAA, excluding disturbed areas; (ee) Critical Biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The proposed Borutho - Silimela 400 kV line is about 150 km in length, thus will comprise of approximately 400 towers. The access routes are required to access all tower positions for the purpose of construction as well as operation and maintenance. Multiple access routes will be required to access the tower positions and the priority will be to utilise existing roads infrastructure in the area (national, provincial, regional, private owners' roads, etc.) to access various tower positions. In instances where there is no existing network of access roads leading to tower positions, new access roads of approximately 4 m wide will be created as a last resort.
12 (e) (i) (ii)	GN R. 985 (as amended) Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation in the (e) Limpopo Province i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans;	In some areas, development of infrastructure will require the clearance of more than 300m^2 of indigenous vegetation. The project site is located within the Limpopo Province. The access roads and proposed poweline be developed within critical biodiversity areas as defined in the Limpopo Conservation Plan V2 Technical Report (refer to appendix 15 of this application Form).
14(ii)(a)(c)(f)(i)(ff)	GN R. 985 (as amended) Activity 14: The development of— (ii) Infrastructure or structures with a physical footprint of 10 square metres or more.	The proposed power line will span over a physical footprint of more than 10 square metres and will also span across watercourses. The proposed power line transverses the Witvinger Nature Reserve,

	Where such development occurs- (a) Within a watercourse; (c) If no development setback has been adopted within 32 metres of a watercourse, measured from the edge of a watercourse; e. Limpopo (i) Outside urban area. (aa) a Protected area identified in terms of NEMPAA, excluding conservancies; (ff) Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Palmer Nature Reserve and the Potgietersrus Nature Reserves. These Nature Reserves have been identified as protected areas in terms of NEMPAA. The power line will also transverse Critical Biodiversity Areas.

Please note that any authorisation that may result from this application will only cover listed or specified activities specifically applied for. Only those activities listed above shall be considered for authorisation. The onus is on the applicant to ensure that all applicable listed activities are included in the application. Environmental Authorisation must be obtained prior to commencement with each applicable listed activity. If a specific listed or specified activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted.
Coordinate points indicating the location of each listed activity (where applicable) must be provided as part of APPENDIX 8. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system.

9. PUBLIC PARTICIPATION

A. INITIATION OF THE PUBLIC PARTICIPATION PROCESS

The initial public participation for the proposed project was undertaken from the 25 April 2024 to the 03 June 2024. Site notices where placed at the Borutho and Silimela Substations and along the power line route. BID were distributed to to the local comuuniities and organs of State on the 6 May 2022. In person Focus group meetings were held on the 16 and 17 May 2024 at the following Venues:

- Mookgophong Community Hall on the 16 May 2024 from 10h00 am to 12h00pm.
- Ga Sekhaolelo on the 16 May 2024 from 14h00pm to 17h00pm.
- Marble hall - World Shakers Christian Church on the 17 May 2024 From 14h00 to 17h00pm.

Virtual Meetings were held via Teams on the 22 May 2024 from 10h00 to 12h00pm and 16h00 to 18h00.
The advertainments were placed in the Sunday World on the 05 May 2024 and the 12 May 2024 notifying the I&APs of the BA process being undertaken and the availability of the DBAR and dates for the Focus Group Meetings.

Due to the deviation of the proposed line, a second round of the public participation process was undertaken and will be as follows:

English and Sepedi Site Notices will be placed at the start point (Borutho Substation), central and end of the powerline route (Silimela Substation) were placed on the 19 August 2024. An advert was placed in the Sunday Wolrd on the 16 August 2024. Distribution of the Background Information Document and Notification letter to inform the public of the availability of the report were distribution 07 August 2024. In person Focus group meetings were held on the 16 and 17 May 2024 at the following Venues:

- Mookgophong Community Park on the 22 August 2024 from 10h00am to 13h00pm.
- Mookgophong-Midimolle Local Municipality on the 22 August 2024 from 14h00pm to 16h00pm and the 27 August 2024 from 13h00 ro 14h00pm.
- Witvinger Nature recerve (with LEDET) on the 08 August 2024 from 10h00 to 12h00.
- Mokopane McDonals (with the Machikiri CPA) on the 06 September 2024

Virtual Meetings were held via Teams on the 23 August 2024 from 14h00 to 13h00pm.

B. ACCESS TO THE DRAFT BA REPORT

Authorities and registered I&APs were notified in writing (including Via sms) of the review of the draft Basic Assessment (BA) Report. All notifications will be sent via email and/or as registered mail. Authorities and I&APs will be provided 30 days to comment on the draft BA Report.
The amended Draft Basic Assessment Report were made available for review from the 05 August to the 06 September 2024 at the following venues and platforms:

- Mokopane Local Library;
- Mogalakwena Local Municipality;
- Ephraim Mogale Local Municipality;
- Ga-Sekhaoelo Tribal Authority House;
- NTC Group website: www.ntcgroup.co.za ;
- Hard copies of the of the draft BA Report were also distributed to key authorities with jurisdiction, including the following:
  - Limpopo Department of Economic Development, Environment and Tourism;
- Soft copies of the reports were distributed to all interested and affected parties on the database including the following organs of state:
  - DFFE (including Biodiversity Conservation Unit);
  - DFFE: Protected Areas Multilateral Programmes Directorate
  - Limpopo Department of Economic Development, Environment and Tourism;
  - Department of Water and Sanitation;
  - Limpopo Department of Agriculture and Rural Development;
  - South African Heritage Resources Agency;
  - Lepelle-Nkumpi, Mogalakwena Local Municipality;
  - Modimolle-Mookgophong;
  - Ephraim Mogale Local Municipalities;
  - Sekhukhune District Municipality;
  - Capricorn District Municipality;
  - Waterberg District Municipality and
  - South African National Biodiversity Institute
  - South African National Roads Agency Limited (SANRAL)
  - Telkom SA Ltd
  - Civil Aviation Authority
  - BirdLife South Africa
  - Roads Agency Limpopo (RAL) SOC Ltd
  - Limpopo Department of Cooperative Governance, Human Settlements and Traditional Affairs
  - South African National Biodiversity Institute (SANBI)
  - Limpopo Province Heritage Resources Authority (LIHRA)
  - Endangered Wildlife Trust
- On request from NTC.

10. OTHER AUTHORISATIONS REQUIRED

Are there any other applications for Environmental Authorisation on the same property?		**YES ✓**	NO
If YES, please indicate the following:			
Competent Authority	DFFE		
Application Reference Number	14/12/16/3/3/1/634		
Project Name	Proposed Solar PV Facility on portion 36 of the Farm Potgietersrust Town & Townlands 44KS		
Please provide details of the steps taken to ascertain this information: Confirmation was obtained from the DFFE Renewable Energy Approved projects database and confirmation from the Landowner.			
Explain whether the above approval(s) will be in conflict with the proposed development. The proposed powerline will not conflict with the approved Solar PV project. The Landowner confirmed that he was notified that the project will not proceed as the applicant (the owner of Acapilco Trade & Invest (Pty) Ltd) passed on a few years back. Please refer to Appendix 15 of this application.			

11. OTHER LEGISLATION/APPROVAL

Applications in terms of the National Environmental Management Act ("NEMA") & specific environmental management Acts ("SEMAs"):

LEGISLATION	**AUTHORISATION REQUIRED**		**APPLICATION SUBMITTED**	
	YES	NO	YES	NO
Is Section 50(5) of the National Environmental Management: Protected Areas Act applicable to your proposed development? (The proposed development is within a proclaimed protected area as defined the Act.)	✓		✓	
National Water Act (Act No. 36 of 1998)	✓			✓
National Environmental Management: Air Quality Act (Act No. 39 of 2004)		✓		✓
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)		✓		✓
National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008)		✓		✓
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	✓		✓	
National Environmental Management: Waste Act (Act No. 59 of 2008)		✓		✓
Others: Please specify		✓		✓

Please be advised that:

- If a Waste Management license is required in terms of the National Environmental Management: Waste Act, please contact the Department for guidance on the Integrated Permitting System. An IPS application can only be lodged with this Department in the event that this Department is the Competent Authority for both the EIA and Waste related activities;
- If Sections 7B and 7C of the National Environmental Management: Integrated Coastal Management Act is applicable to your proposed development, you are required to obtain pre-approval for a reclamation application prior to an Application for Environmental Authorisation being lodged with the Competent Authority;
- If Section 50(5) of the National Environmental Management: Protected Areas Act is applicable to your proposed development, you are required to obtain approval from the Management Authority prior to an Application for Environmental Authorisation being lodged with the Competent Authority. This approval must be attached as APPENDIX 12; and

- If Section 38 of the National Heritage Resources Act (Act No. 25 of 1999) is applicable to your proposed development, you are requested to submit the Notice of Intent form to the relevant SAHRA or a Provincial Heritage Resources Authority and attach a copy to this form as APPENDIX 13. If it is indicated that a Heritage Impact Assessment will be required, the Heritage Impact Assessment must be undertaken as one of the specialist studies of the EIA process to be undertaken in terms of the NEMA EIA Regulations, 2014, as amended.

12. LIST OF APPENDICES

		SUBMITTED	
		YES	NO
APPENDIX 1	Copy of the pre-application meeting minutes		✓
APPENDIX 2	Proof of Payment / Motivation for exclusion	✓	
APPENDIX 3	List of landowners (with contact details) and written consent of landowners. If more than 1 landowner consent is attached, use sub- number 3a, 3b, 3c to denote the associated document.		✓
APPENDIX 4	Declaration of Applicant	✓	
APPENDIX 5	List of Local/Provincial Authority involved (with contact details)	✓	
APPENDIX 6A	Proof of appointment of EAP before 8 August 2022		✓
APPENDIX 6B	Valid EAPASA Registration Certificate	✓	
APPENDIX 6C	Declaration of EAP and undertaking under oath or affirmation	✓	
APPENDIX 7A	Renewable Energy Development Zone Map		✓
APPENDIX 7B	EGI in Strategic Transmission Corridor Map	✓	
APPENDIX 7C	Pre-Negotiated Route Agreement for EGI	✓	
APPENDIX 7D	Motivation pertaining to the Standard as per GNR 2313	✓	
APPENDIX 7E	EGI in Renewable Energy Development Zone Map		✓
APPENDIX 7F	Pre-Negotiated Route Agreement for EGI in REDZ		✓
APPENDIX 7G	Gas Transmission Pipeline Infrastructure Map		✓
APPENDIX 7H	Pre-Negotiated Route Agreement for Gas Transmission Pipeline		✓
APPENDIX 8A	List of Strategic Infrastructure Projects	✓	
APPENDIX 8B	SIP Confirmation Letter from SIP Coordinator	✓	
APPENDIX 9	List of SGIDs and coordinates	✓	
APPENDIX 10	Locality map	✓	
APPENDIX 11	Project schedule	✓	
APPENDIX 12	Section 50(5) of NEM:PAA approval	✓	
APPENDIX 13	Notice of Intent in terms of NHRA 25 of 1999		✓
APPENDIX 14	Screening Tool Report	✓	
APPENDIX 15	Other The Limpopo Conservation Plan V2 Technical Report Proof of landowner correspondence – Landowner of portion 36 of the Farm Potgietersrust Town & Townlands 44KS	✓	

APPENDIX 1 – COPY OF THE APPLICATION MEETING MINUTES

Pre-Application meeting was not held, confirmation from the DFFE Case Officer is attached.

APPENDIX 2 – PROOF OF PAYMENT / MOTIVATION FOR EXCLUSION

APPENDIX 3: CONSENT FROM THE LANDOWNER / PERSON IN CONTROL OF THE LAND, ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN

THIS SECTION IS NOT APPLICABLE. THE PROJECT IS FOR LINEAR INFRASTRUCTURE (400KV TRANSMISSION LINE) THEREFORE A LANDOWNER CONSENT IS NOT REQUIRED.

(with contact details) and written consent of landowners. If more than 1 landowner consent is attached, use sub- number 3a, 3b, 3c to denote the associated document.

- If more than 1 landowner consent is attached, use sub-number 3a, 3b, 3c to denote the associated document.
- See attached template for landowner consent.
- In addition, the below list of landowners must be completed.

Listed Activity	Project description	Farm Portions	Farm Owner	Landowner consent provided Y/N	Include document name
e.g. Act 11	Sub and Line	Portion 3 of Farm BelingerX	Mr Y. Smit	Yes, for Substation	Appendix 3B
e.g. Act 27	Clearance for Substation area	Portion 3 of Farm BelingerX	Mr Y. Smit	Yes, for Substation	Appendix 3B
e.g. Act 14	Storage of dangerous goods	Portion 6 of Farm BelingerX	Mrs A. Williams	Yes	Appendix 3B

*If more than 1 activity applies to the same farm portion/property and same landowner, One (1) landowner consent form may be submitted, which clearly outlines all the relevant activities specific to said property and landowner.

Submitted in terms of the requirements of sub-regulation 39(1) of the Environmental Impact Assessment Regulations, 2014 (if the applicant is not the owner or person in control of the land on which the activity is to be undertaken).

KINDLY NOTE THAT:

1. This document should be attached as Appendix 3 to: The application form for Environmental Authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the form have been released by the Department.
3. One form must be filled in per landowner.

1. DETAILS OF APPLICANT:

Project Applicant	N/A
Trading name (if any)	Click or tap here to enter text.
Contact person	Click or tap here to enter text.
Physical address	Click or tap here to enter text.
Postal address:	Click or tap here to enter text.
Postal code	Click or tap here to enter text.
Telephone/ cell:	Click or tap here to enter text.
E-mail:	Click or tap here to enter text.

2. DETAILS OF LANDOWNER:
(where the applicant is not the landowner or person in control of the land)

Landowner or person in control of the land:	N/A
Contact person	Click or tap here to enter text.
Physical address	Click or tap here to enter text.
Postal address:	Click or tap here to enter text.
Postal code	Click or tap here to enter text.

Telephone/ cell:	Click or tap here to enter text.
E-mail:	Click or tap here to enter text.

3. PROJECT DETAILS AND ACTIVITIES APPLIED FOR:

Project title	N/A

3.1. Activities applied for:
Describe each listed activity in Listing Notices 1, 2 or 3 (GNR 983 -985, 04 December 2014) which is being applied for as per the project description

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.

4. PROPERTY DESCRIPTION:

Property Description	N/A

Town(s) or district(s):	Click or tap here to enter text.
Physical (street) address of project:	Click or tap here to enter text.

5. CONSENT FROM LANDOWNER OR PERSON IN CONTROL OF THE LAND TO UNDERTAKE THE ACTIVITY/IES:

I, Click or tap here to enter text.declare that, I:-

1. Am the landowner or person in control of the property described in Section 4 of this document; and
2. That I hereby give consent to the applicant Click or tap here to enter text. as described in section 1 of this document to undertake the activity/ies as described in section 3 of this document on the property described in section 4.

_____

Signature of the landowner or person in control of the land

APPENDIC 4: DECLARATION OF APPLICANT

I, Madinare Mukhuba. declare that –

a) I am, or represent[1], the applicant in this application;
b) I have appointed a valid, EAPASA registered Environmental Assessment Practitioner (EAP) to act as the independent EAP for this application / have obtained exemption from the requirement to obtain an EAP[2];
c) I will take all reasonable steps to verify whether the EAP and specialist/s appointed are independent, affiliated with the relevant professional body e.g. EAPASA/SACNASP etc and have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, the EIA Regulations and any guidelines that have relevance to the proposed activity;
d) I will provide the EAP and the Competent Authority with access to all information at my disposal that is relevant to the application;
e) I will be responsible for the costs incurred in complying with the EIA Regulations, including but not limited to –
   - costs incurred in connection with the appointment of the EAP or any person contracted by the EAP;
   - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
   - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
   - costs in respect of specialist reviews, if the Competent Authority decides to recover costs; and
   - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the Competent Authority;
f) I will inform all registered interested and affected parties of any suspension of the application as well as of any decisions taken by the Competent Authority in this regard;
g) I am responsible for complying with the conditions of any environmental authorisation issued by the Competent Authority;
h) I hereby indemnify the Government of the Republic of South Africa, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or EAP is responsible for in terms of these Regulations;
i) I will not hold the Competent Authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these EIA Regulations;
j) I will perform all obligations as expected from an applicant in terms of the EIA Regulations;
k) All the particulars furnished by me in this form are true and correct;
l) I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in section 49B of the NEMA Act; and
m) I am aware that in terms of Section 24F of the National Environmental Management Act, as amended (Act No. 107 of 1998) that no listed activity may commence prior to an environmental authorisation being granted by the Competent Authority.

Signature of the applicant/ Signature on behalf of the applicant

National Transmission Company of South Africa (NTCSA)

Name of company (if applicable):

Click or tap to enter a date.

Date 18/09/2024

[1] If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached. If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.

2 If exemption is obtained from appointing an EAP, the responsibilities of an EAP will automatically apply to the person conducting the environmental impact assessment in terms of the Regulations.

APPENDIX 5: LIST OF LOCAL/PROVINCIAL AUTHORITY INVOLVED (WITH CONTACT DETAILS)

(Use this table as a template for information)

Local Municipality	Lepelle-Nkumpi
Name of contact person in Environmental Section (name and surname)	Mr Lwaleng Kanyane
Postal address	Private Bag X07, Chuenespoort
Postal code	0745
Telephone	015 633 4574
Cellphone	N/A
E-mail:	lwaleng.kanyane@lepelle-knumpi.gov.za

Local Municipality	Mogalakwena Local Municipality
Name of contact person in Environmental Section (name and surname)	M Berrange
Postal address	P.O. Box 34, Mokopane
Postal code	0600
Telephone	015 491 9685
Cellphone	N/A
E-mail:	berrangem@mogalakwena.gov.za

Local Municipality	Modimmolle-Mookgopong Local Municipality
Name of contact person in Environmental Section (name and surname)	Mr N.B Thobela
Postal address	Private Bag X1008, Modimolle
Postal code	0510
Telephone	014 717 4077
Cellphone	Ms Magdalena Derrange
E-mail:	kekaname@modimolle.gov.za

Local Municipality	Ephriam Mogale Local Municipality
Name of contact person in Environmental Section (name and surname)	Mr C Badenhorst
Postal address	P.O.Box 111, Marble Hall
Postal code	0450
Telephone	013 766 6060
Cellphone	N/A
E-mail:	cbadenhorst@emogalelm.gov.za

APPENDIX 6A - PROOF OF APPOINTMENT OF EAP BEFORE 8 AUGUST 2022
N/A

APPENDIX 6B: VALID EAPASA REGISTRATION CERTIFICATE

APPENDIC 6C: DECLARATION OF EAP AND UNDERTAKING UNDER OATH OR AFFIRMATION

I, Ms Rendani Rasivhetshele declare that –

a) I act as the independent, registered in terms of EAPASA, environmental assessment practitioner in this application;
b) I have expertise in conducting environmental impact assessments, including knowledge of the Act, EIA Regulations and any guidelines that have relevance to the proposed activity;
c) I will comply with the Act, EIA Regulations and all other applicable legislation;
d) I am aware that I must be registered with Environmental Assessment Practitioners Association of South Africa (EAPASA) in terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016, as amended.
e) I am aware that a candidate EAP may only assist the registered EAP and work under the supervision of a registered EAP (regulation 14(6) in the S24H Registration Authority Regulations, 2016, as amended) such as myself. I take full responsibility for the work conducted.
f) I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
g) I will take into account, to the extent possible, the matters listed in Regulation 13 of the EIA Regulations and Regulation 14 of S24H of Section 24H Registration Authority Regulations, 2016, as amended, when preparing the application and any report relating to the application;
h) I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
i) I will perform all obligations as expected from an environmental assessment practitioner in terms of the EIA Regulations and S24H of NEMA ; and
j) I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act and EIA Regulations and Regulation 18 and 20 of S24H Registration Authority Regulations, 2016, as amended.

Disclosure of Vested Interest (delete whichever is not applicable)

k) I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the EIA Regulations;

Signature of the registered environmental assessment practitioner

NTC Group (Pty) Ltd

Name of company:

16 September 2024

Date

UNDERTAKING UNDER OATH/ AFFIRMATION

I, Ms Rendani Rasivhetshele swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the registered Environmental Assessment Practitioner

NTC Group (Pty) Ltd

Name of Company

16 September 2024

Date

Signature of the Commissioner of Oaths

16 September 2024

Date

Susu Nethanani
Commissioner of Oaths ex officio
Associate Chartered Management Accountant

APPENDIX 7A
RENEWABLE ENERGY DEVELOPMENT ZONE MAP
N/A

APPENDIX 7B
EGI IN STRATEGIC TRANSMISSION CORRIDOR MAP

APPENDIX 7C - PRE-NEGOTIATED ROUTE AGREEMENT FOR EGI

SIP NUMBER	SIP NAME
Energy Strategic Integrated Project No. 10 (i)	Borutho Silimela powerline project is under the Waterberg Generation 400 kV Stability Enhancement Scheme

APPENDIX 7D - MOTIVATION PERTAINING TO THE STANDARD AS PER GNR 2313

APPENDIX 7E - EGI IN RENEWABLE ENERGY DEVELOPMENT ZONE MAP

APPENDIX 7F - PRE-NEGOTIATED ROUTE AGREEMENT FOR EGI IN REDZ

APPENDIX 7G - GAS TRANSMISSION PIPELINE INFRASTRUCTURE MAP

N/A

APPENDIX 7H - PRE-NEGOTIATED ROUTE AGREEMENT FOR GAS TRANSMISSION PIPELINE
N/A

APPENDIX 8A - LIST OF STRATEGIC INFRASTRUCTURE PROJECTS

APPENDIX 8B - LIST OF STRATEGIC INFRASTRUCTURE PROJECTS

APPENDIX 8B: SIP CONFIRMATION LETTER FROM SIP COORDINATOR

APPENDIX 9: SIP LIST OF SGIDS AND COORDINATES

Please include Farm name, portion number, SGID and coordinates (where applicable)

PROPERTIES	SGIDS
Portion 0 of Farm Gillimberg 861 LR	T0LR00000000086100000
Portion 7 of Farm Gillimberg 861 LR	T0LR00000000086100007
Portion 8 of Farm Gillimberg 861 LR	T0LR00000000086100008
Portion 9 of Farm Gillimberg 861 LR	T0LR00000000086100009
Portion 10 of Farm Gillimberg 861 LR	T0LR00000000086100010
Portion 3 of Farm Uitloop 3 KS	T0KS00000000000300021
Portion 3 of Farm Uitloop 3 KS	T0KS00000000000300039
Portion 33 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400033
Portion 35 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400035
Portion 36 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400036
Portion 39 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400039
Portion 40 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400040
Portion 44 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400044
Portion 43 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400043
Portion 80 of Farm Piet Potgietersrust Town and Townlands 4 KS	T0KS00000000004400080
Portion 6 Farm Oorlogsfontein 45 KS	T0KS00000000004500006
Portion 88 Farm Oorlogsfontein 45 KS	T0KS00000000004500088
Portion 89 Farm Oorlogsfontein 45 KS	T0KS00000000004500089
Portion 94 Farm Oorlogsfontein 45 KS	T0KS00000000004500094
Portion 96 Farm Oorlogsfontein 45 KS	T0KS00000000004500096
Portion 152 Farm Oorlogsfontein 45 KS	T0KS00000000004500152
Portion 0 of Farm Rooipoort 46 KS	T0KS00000000004600000
Portion 1 of Farm Rooipoort 46 KS	T0KS00000000004600001
Portion 5 of Farm Rooipoort 46 KS	T0KS00000000004600005
Portion 9 of Farm Rooipoort 46 KS	T0KS00000000004600009
Portion 19 of Farm Rooipoort 46 KS	T0KS00000000004600019
Portion 20 of Farm Rooipoort 46 KS	T0KS00000000004600020
Portion 0 Farm 1046 KS	T0KR00000000033300000
Portion 1 Farm 1046 KS	T0KR00000000033300001
Portion 2 Farm 1046 KS	T0KR00000000033300002
Portion 4 Farm 1046 KS	T0KR00000000033300004
Portion 7 Farm 1046 KS	T0KR00000000033300007
Portion 0 Farm Platdoorns 333 KR	T0KR00000000033300000
Portion 1 Farm Hartebeestfontein 355 KR	T0KR00000000054300001
Portion 2 Farm Hartebeestfontein 355 KR	T0KR00000000054300002
Portion 4 Farm Hartebeestfontein 355 KR	T0KR00000000054300004
Portion 0 Farm Derdekraalpoort 543 KR	T0KR00000000054300000
Portion 0 Farm Klaver Valley 542 KR	T0KR00000000054200000
Portion 0 Farm Vlaklaagte 544 KR	T0KR00000000054400000

Portion 1 Farm Vlaklaagte 544 KR	T0KR00000000054400001
Portion 2 Farm Vlaklaagte 544 KR	T0KR00000000054400002
Portion 1 Farm Geluksfontein 547 KR	T0KR00000000054700001
Portion 11 Farm Geluksfontein 547 KR	T0KR00000000054700011
Portion 4 Farm De HooP 617 KS	T0KS00000000061700004
Portion 0 Farm Klipgat 618 KS	T0KS00000000061800000
Portion 3 Farm Klipgat 618 KS	T0KS00000000061800003
Portion 0 Farm Hendriksrust 621 KS	T0KS00000000062100000
Portion 0 Farm Conterberg 665 KS	T0KS00000000066500000
Portion 7 Farm Conterberg 665 KS	T0KS00000000066500007
Portion 9 Farm Conterberg 665 KS	T0KS00000000066500009
Portion 18 Farm Conterberg 665 KS	T0KS00000000066500018
Portion 23 Farm Conterberg 665 KS	T0KS00000000066500023
Portion 0 Farm Weltevrede 670 KS	T0KS00000000067000000
Portion 2 Farm Doornpan 694 KS	T0KS00000000069400002
Portion 3 Farm Doornpan 694 KS	T0KS00000000069400003
Portion 0 Farm OnverwachT 698 KS	T0KS00000000069800000
Portion 0 Farm 996 KS	T0KS00000000099600000
Portion 5 Farm Haringbult 699 KS	T0KS00000000069900005
Portion 6 Farm Haringbult 699 KS	T0KS00000000069900006
Portion 0 Farm Dronkfontein 724 KS	T0KS00000000072400000
Portion 1 Farm Dronkfontein 724 KS	T0KS00000000072400001
Portion 4 Farm ClaremonT 734 KS	T0KS00000000073400004
Portion 5 Farm ClaremonT 734 KS	T0KS00000000073400005
Portion 7 Farm ClaremonT 734 KS	T0KS00000000073400007
Portion 8 Farm ClaremonT 734 KS	T0KS00000000073400008
Portion 0 Farm Rhenosterfontein 731	T0KS00000000073100000
Portion 1 Farm Mapochsgronde 733	T0JS00000000073300001
Portion 2 Farm Mapochsgronde 733	T0JS00000000073300002
Portion 0 Farm Gruysbank 5 JS	T0JS00000000000500000
Portion 191 Farm Loskop Noord 12 JS	T0JS00000000001200191
Portion 206 Farm Loskop Noord 12 JS	T0JS00000000001200206
Portion 281 Farm Loskop Noord 12 JS	T0JS00000000001200281
Portion 282 Farm Loskop Noord 12 JS	T0JS00000000001200282
Portion 351 Farm Loskop Noord 12 JS	T0JS00000000001200351
Portion 630 Farm Loskop Noord 12 JS	T0JS00000000001200630
Portion 638 Farm Loskop Noord 12 JS	T0JS00000000001200638
Portion 640 Farm Loskop Noord 12 JS	T0JS00000000001200640
Portion 642 Farm Loskop Noord 12 JS	T0JS00000000001200642
Portion 643 Farm Loskop Noord 12 JS	T0JS00000000001200643
Portion 686 Farm Loskop Noord 12 JS	T0JS00000000001200686
Portion 782 Farm Loskop Noord 12 JS	T0JS00000000001200782
Portion 783 Farm Loskop Noord 12 JS	T0JS00000000001200783
Portion 784 Farm Loskop Noord 12 JS	T0JS00000000001200784
Portion 785 Farm Loskop Noord 12 JS	T0JS00000000001200785
Portion 786 Farm Loskop Noord 12 JS	T0JS00000000001200786
Portion 787 Farm Loskop Noord 12 JS	T0JS00000000001200787
Portion 788 Farm Loskop Noord 12 JS	T0JS00000000001200795
Portion 795 Farm Loskop Noord 12 JS	T0JS00000000001200975
Portion 1050 Farm Loskop Noord 12 JS	T0JS00000000001201050
Portion 1107 Farm Loskop Noord 12 JS	T0JS00000000001201107
Portion 1083 Farm Loskop Noord 12 JS	T0JS00000000001201083
Portion 1085 Farm Loskop Noord 12 JS	T0JS00000000001201085

Portion 1208 Farm Loskop Noord 12 JS	T0JS00000000001201208
Portion 04 Farm Kleinklipput 11 JS	T0JS00000000001100004
Portion 05 Farm Kleinklipput 11 JS	T0JS00000000001100005
Porthion 0 of Farm Doelen 327 KR	T0KR00000000032700000
Portion 8 of Farm Blinkwater 331 KR	T0KR00000000033100008
Portion 2 Farm Gegund 332 KR	T0KR00000000033200002
Portion 4 Farm Gegund 332 KR	T0KR00000000033200004

APPENDIX 10: LOCALITY MAP

APPENDIX 11: PROJECT SCHEDULE

Application Form/ BAR/ EMP Reports/ Public Participation			
Newspaper/ Site Notices/ BID	Complete	Revised documents are to be submitted to the client for approval.	16 February 2024
Newspaper/ Site Notices	Complete	Advert has been published. We are waiting for the newspaper clipping have been sent to NTC.	Adverts was published in the Sunday World on the 05 May 2024 and on the 12 May 2024
Draft BAR/EMPR/Specialist Reports	Complete	**Finalise the DBAR – final amendment based on comments from the client** Amended Application Form Specialist Reports and PP Report Amended Draft BAR and EMPr **Draft Agricultural Assessment** Site visit Draft Report Submission to NTC and NTCSA Final Report **Revised Ecological Assessment** Site visit Revised Report Submission to NTC and NTCSA	 17 April 2024 18 April 2024 22 April 2024 08 – 09 April 2024 22 April 2024 24 April 2024 16 April 2024 18 April 2024
30 Days review period	Complete	Anticipated date, timelines are dependent on the submission of the Agricultural Assessment.	25 April 2024 – 03 June 2024
Draft BAR Notification	Complete	Notification letter to inform the public of the availability of the DBAR. Bulk SMS's have been sent out to the Landowners-	25 April 2024
Focus Group Meeting	Complete	Public meetings were undertaken in Mookgopong, Armode and Marblehall. Virtual meetings for Organs of State and in-person meetings with the affected communities.	16 – 17 May 2024 Virtual meetings with the Organs of state and the public: 22 May 2023 (online).
Amended Draft BAR and EMPr			
Newspaper/ Site Notices/ BID	Complete	Revised documents are to be submitted to the client for approval.	06 August 2024
Newspaper	Complete	Advert to be published in the Sunday World	18 August 2024
Draft BAR/EMPR/CRR	Complete	PPP Document Submission for client review.	22 July 2024 23 July 2024 – 05 August 2024

		NTC to finalise report for submission based on the client's comments.	05 August 2024
30 Days review period	Complete	Release the amended DBAR for public review	05 August 2024 – 06 September 2024
Draft BAR Notification	Complete	Distribution of the Notification letter to I&AP's and Organs of State.	06 August 2024
Focus Group Meeting	Complete	Focus group meetings (in-person and virtual)	22 August – 06 September 2024
Last Draft BAR Notification	Complete	Reminder to be sent to the public that PPP is coming to an end. This will be a week before the end of the public review process	05 September 2024
BAR Comment and Responses Report	Complete	Update the comment and responses report.	02 September – 12 September 2024
Final BAR & CRR for client signoff	Pending	Sending final BAR incorporating the comments and issues report for client review and signoff prior to submission for authorisation.	12 September 2024
Final BAR/EMPR submission to authorities	Pending	Submission of the FBAR to DFFE for review.	16 September 2024
Authority Decision	Pending	Anticipated dates (57 days) days from the date of submission).	13 November 2024
EA Notification	Pending	Anticipated dates. The Notification letters will be distributed 14 day from the issues of the decision.	18 November 2024
Appeals Period	Pending	The I&APs have 20 days to lodge an appeal.	09 December 2024

APPENDIX 12: SECTION 50(5) OF NEM:PAA APPROVAL

APPENDIX 13: NOTICE OF INTENT IN TERMS OF NHRA 25 OF 1999
N/A

APPENDIX 14: SCREENING TOOL REPORT

APPENDIX 15: OTHER
THE LIMPOPO CONSERVATION PLAN v2 TECHNICAL REPORT & PROOF OF LANDOWNER CORRESPONDENCE – LANDOWNER OF PORTION 36 OF THE FARM POTGIETERSRUST TOWN & TOWNLANDS 44KS

Subject: RE: 2024-02-0008
Date: Wednesday, 07 February 2024 at 15:20:53 South Africa Standard Time
From: Makhosi Yeni
To: Tebogo Mapinga, Karabo Mashabela
CC: Mahlatse Shubane, Olivia Letlalo
Attachments: image001.png

Dear Tebogo

Based on our telephonic conversation earlier today, it was confirmed that the preapplication meeting is not necessary.

You can attach this email as proof of our correspondence when submitting the application to EIAApplications@dffe.gov.za .

Regards
Makhosazane Yeni

From: EIA Applications <EIAApplications@dffe.gov.za>
Sent: Wednesday, February 7, 2024 11:35 AM
To: Makhosi Yeni <MYeni@dffe.gov.za>
Cc: Mahlatse Shubane <MSHUBANE@dffe.gov.za>; Olivia Letlalo <OLetlalo@dffe.gov.za>; Tebogo Mapinga <tebogo@ntcgroup.co.za>
Subject: 2024-02-0008

Dear Makhosi.

Please note that you have been allocated an application:

Type of Application: Pre-Application Meeting Request;
Reference Number: 2024-02-0008;
Date Received: 05/02/2024;
Action Required: Decide on meeting request.

Kindly let Ephron know which date the meeting is to be held, if it will be set

EIA Applications
Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment

Please note that this email is for the receipt and processing of online applications only, and is not monitored for responses. All queries must be directed to EIAadmin@dffe.gov.za.

You are advised that this mailbox has a 48 hour response time.

Please note that this mailbox has a 5mb mail limit. No zip files are to be attached in any email

---

From: Tebogo Mapinga <tebogo@ntcgroup.co.za>
Sent: Monday, February 5, 2024 2:37 PM
To: EIA Applications <EIAApplications@dffe.gov.za>
Cc: Karabo Mashabela <karabo@ntcgroup.co.za>

Subject: Re: Pre-Application Meeting Request - Proposed Highveld North-West and Lowveld Strengthening Project Eskom Borutho-Silimela 400 kV Transmission Line.

Good afternoon

Sorry about that, please find the attached application form for your consideration.

Kind regards,

Tebogo Mapinga (Pr.Sci.Nat)
Environmental Management Executive

072 738 3836

NTC Group

AMP Building | 17 Eaton Avenue | Bryanston | 2192 | Tel: 011 462 2022 | Fax: 086 692 8639
Email: Tebogo@ntcgroup.co.za | Web: www.ntcgroup.co.za

From: EIA Applications <EIAApplications@dffe.gov.za>
Date: Monday, 05 February 2024 at 14:10
To: Tebogo Mapinga <tebogo@ntcgroup.co.za>
Cc: Karabo Mashabela <karabo@ntcgroup.co.za>
Subject: RE: Pre-Application Meeting Request - Proposed Highveld North-West and Lowveld Strengthening Project Eskom Borutho-Silimela 400 kV Transmission Line.

Dear Tebogo.

Kindly note that we cannot consider your pre-application meeting request, as you have not attached a pre-application meeting form. Kindly complete the attached and resubmit for consideration.

Regards

EIA Applications
Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment

Please note that this email is for the receipt and processing of online applications only, and is not monitored for responses. All queries must be directed to EIAadmin@dffe.gov.za.

You are advised that this mailbox has a 48 hour response time.

Please note that this mailbox has a 5mb mail limit. No zip files are to be attached in any email.

From: Tebogo Mapinga <tebogo@ntcgroup.co.za>
Sent: Sunday, February 4, 2024 8:30 PM
To: EIA Applications <EIAApplications@dffe.gov.za>

Cc: Karabo Mashabela <karabo@ntcgroup.co.za>
Subject: Pre-Application Meeting Request - Proposed Highveld North-West and Lowveld Strengthening Project Eskom Borutho-Silimela 400 kV Transmission Line.

Good day

Please find that attached request for a pre-application form.

The proposed project entails the construction of a 400kV power line to connect Silimela Substation and the Borutho Substation. It should be noted that he proposed project was previously issued with an environmental authorisation on the 19 April 2011 with a validity period of 5 years. Eskom could not commence with construction activities of the power line within the given time and requested an extension of validity of the EA. DEA issued Eskom with extensions that were valid until 14 April 2020. Prior to expiry of the EA in April 2020 Eskom requested a further extension of the EA and this request was rejected by the Department on 28 February 2020. The reason for rejection of the amendment was that validity of this EA would have been for a period of more than 10 years and that environmental conditions on site would have changed. Therefore, Eskom appointed NTC Group was appointed to undertake the EIA Process for the project which was initially authorised in April 2011.

The project scope of work and the requirements as indicated in the DFFE Screening Report are clear and the EAP is of the opinion that a pre-application meeting will not be required. NTC did however propose dates should the Department see it fit that a pre-application. meeting should be conducted.

Kind regards,

Tebogo Mapinga (Pr.Sci.Nat)
Environmental Management Executive

072 738 3836

NTC Group

AMP Building | 17 Eaton Avenue | Bryanston | 2192 | Tel: 011 462 2022 | Fax: 086 692 8639
Email: Tebogo@ntcgroup.co.za | Web: www.ntcgroup.co.za

Date:
13 March 2024

Enquiries: Masala Mugwagwa
Tel: 011 800 6341
Email: MugwagJM@Eskom.co.za

Mr. S. Malaza
Chief Director: Integrated Environmental Authorization
Department of Environment Forestry and Fisheries
Private Bag X447
PRETORIA
0001
Tel: 012 399 8792
Email: smalaza@dffe.gov.za

Dear Sir/Madam,

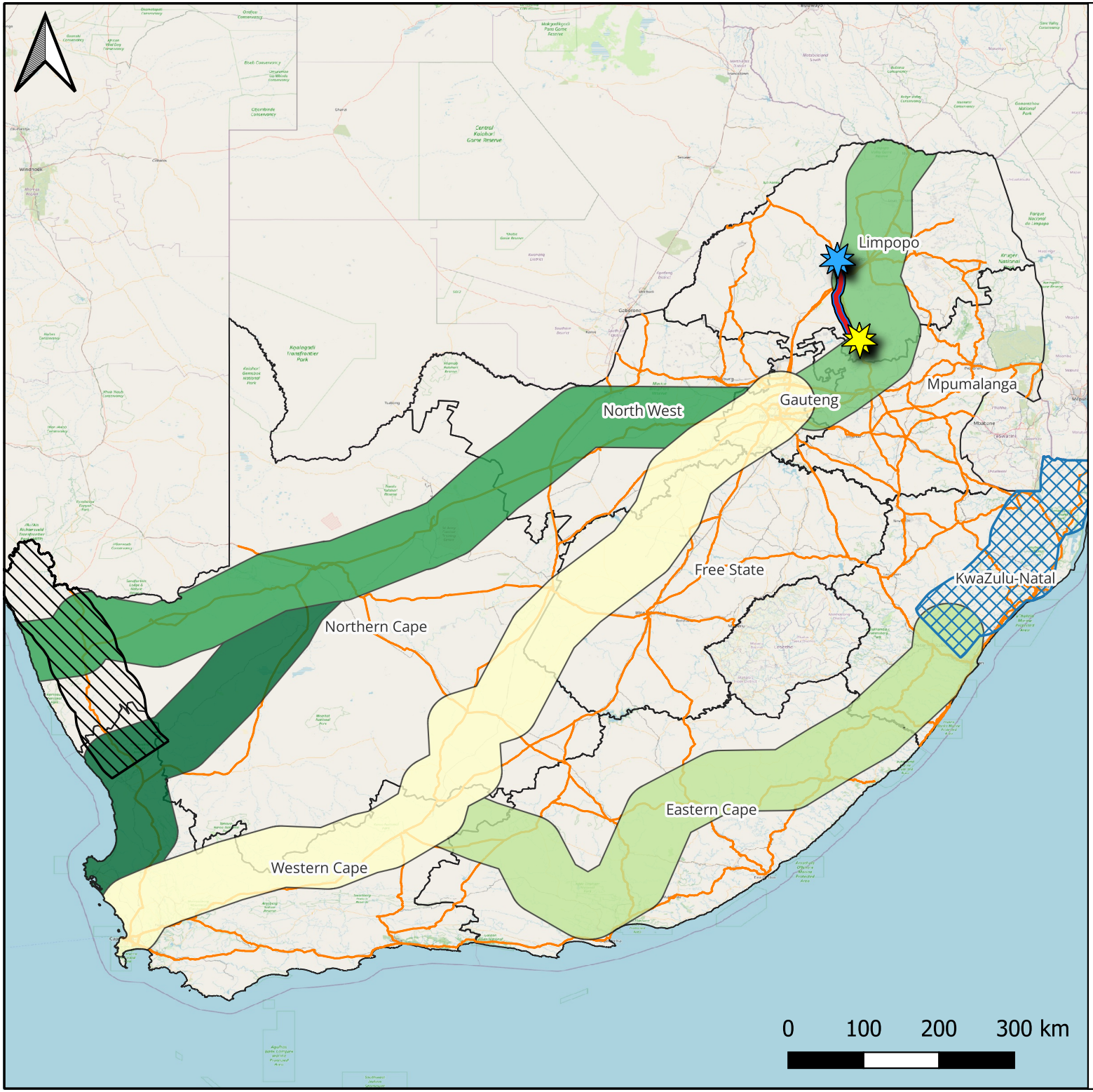
MOTIVATION FOR EXCLUSION OF ESKOM HOLDINGS (SOC) LIMITED FROM PAYING APPLICATION FEE IN RELATION TO THE APPLICATION FOR ENVIRONMENTAL AUTHORISATION, FOR CONSTRUCTION OF THE PROPOSED BORUTHO-SILIMELA 400KV POWER LINE AND ASSOCIATED INFRASTRUCTURE WITHIN THE SEKHUKHUNE AND WATERBERG DISTRICT MUNICIPALITIES IN THE LIMPOPO PROVINCE

Eskom hereby confirms that it is a State-Owned Company, and the company is excluded from paying the application fees for the Environmental Authorization and Amendments in terms of Regulation 2 of "National Environmental Management Act, 1998 (Act No. 107 of 1998) "Fees for consideration and processing of applications for Environmental Authorisations and Amendments thereto" which were published on 28 February 2014 in the Government Gazette No.37383".

Eskom hereby applies for exclusion from payment of the fees applicable to this application since it is a State-Owned Company.

Yours Sincerely

Madinare Mukhuba
MIDDLE MANAGER: LAND AND RIGHTS



Eskom Borutho-Silimela 400 kV Powerline

Power Corridor - Locality map

Legend

Main Roads

Borutho Silimela 400kV Alternative 2

Substations

Borutho

Silimela

EGI Power Corridors

Central corridor

Eastern corridor

International corridor

Northern corridor

Western corridor

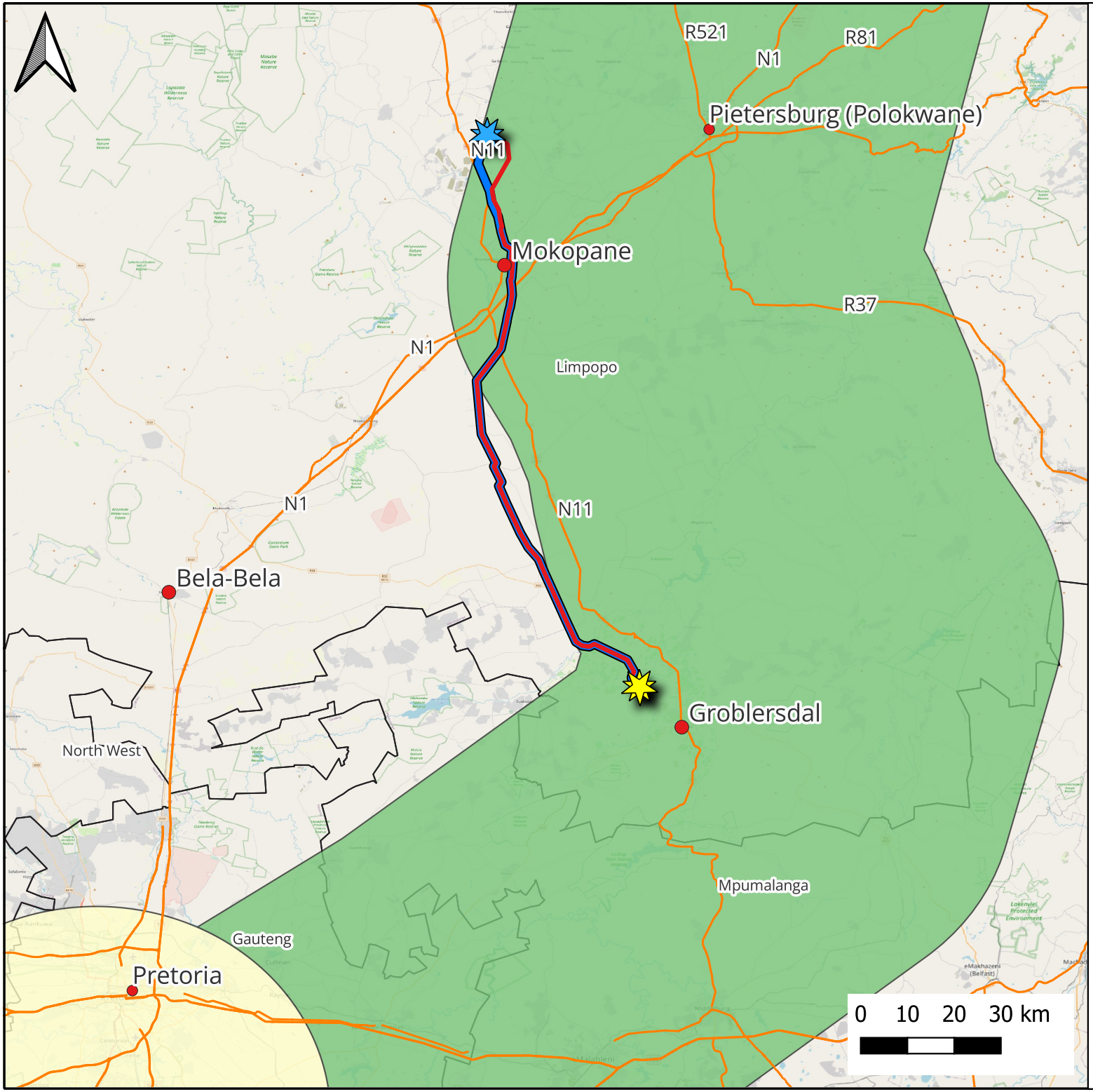
EGI Expansion Corridors

EGI East

EGI West

20/02/2024
Revision A

NTC Group



Eskom Borutho-Silimela 400 kV Powerline

Power Corridor - Locality map

Legend

- Nearby Cities
- Main Roads
- Borutho Silimela 400kV Alternative 1
- Borutho Silimela 400kV Alternative 2

Substations

- Borutho
- Silimela

EGI Power Corridors

- Central corridor
- International corridor

NTC Group

Revision A

20/02/2024

Appendix 7D: Motivation pertaining to the Standard as per GNR 2313

1. INTRODUCTION

National Transmission company of South Africa ((herein referred to as NTCSA), a subsidiary of Eskom Holdings SOC Limited has appointed NTC Group (Pty) Ltd as an independent Environmental Consultant to undertake a Basic Assessment Process for the proposed construction of the Borutho-Silimela 400kV power line and its associated infrastructure. The length of the power line is approximately 150km. The proposed power line is located between the Borutho Substation on farm Gillimberg 861 in Mokopane and runs south to the proposed Silimela substation on farm Loskop Noord 12, near Marble Hall within the Lepelle-Nkumpi, Mogalakwena, Modimolle- Mookgophong and Ephriam Mogale Local Municipalities, Limpopo Province. The construction of the power line will aid Eskom in strengthening the power supply within Limpopo Province.

The proposed project falls within the Electricity Grid Infrastructure (EGI) corridor/ within the within the strategic transmission corridors as identified in Government Notice No. 113 in Government Gazette No. 41445 of 16 February 2018 and Government Notice No. 1637 in Government Gazette No. 45690 of 24 December 2021.

It is noted that the Standard does not apply based on the following reason:

- Sections of the powerline route occurs in areas of environmental sensitivity for several environmental theme were identified as being very high or high by the screening tool and confirmed to be such by the EAP and specialist for the identified environmental theme. (the findings of the screening tool are outlined in the section below.

Therefore, an Environmental Authorisation is required in terms of the EIA Regulations, or the requirements of Government Notice No. 113 in Government Gazette No. 41445 of 16 February 2018, read with the NEMA EIA Regulations. The project therefore triggers the Basic Assessment Process in terms of the Environmental Impact Assessment Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act 1998 (Act No 107 of 1998).

As part of the EIA process and screening report was generated via the DFFE Screening Tool and based on the Environmental Sensitivities a team of specialist was appointed to conduct detailed specialist assessments.

2. FINDINGS OF THE SCREENING REPORT

Proposed development area environmental sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

THEME	Very High Sensitivity	High Sensitivity	Meduim Sensitivity	Low Sensitivity
Agriculture Theme	**X**			
Animal Species Theme		**X**		
Aquatic Biodiversity Theme	**X**			
Archaeological and Cultural Heritage Theme	**X**			
Civil Aviation Theme		**X**		
Defense Theme			X	
Paleontology Theme	**X**			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	**X**			

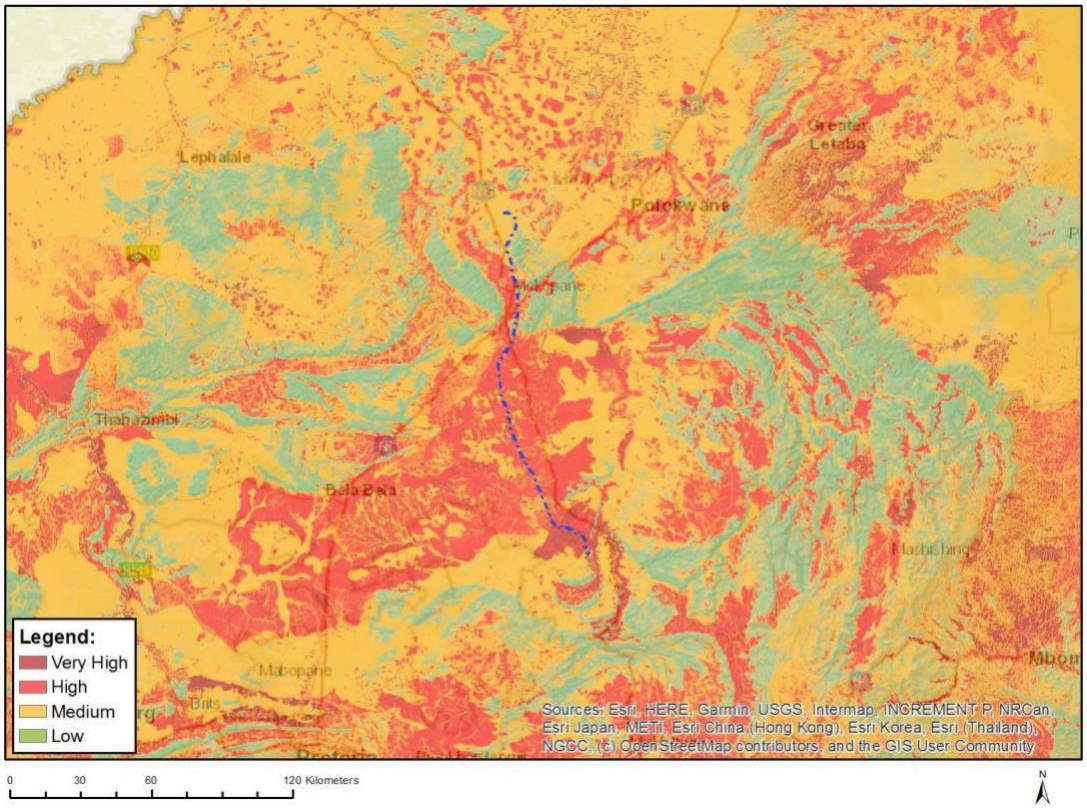


Figure 1: Agriculture Theme Sensitivity

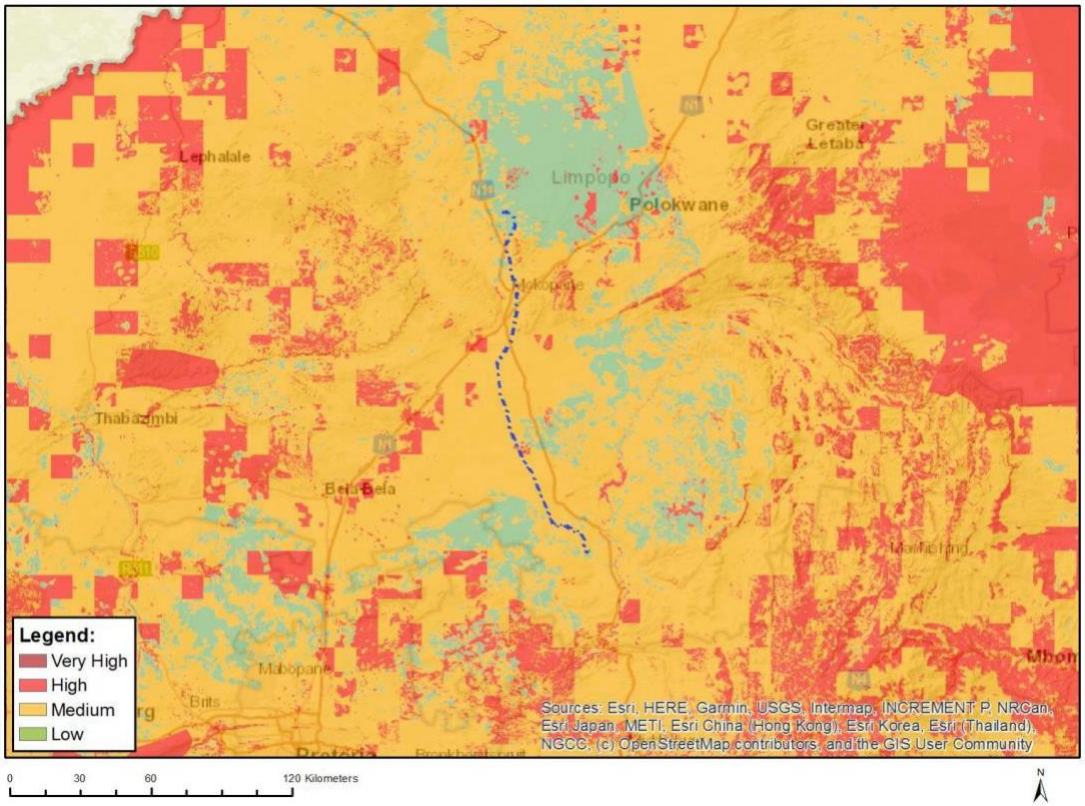


Figure 2: Animal Species Theme Sensitivity (High Sensitivity)

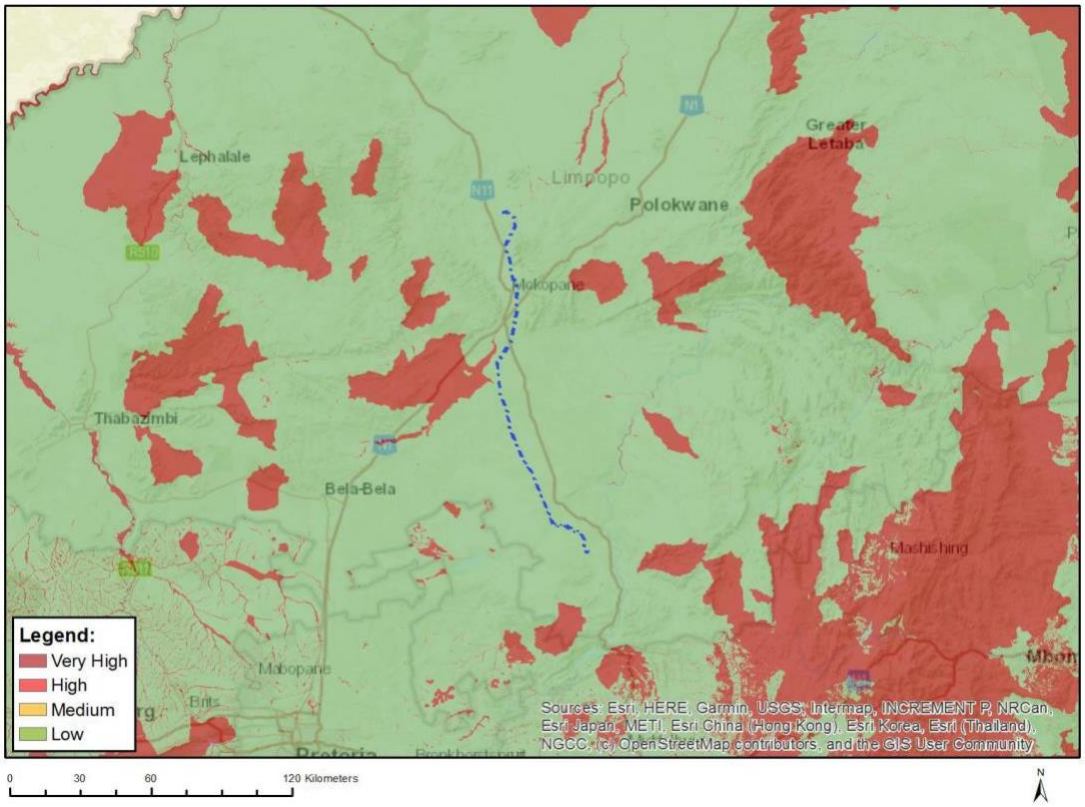


Figure 3: Aquatic Biodiversity Theme Sensitivity (very high)

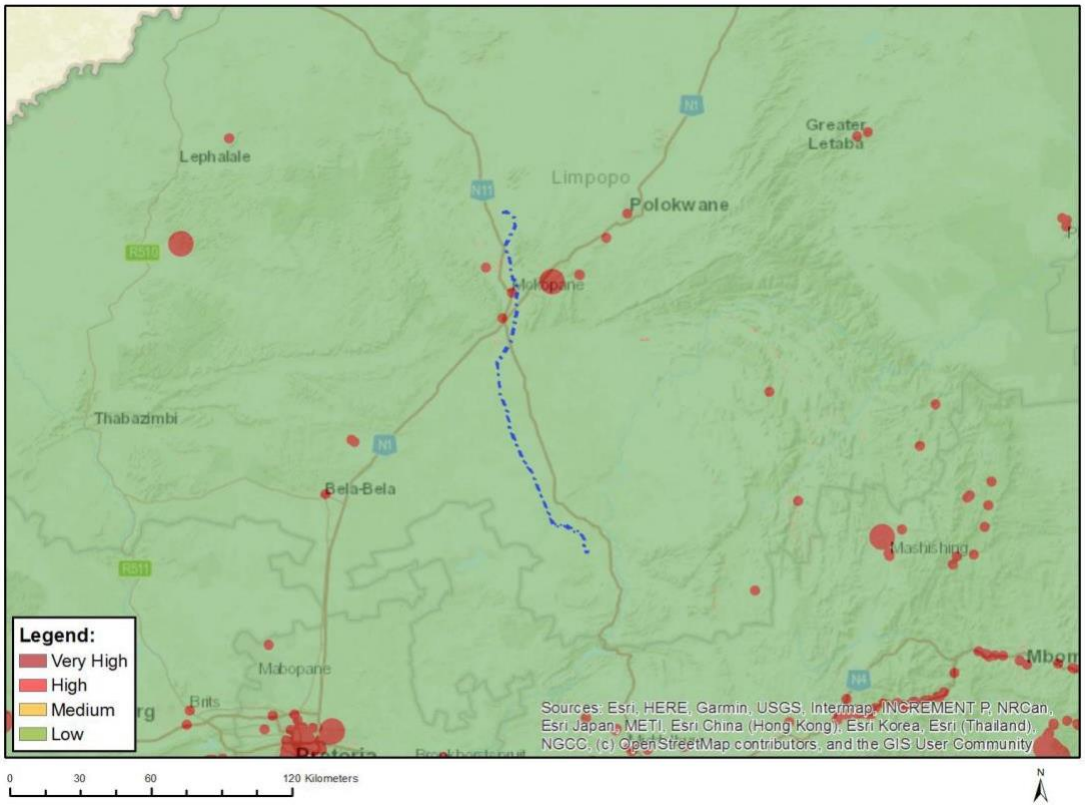


Figure 4: Archaeological and Cultural Heritage Theme Sensitivity (very high)

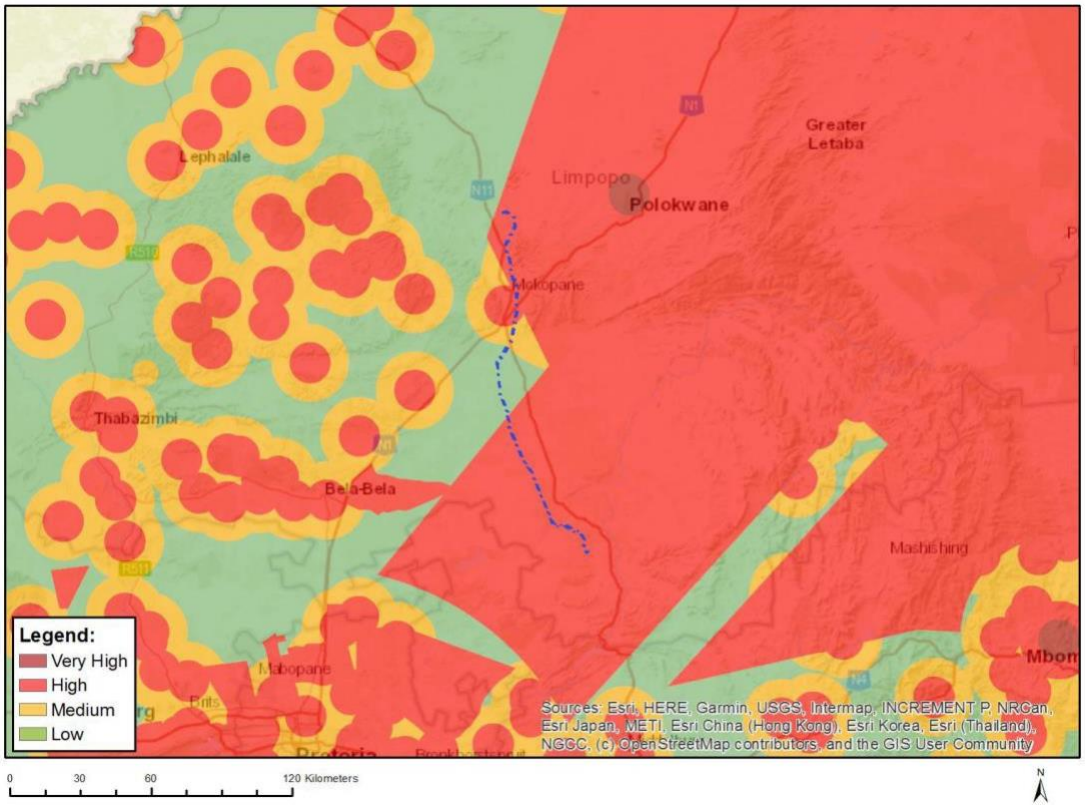


Figure 5: Civil Aviation Theme Sensitivity (High Sensitivity)

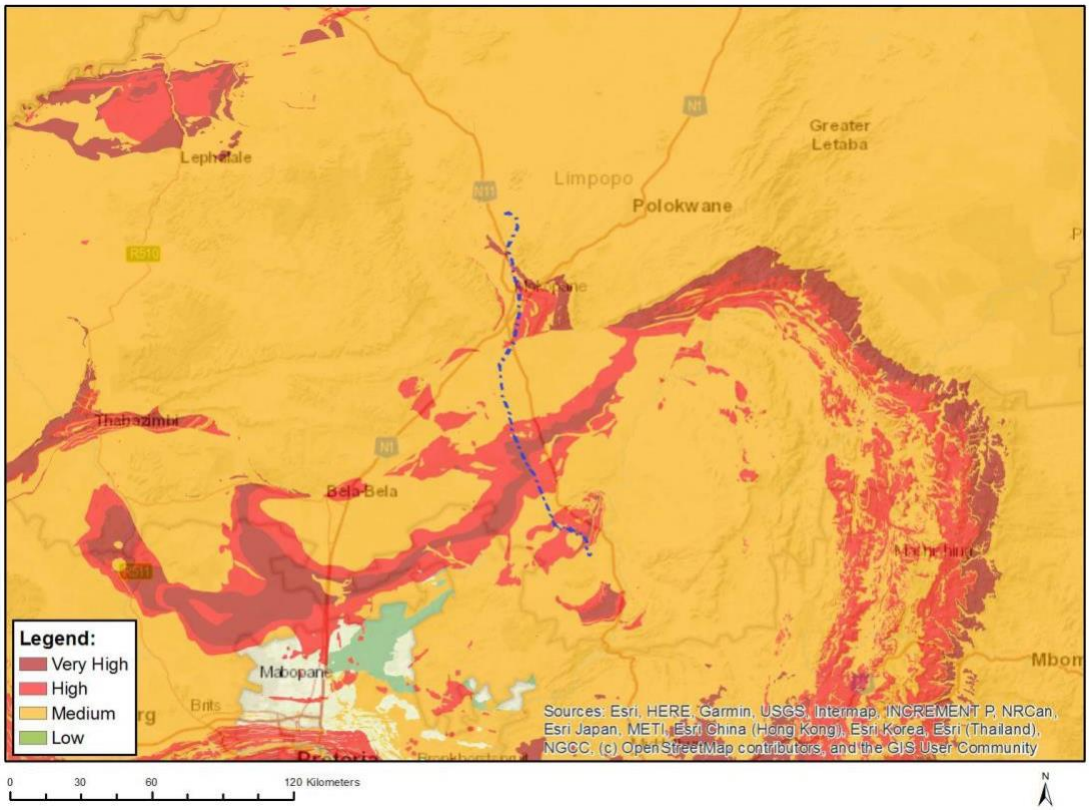


Figure 6: Paleontology Theme Sensitivity (Very High)

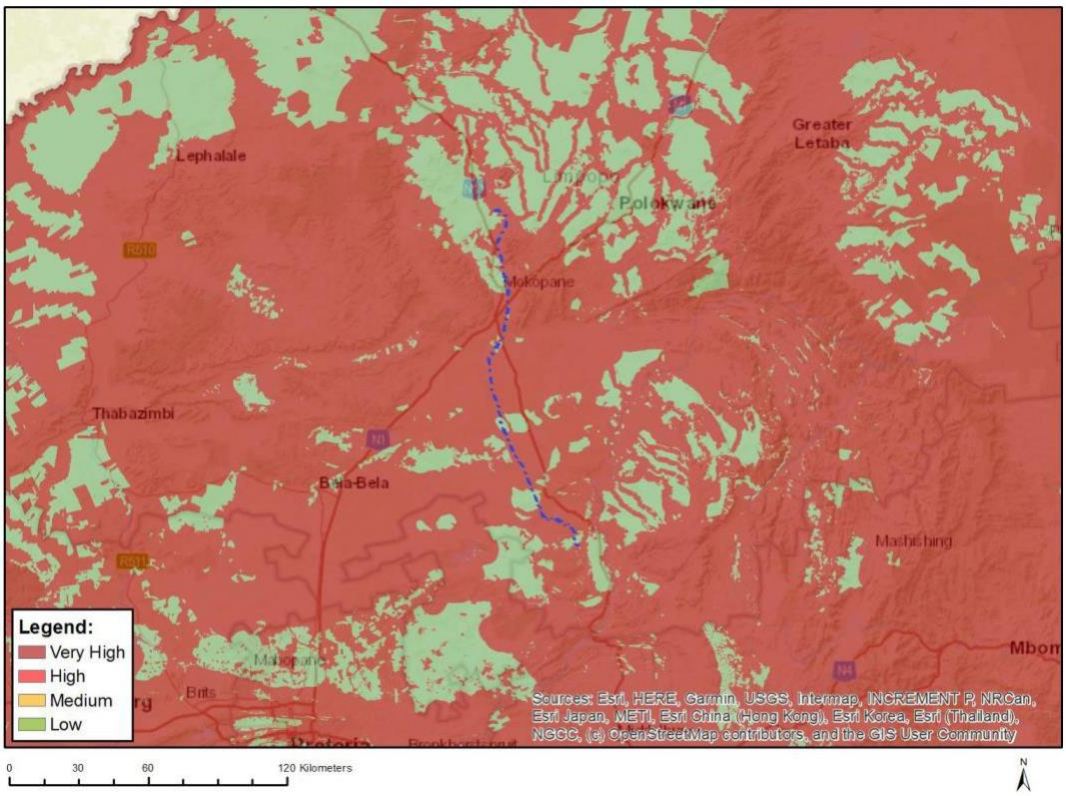


Figure 7: Terrestrial Biodiversity Theme Sensitivity (Very High)

Specialist Findings

Based on the findings of the Screening Tool Report the following Specialists were appointed to investigate the environmental sensitivities further:

Specialist	Specialist Study	Organisation
Mokgatla Molepo	Terrestrial Biodiversity Assessment	Moro Ecological Services (Pty) Ltd
Mokgatla Molepo	Avifaunal Assessment	Moro Ecological Services (Pty) Ltd
Tsepo Lepono	Wetland Assessment	Ecosolve Consulting (Ecosolve)
Makhosazana Mngomezulu	Heritage Assessment	Vungandze Project (Pty) Ltd
Prof Marion Bamford	Palaeontological Assessment	Independent Consultant
Marvin Gabara	Social Assessment	Eco-Thunder Consulting (Pty) Ltd
Brogan Geldenhuys	Visual Assessment	Eco-Thunder Consulting (Pty) Ltd
Darren Bouwer	Soil and Agricultural Potential	Digital Soils Africa (Pty) Ltd
I Heeger & S Nkabinde	Civil Aviation Sensitivity Study & Obstacle Assessment	GWI Aviation Advisory

3. SPECIALIST FINDINGS

Terrestrial Biodiversity Assessment

The impacts assessment ratings will be mostly Negative medium impact to Negative low impact from a specialist perspective. However, considering the aforementioned conservation status of the footprint bioregion and the recommended mitigations are not implemented, the project will drastically have an overall Negative high impact which should be avoided by the applicant.

Wetland Assessment

The majority of the watercourses in the study area are likely to have been impacted by agriculture and cattle farming to varying degrees, as well as mining in some areas. However, most of the proposed line is located on parts of the country that is very sparsely inhabited. Consequently, impacts to watercourses are relatively less significant compared to denser populated areas. Numerous waterbodies occur within the 250m route discussed in this report. The watercourses (including the buffer zones) directly crossed by the proposed development are the ones likely to be potentially impacted and form the main focus.

The risk scores fall in the Low category. Authorisation may proceed through a General Authorisation given that mitigation measures are effectively implemented. The risk scores fall in the Low category. Authorisation may proceed through a General Authorisation given that mitigation measures are effectively implemented. It should be noted that Appendix D2 of GN 509 states that the construction.

of new transmission or distribution powerlines, minor maintenance on roads, river crossings, towers and substations, where the footprint remains the same, are exempt from a WUL.

From the impact assessment undertaken it is evident that during construction phase, prior to mitigation impacts on loss of habitat and ecological structure, as well as impacts on hydrological function and sediment balance are medium-high level impacts. However, should mitigation be implemented, the impacts will be reduced to medium-low level impacts. The impacts on ecological and sociocultural service provision, impacts on floral species as well as impacts on floral species are medium-low level impacts prior to mitigation. However, should mitigation be implemented, the impacts will be reduced to low level impacts. The impacts on faunal species will be low prior to mitigation and very-low should mitigation be implemented. During operational phase, prior to mitigation impacts on habitat and ecological structure, ecological and sociocultural service provision as well as hydrological function and sediment balance are low level impacts. Furthermore, the impacts on floral species and faunal species are very low significance impacts. However, should mitigation be implemented all impacts will be reduced to very-low significance impacts.

Avifauna

The proposed powerline development is situated in an area of High animal sensitivity. Acquired historical data indicated the dominance of Least Concern species with a very moderate diversity of individuals. As a result, from an avifaunal perspective, there is no objection to the development of the proposed powerline development and associated infrastructure, provided that the recommended mitigation measures are strictly followed. The overall impacts (including cumulative) for the project are considered to be Negative low should the mitigation recommendations be effectively implemented.

Soil and Agricultural Potential

The study area has a Semi-Arid climate, making the cultivation of dry land crops possible but challenging. The area is dominated by the Ae broad land type, characterized by freely drained, deep, red, sandy soils. The soil capability varies across the proposed transmission line, with the southern part having a high capability (3-8), the central region having a moderate to high capability (4-7), and the northern part having a very low to moderate capability (1-6). The land capability also varies, with the northern part being non-arable and having low capability (5-7), while the central and southern parts are arable with moderate to high capability (8-11). The South African National Land-Cover 2020 (SANLC 2020) shows little change in land use since 2014, with the area predominantly classified as forested area, grassland, and both pivot irrigated and non-irrigated agricultural lands in the south.

A total of 35 soil and land use observations were made in the portion from the Elandsrivier to the Silimela substation, with 21 conducted on the Burutho-Silimela Transmission Line Deviation Route and 14 additional or shifted observations due to inaccessible areas. The prevalent soil forms identified were Vaalbos, Mispah, and Hutton soils, with other soil forms such as Avalon, Bainsvlei, and Nkonkoni identified in the south of the study area, close to the Silimela Substation. Land capability calculated from the field assessed portion of the line shows varying land capability across different areas. The southern

part predominantly has high land capability, while the central and northern parts have predominantly low land capability.

The impact assessment identified soil erosion, compaction, and surface sealing as minor impacts. However, the loss of agricultural land was flagged as a moderate-to-high impact, necessitating mitigation measures (refer to Figure 3 below).

The Burutho - Silimela 400 kV Transmission Line is supported from an agricultural perspective with the following conditions:

- No placement of surface infrastructure within cropped fields, particularly in irrigated and citrus fields.
- Construction must interfere with agricultural activities.
- During construction, large vehicles and building equipment need to keep largely to the infrastructure footprint to not cause compaction and sealing further than the footprint.
- Perimeter fence, particularly in the game and grazing farms.

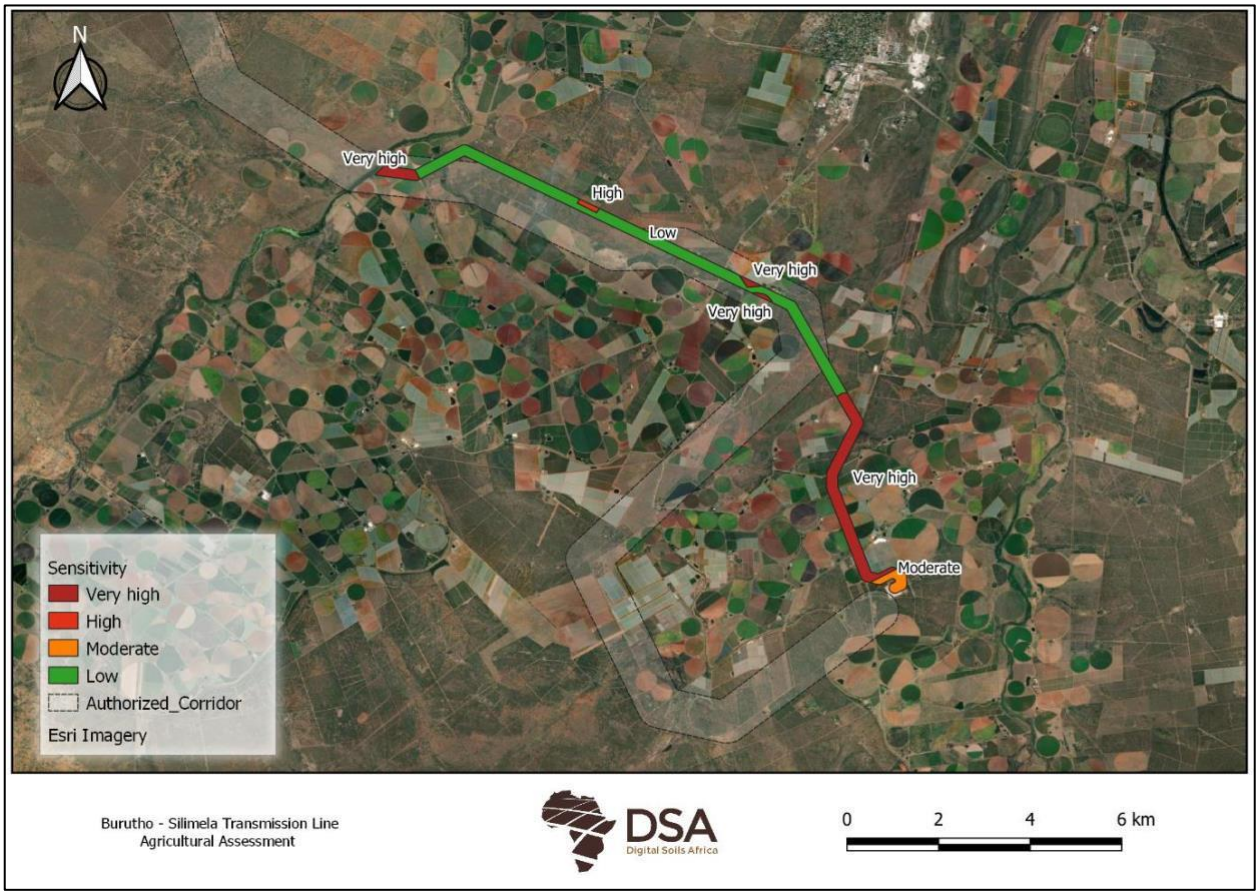


Figure 9: Sensitivity of the surveyed area

Social Impacts

From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws, and which are of such significance that it cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning.

Based on the social assessment, the following general conclusions and findings can be made:

- The development of an overhead powerline is a critical step in addressing the socio-economic challenges faced by residents. The assessment identified key issues such as inadequate access to water, electricity, sanitation, and safety concerns. By developing these services, the project aims to improve living conditions, enhance safety, and provide equal opportunities for all residents.

- The proposed development aligns with the national, provincial, and local policy frameworks, emphasizing the importance of inclusive housing development, improved service delivery, and sustainable urban development. It supports the goals outlined in the National Development Plan and various housing policies, which prioritize the provision of basic services and the enhancement of living conditions in informal settlements.

- The development of an overhead powerline will have positive socio-economic impacts. Job creation is expected during the construction phase, stimulating local economic activity through the procurement of construction materials and services. It also offers opportunities for skills development and training for the local labour force, contributing to improved employment prospects and income generation. The project will result in enhanced access to basic services and amenities, improving the standard of living and quality of life for affected communities.

- The stakeholder engagement process played a vital role in shaping the project. Community members and other stakeholders provided valuable insights and feedback, highlighting the importance of basic services, job opportunities, and addressing major social issues. The overwhelming support for the proposed development underscores the recognition of its potential benefits in improving the socio-economic well-being of the community.

- Mitigation measures are necessary to address potential negative impacts associated with the construction and operational phases. Temporary inconveniences and disruptions during construction should be minimized through effective project management and communication. Challenges in managing and maintaining the formalized services effectively require the implementation of efficient management practices, ongoing monitoring, and community engagement. Measures should also be in place to manage and resolve potential conflicts or disputes related to the allocation of formalized services.

- The cumulative impacts of the project can contribute to sustained economic growth, improved infrastructure development, and enhanced local services. Economic growth will be driven by job creation, increased business activity, and revenue generation. Infrastructure development will result in improved transportation networks, utilities, and community facilities, enhancing access to services.
- However, the cumulative impacts also present challenges that need to be addressed. The increased demand on resources, including water, energy, and land, must be managed efficiently to prevent scarcity and environmental degradation. Measures should be in place to minimize social displacement and avoid exacerbating socio-economic inequalities. Environmental degradation, including habitat loss, pollution, and resource depletion, must be mitigated through robust environmental management strategies.

Visual Impacts

The VIA identifies that the visual impacts of the Borutho-Silimela project, while notable, can be substantially mitigated through diligent planning and design. The region's inherent VAC, alongside the existing infrastructure network, positions the project favorably for visual integration. Strategic siting of the transmission line within the established landscape, utilising natural contours for screening and aligning with current visual corridors, contributes to the mitigation of potential visual impacts.

Civil Aviation Sensitivity Study & Obstacle

An Aeronautical Study was undertaken it is was found that proposed development is compliant with all relevant ICAO Annex 14 and SACAA (CARS and CATS) standards in respect of obstacle limitation surfaces and can therefore be supported for purposes of environmental approval. The proposed development will not materially impact civilian radar, navigation or communications infrastructure in the environs, nor present any material additional risks to operations at the aerodromes identified as potentially affected, currently or in the future.

CAA Obstacle Approval processes per CA139.27 will need to be complied with, and amended aerodrome operating procedures will need to be implemented in due course. On this basis, the recommendation of this CASS is that the sensitivity status of the proposed development be amended to ‘low’.

Heritage

The level of significance of the site and the cultural resources varies between social, historical, spiritual, scientific and aesthetic value.

Social value is when a place has become a focus of spiritual, political, national, or other cultural sentiments to a majority or minority group. This may be because the site is accessible and well known, rather than particularly well preserved or scientifically important (SAHRA Regulations). The proposed route has no social value.

Historical value refers to areas where historical events took place, and such events have high

significance either locally, regionally, provincially or nationally. The proposed route does not traverse in areas of historical significance.

Scientific value refers to the importance of the study area for research purposes. The proposed route has no scientific value.

Aesthetic value refers to the unique beauty of the site. No aesthetic value found on the proposed route.

Based on the level of significance, the proposed route traverse in areas of low heritage significant from a heritage perspective. Cemeteries in the vicinity and a dilapidated structure were noted. Some portions of the route have been previously disturbed by the existing power line. Chances of finding burial ground and graves and/or any other archaeological material on the proposed route should not be ruled out especially during construction phase.

Palaeontology

Based on the geology of the area and the palaeontological records, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and only some do contain trace fossils or fossil plant material. The overlying sands and soils of the Quaternary period would not preserve fossils. It should be noted that most of the route is along disturbed ground, on road servitudes or adjacent to the existing power lines.

There is a small chance that fossils may occur in the Malmani Subgroup dolomites (Farm Rietfontein 2) and the southern section Irrigassie Formation (Farms Doringstock 623 and Rondeberg 624). There is a very small chance that fossils might occur in the route sections indicated as orange on the SAHRIS palaeosensitivity map. Therefore, a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the contractor, environmental officer, or other responsible person once excavations for tower foundations and infrastructure have commenced then they should be rescued, and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be very low for most of the route but low for two sections of the National Environmental Management Act 1998 (Act No 107 of 1998).

Civil Aviation

The analysis contained in this Aeronautical/Civil Aviation Study has determined:

- The proposed development is compliant with all relevant ICAO Annex 14 and SACAA (CARS and CATS) standards in respect of obstacle limitation surfaces and can therefore be supported for purposes of environmental approval.

- The proposed development will not materially impact civilian radar, navigation or communications infrastructure in the environs, nor present any material additional risks to operations at the aerodromes identified as potentially affected, currently or in the future.

- CAA Obstacle Approval processes per CA139.27 will need to be complied with, and amended aerodrome operating procedures will need to be implemented in due course.

On this basis, the recommendation of this CASS is that the sensitivity status of the proposed development be amended to ‘low’.

INFRASTRUCTURE
South Africa

Ms. Mameetse Masemola
DDG: Infrastructure Investment Planning
Head: Infrastructure South Africa (Acting)
Email: LebogangM@infrastructuresa.org

To Whom It May Concern,

STRATEGIC INTEGRATED PROJECT (SIP) 10 ELECTRICITY TRANSMISSION AND DISTRIBUTION FOR ALL: CONFIRMATION OF PROJECT STATUS

The Electricity Transmission and Distribution for all programme forms part of the Energy Strategic Integrated Project No. 10, that was gazetted on 02 June 2014 (Government Gazette 37712) in line with the provisions of the Infrastructure Development Act (IDA) (Act No.23 of 2014). These projects are classified as Strategic Integrated Projects (SIP) and are required to be managed within the requirements as set out in the IDA.

The following project has been awarded SIP status:

i. **The Waterberg Generation 400 kV Stability Enhancement Scheme**

These projects together with any of their associated infrastructure, such as, but not limited to access roads, substations, and overhead power lines, are regarded as Strategic Integrated Projects (SIPs) to be expedited in terms of Schedule 2 (Section 17(2)) of the Infrastructure Development Act (Act No. 23 of 2014).

I hereby request that you please assist the Project Sponsor with the necessary approvals, authorisations, licences, permissions, and exemptions, as determined within the boundaries of the Infrastructure Development Act (Act No 23 of 2014) and other applicable legislations. Your assistance will be much appreciated.

For clarifications, you may contact Mr Alvino Wildschutt-Prins, Programme Manager for Project Pipeline Development at Infrastructure South Africa on AlvinoW@infrastructuresa.org.

We wish the project owners and project sponsors all the best in the development of this project.

Yours sincerely

Ms. Mameetse Masemola
Chairperson: SIP Steering Committee
Head: Infrastructure South Africa (Acting)
Date: 25/3/2024

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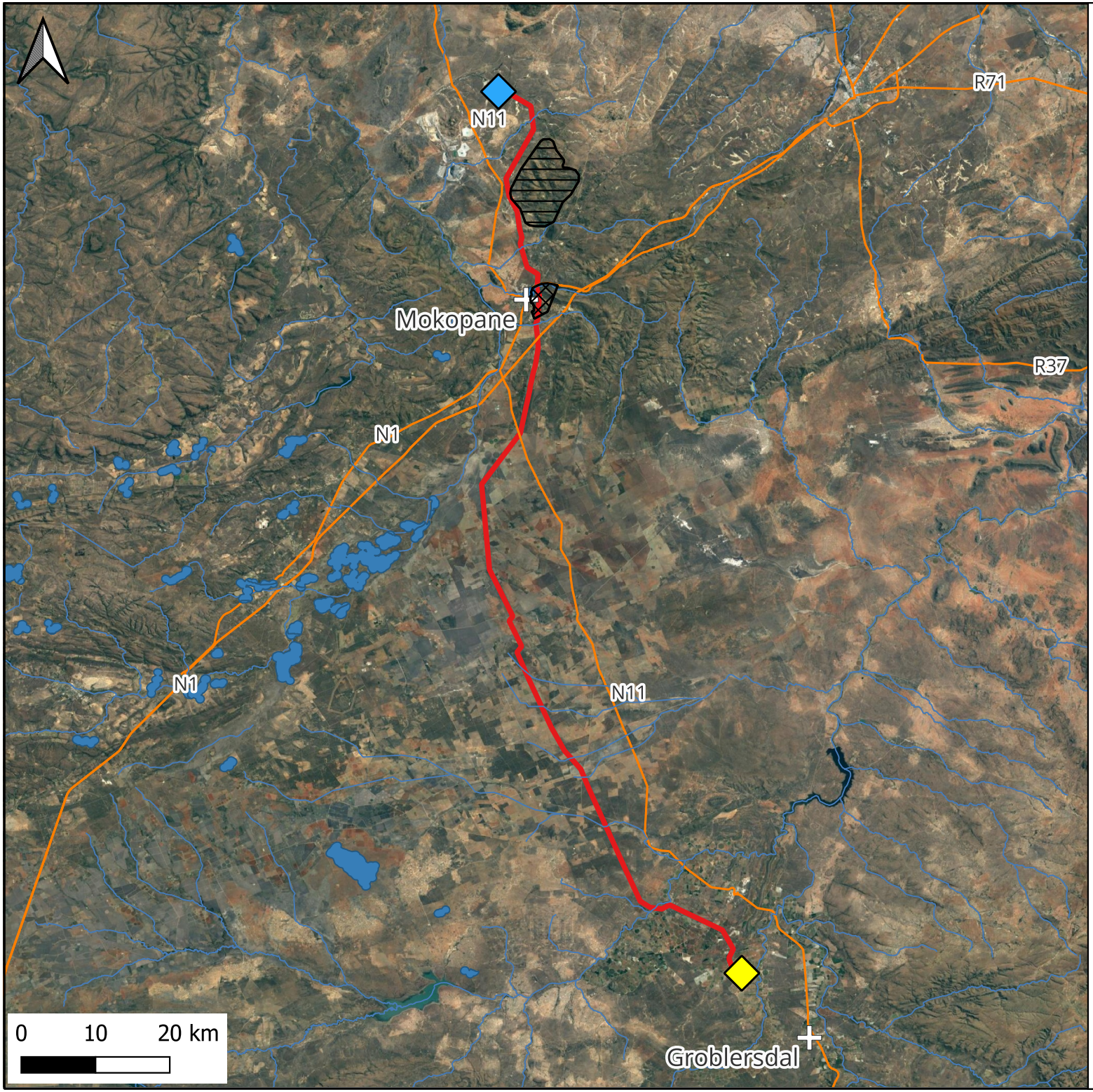


Eskom Borutho Silimela 400 kV Powerline Locality Map

Legend

- Nearby Cities
- Potgietersrus Nature Reserve
- Witvinger Nature Reserve
- Main Roads
- NFEPA Rivers
- NFEPA Wetlands
- Borutho Silimela 400kV Proposed Route

Substations

- Borutho
- Silimela

Coordinate Points

- Start
- Middle
- End

Point	Latitude	Longitude
Start	23° 54' 11.41" S	28° 58' 38.35" E
Middle	24° 32' 33.90" S	28° 57' 49.92" E
End	25° 5' 9.01" S	29° 17' 52.39" E

NTC Group

Revision A

19/04/2024

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: 14/12/16/3/3/1/2979

Project name: Borutho-Silimela BAR

Project title: BASIC ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE BUROTHO-SILIMELA 400kv POWER LINE, LIMPOPO PROVINCE

Date screening report generated: 25/07/2024 14:16:19

Applicant: Eskom Holdings SOC Ltd

Compiler: NTC Group (Pty) Ltd

Compiler signature: .....

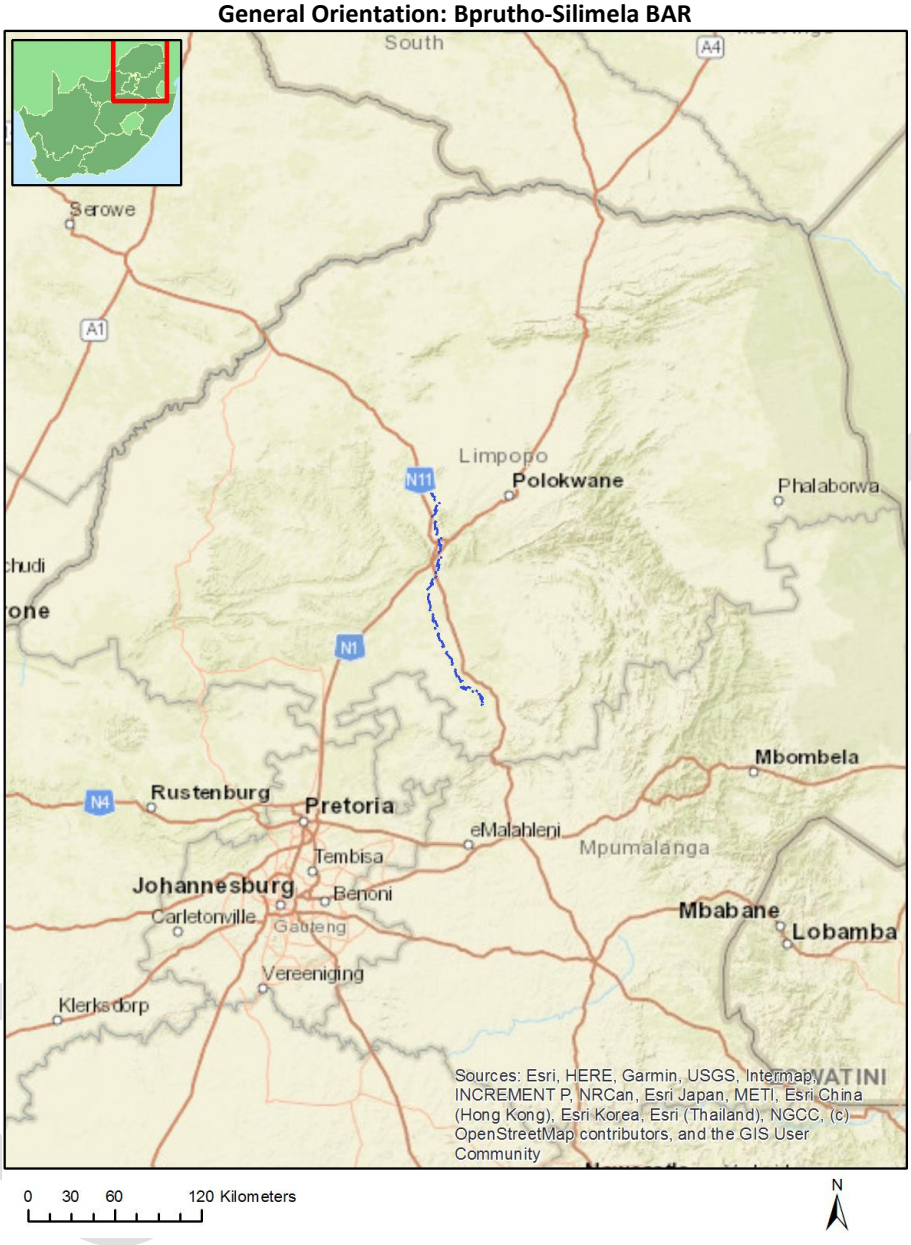
Application Category: Utilities Infrastructure|Electricity|Distribution and Transmission|Powerline

Table of Contents

Proposed Project Location

Orientation map 1: General location

General Orientation: Bprutho-Silimela BAR



Map of proposed site and relevant area(s)

Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	PIET POTGIETERSRUST	6509	1486	24°8'21.32S	29°0'36.71E	Erven
2	PIET POTGIETERSRUST	6509	1443	24°8'21.35S	29°0'34.06E	Erven
3	PIET POTGIETERSRUST	6509	1539	24°8'25.41S	29°0'36.41E	Erven
4	PIET POTGIETERSRUST	6509	1431	24°8'19.19S	29°0'38.65E	Erven
5	PIET POTGIETERSRUST	6509	1520	24°8'22.85S	29°0'34.5E	Erven
6	PIET POTGIETERSRUST	6509	1537	24°8'24.52S	29°0'37.07E	Erven
7	PIET POTGIETERSRUST	6509	1430	24°8'18.9S	29°0'38.2E	Erven
8	PIET POTGIETERSRUST	6509	1494	24°8'24.6S	29°0'34.24E	Erven
9	PIET POTGIETERSRUST	6509	1495	24°8'25.01S	29°0'33.93E	Erven
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11	PIET POTGIETERSRUST	6509	1533	24°8'22.91S	29°0'38.27E	Erven
12	PIET POTGIETERSRUST	6509	1491	24°8'23.32S	29°0'35.2E	Erven
13	PIET POTGIETERSRUST	6509	1521	24°8'22.45S	29°0'34.8E	Erven
14	PIET POTGIETERSRUST	6509	1489	24°8'22.52S	29°0'35.81E	Erven
15	PIET POTGIETERSRUST	6509	1567	24°8'23.64S	29°0'36.63E	Erven
16	PIET POTGIETERSRUST	6509	1435	24°8'20.34S	29°0'40.44E	Erven
17	PIET POTGIETERSRUST	6509	1483	24°8'20.06S	29°0'37.66E	Erven
18	PIET POTGIETERSRUST	6509	1440	24°8'20.15S	29°0'34.97E	Erven
19	PIET POTGIETERSRUST	6509	1433	24°8'19.76S	29°0'39.56E	Erven
20	PIET POTGIETERSRUST	6509	1572	24°8'21.63S	29°0'38.12E	Erven
21	PIET POTGIETERSRUST	6509	1566	24°8'24.05S	29°0'36.33E	Erven
22	PIET POTGIETERSRUST	6509	1444	24°8'21.76S	29°0'33.76E	Erven
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63	PIET POTGIETERSRUST	6509	1570	24°8'22.43S	29°0'37.53E	Erven
64	PIET POTGIETERSRUST	6509	1527	24°8'20.04S	29°0'36.61E	Erven
65	PIET POTGIETERSRUST	6509	1479	24°8'19.68S	29°0'34.26E	Erven
66	PIET POTGIETERSRUST	6509	1538	24°8'24.92S	29°0'36.78E	Erven
67	PIET POTGIETERSRUST	6509	1428	24°8'18.33S	29°0'37.3E	Erven
68	PIET POTGIETERSRUST	6509	1425	24°8'17.47S	29°0'35.95E	Erven
69	PIET POTGIETERSRUST	6509	1569	24°8'22.84S	29°0'37.22E	Erven
70	PIET POTGIETERSRUST	6509	1534	24°8'23.31S	29°0'37.97E	Erven
71	PIET POTGIETERSRUST	6509	1523	24°8'21.64S	29°0'35.4E	Erven
72	PIET POTGIETERSRUST	6509	1562	24°8'25.74S	29°0'35.07E	Erven
73	PIET POTGIETERSRUST	6509	1571	24°8'22.03S	29°0'37.83E	Erven
74	PIET POTGIETERSRUST	6509	1493	24°8'24.2S	29°0'34.55E	Erven
75	PIET POTGIETERSRUST	6509	0	24°9'1.56S	29°0'26.17E	Erven
76	PIET POTGIETERSRUST	6509	1542	24°8'26.61S	29°0'35.52E	Erven
77	PIET POTGIETERSRUST	6509	1541	24°8'26.22S	29°0'35.82E	Erven
78	PIET POTGIETERSRUST	6509	1529	24°8'21.23S	29°0'39.49E	Erven
79	PIET POTGIETERSRUST	6509	1568	24°8'23.24S	29°0'36.93E	Erven
80	PIET POTGIETERSRUST	6509	1535	24°8'23.72S	29°0'37.67E	Erven
81	PIET POTGIETERSRUST	6509	1478	24°8'20.08S	29°0'33.95E	Erven
82	PIET POTGIETERSRUST	6509	1528	24°8'20.78S	29°0'38.77E	Erven
83	PIET POTGIETERSRUST	6509	1524	24°8'21.24S	29°0'35.7E	Erven
84	PIET POTGIETERSRUST	6509	1522	24°8'22.05S	29°0'35.09E	Erven
85	PIET POTGIETERSRUST	6509	1441	24°8'20.56S	29°0'34.67E	Erven
86	PIET POTGIETERSRUST	6509	1488	24°8'22.12S	29°0'36.11E	Erven
87	PIET POTGIETERSRUST	6509	1536	24°8'24.12S	29°0'37.37E	Erven

88	SCHIETFONTEIN	620	0	24°42'49.54S	29°0'21.35E	Farm
89	VLAKPAN	136	0	24°22'41.69S	29°1'38.86E	Farm
90	MACALACASKOP	243	0	24°8'37.58S	28°58'23.51E	Farm
91	PRUISSEN	48	0	24°17'5.77S	29°3'15.28E	Farm
92	PLATDOORNS	333	0	24°26'45.72S	28°56'47.55E	Farm
93	TURFSPRUIT	241	0	24°6'25.26S	28°56'42.69E	Farm
94	OORLOGSFONTEIN	45	0	24°13'21.03S	29°1'48E	Farm
95	GELUKSFONTEIN	547	0	24°35'21.69S	28°59'15.14E	Farm
96	CONTERBERG	665	0	24°45'7.65S	29°2'39.96E	Farm
97	RHENOSTERFONTEIN	731	0	24°57'2.89S	29°6'31.11E	Farm
98	DE HOOP	617	0	24°37'32.65S	29°0'21.04E	Farm
99	KLIPGAT	618	0	24°39'45.45S	29°1'18.08E	Farm
100	HARTEBEESTFONTEIN	355	0	24°28'50.52S	28°57'41.92E	Farm
101	GEGUND	332	0	24°25'56.5S	28°58'29.02E	Farm
102	BOKPOORT	328	0	24°23'49.32S	28°57'48.49E	Farm
103	ROOIPOORT	46	0	24°16'12.76S	29°0'35.86E	Farm
104	CLAREMONT	734	0	24°55'56.07S	29°9'28.45E	Farm
105		996	0	24°51'47.15S	29°7'56.57E	Farm
106		995	0	24°53'10.44S	29°7'43.59E	Farm
107	WELTEVREDE	670	0	24°48'27.88S	29°3'19.56E	Farm
108	DRONKFONTEIN	724	0	24°54'17.27S	29°8'46.57E	Farm
109	DOORNPAN	694	0	24°50'21.16S	29°4'6E	Farm
110	VLAKLAAGTE	544	0	24°33'12.71S	28°58'16.25E	Farm
111	UITLOOP	3	0	24°6'16.88S	29°1'56.3E	Farm
112	HARINGBULT	699	0	24°53'40.24S	29°5'38.13E	Farm
113	ONVERWACHT	698	0	24°51'52.35S	29°5'17.84E	Farm
114	GRASVALLY	293	0	24°19'9.68S	28°59'10.54E	Farm
115	DE BULTS PUNT	582	0	24°40'36.12S	28°59'22.39E	Farm
116	ZOETFONTEIN	330	0	24°24'44.12S	28°56'6.26E	Farm
117	ROTTERDAM	12	0	25°4'7.2S	29°13'28.85E	Farm
118	GILLIMBERG	861	0	23°51'20.21S	28°54'48.95E	Farm
119	BLINKWATER	331	0	24°25'2.28S	29°0'15.63E	Farm
120	DOELEN	327	0	24°23'4.24S	28°59'38.98E	Farm
121	WELGEGUND	693	0	24°49'40.26S	29°6'58.31E	Farm
122	MAPOCHSGRONDE	733	0	24°58'56.36S	29°7'19.96E	Farm
123	WOLVENKRAAL	13	0	25°2'28.64S	29°18'53.86E	Farm
124	DERDEKRAALPOORT	543	0	24°30'44.83S	28°59'20.33E	Farm
125	ZOETVELD	294	0	24°20'46.28S	28°58'18.57E	Farm
126	GRUYSBANK	5	0	24°58'42.69S	29°10'33.37E	Farm
127	KLAVERVALLEY	542	0	24°31'26.58S	28°57'22.48E	Farm
128		1046	0	24°19'57.68S	29°2'24.13E	Farm
129	HENDRIKSRUST	621	0	24°41'51.04S	29°2'15.05E	Farm
130	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	0	24°9'57.81S	29°0'46.31E	Farm
131	VIER EN TWINTIG RIVIER	49	0	24°14'33.23S	29°4'29.58E	Farm
132	GELUKSFONTEIN	547	7	24°34'19.26S	28°59'8.83E	Farm Portion
133	GRASVALLY	293	70	24°20'16.64S	29°0'3.24E	Farm Portion
134		1046	1	24°18'39.16S	29°1'7.37E	Farm Portion
135	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	146	24°7'38.05S	29°0'29.31E	Farm Portion
136	GELUKSFONTEIN	547	8	24°36'9.63S	28°59'56.18E	Farm Portion
137	GRASVALLY	293	2	24°20'54.32S	28°59'49.45E	Farm Portion
138		1282	0	25°0'52.65S	29°15'44.69E	Farm Portion
139	PIET POTGIETERSRUST	44	33	24°7'45S	29°0'45.37E	Farm

	TOWN AND TOWNLANDS 4					Portion
140	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	80	24°10'43.26S	29°1'50.62E	Farm Portion
141	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	0	24°10'55.3S	29°0'9.1E	Farm Portion
142	GILLIMBERG	861	9	24°0'39.27S	28°58'50.79E	Farm Portion
143		1046	2	24°19'34.17S	29°1'28.36E	Farm Portion
144	ROOIPOORT	46	25	24°16'2.55S	29°1'33.82E	Farm Portion
145	DE BULTS PUNT	582	0	24°41'33.86S	28°59'46.48E	Farm Portion
146	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	78	24°10'2.28S	29°1'41.4E	Farm Portion
147		1281	0	25°0'53.61S	29°15'44.27E	Farm Portion
148		1046	7	24°21'3.21S	29°0'47.26E	Farm Portion
149	OORLOGSFONTEIN	45	122	24°13'30.62S	29°2'2.66E	Farm Portion
150	TURFSPRUIT	241	0	24°6'17.83S	28°56'53.91E	Farm Portion
151	PLATDOORNS	333	0	24°26'1.56S	28°56'36.55E	Farm Portion
152	OORLOGSFONTEIN	45	176	24°13'35.12S	29°1'56.54E	Farm Portion
153	ROOIPOORT	46	27	24°16'5.88S	29°1'51.2E	Farm Portion
154	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	44	24°8'40.69S	29°1'34.69E	Farm Portion
155	ROOIPOORT	46	30	24°16'9.34S	29°1'9.23E	Farm Portion
156	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	47	24°8'44.04S	29°1'49.72E	Farm Portion
157	ROOIPOORT	46	19	24°16'40.15S	29°1'20.65E	Farm Portion
158		2	1	24°5'52.27S	29°0'2.5E	Farm Portion
159	ROOIPOORT	46	21	24°16'44.14S	29°1'58.53E	Farm Portion
160	OORLOGSFONTEIN	45	110	24°13'29.01S	29°1'29.42E	Farm Portion
161	PRUISSEN	48	0	24°17'1.33S	29°3'13.61E	Farm Portion
162	DE HOOP	617	8	24°36'38.16S	29°0'12.65E	Farm Portion
163	CONTERBERG	665	0	24°47'21.41S	29°4'46.75E	Farm Portion
164	OORLOGSFONTEIN	45	10	24°12'50.18S	29°1'47.49E	Farm Portion
165	OORLOGSFONTEIN	45	94	24°12'44.02S	29°1'29.69E	Farm Portion
166	ROOIPOORT	46	9	24°16'22.88S	29°1'24.28E	Farm Portion
167	DE HOOP	617	3	24°36'39.72S	28°59'47.41E	Farm Portion
168		2	0	24°3'18.99S	28°59'15.99E	Farm Portion
169	OORLOGSFONTEIN	45	15	24°13'12.84S	29°1'56.39E	Farm Portion

170	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	144	24°9'50.5S	29°1'21.34E	Farm Portion
171	HARINGBULT	699	6	24°53'36.61S	29°6'50.61E	Farm Portion
172	SCHIETFONTEIN	620	1	24°43'12.16S	29°1'1.39E	Farm Portion
173	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	39	24°8'16.71S	29°1'0.97E	Farm Portion
174	WELTEVREDE	670	3	24°48'9.16S	29°3'43.71E	Farm Portion
175	DOORNPAN	694	3	24°49'36.79S	29°4'35.83E	Farm Portion
176	ROOIPOORT	46	20	24°16'55.92S	29°1'16.16E	Farm Portion
177	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	37	24°7'55.33S	29°1'1.57E	Farm Portion
178	CONTERBERG	665	5	24°46'26.22S	29°4'50.51E	Farm Portion
179	CONTERBERG	665	7	24°45'4.41S	29°3'51.37E	Farm Portion
180	OORLOGSFONTEIN	45	4	24°12'30.53S	29°1'32.15E	Farm Portion
181	OORLOGSFONTEIN	45	89	24°13'27S	29°1'44.69E	Farm Portion
182	OORLOGSFONTEIN	45	97	24°13'10.73S	29°1'19.45E	Farm Portion
183	OORLOGSFONTEIN	45	0	24°12'48.79S	29°1'18.25E	Farm Portion
184	OORLOGSFONTEIN	45	5	24°12'38.15S	29°1'38.15E	Farm Portion
185	ROOIPOORT	46	5	24°17'35.9S	29°1'37.72E	Farm Portion
186	DE BULTS PUNT	582	3	24°40'34.87S	28°59'21.93E	Farm Portion
187	DE BULTS PUNT	582	4	24°41'3.88S	28°59'33.85E	Farm Portion
188	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	43	24°8'31.21S	29°1'23.54E	Farm Portion
189	CONTERBERG	665	18	24°46'10.77S	29°3'50.4E	Farm Portion
190	OORLOGSFONTEIN	45	109	24°13'30.69S	29°1'16.87E	Farm Portion
191	ROOIPOORT	46	22	24°16'57.33S	29°1'59.33E	Farm Portion
192	OORLOGSFONTEIN	45	95	24°13'6.72S	29°1'43.55E	Farm Portion
193	OORLOGSFONTEIN	45	7	24°12'22.73S	29°2'13.07E	Farm Portion
194	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	40	24°8'24.2S	29°1'12.33E	Farm Portion
195	CLAREMONT	734	5	24°56'10.51S	29°8'21.81E	Farm Portion
196	RHENOSTERFONTEIN	731	10	24°56'37.91S	29°7'53.99E	Farm Portion
197	WELTEVREDE	670	1	24°47'37.29S	29°3'14E	Farm Portion
198	CONTERBERG	665	9	24°43'44.12S	29°3'5.7E	Farm Portion
199	SCHIETFONTEIN	620	3	24°42'7.03S	29°0'47.83E	Farm Portion
200	ROOIPOORT	46	26	24°16'4.36S	29°1'42.75E	Farm

						Portion
201	OORLOGSFONTEIN	45	18	24°13'21.87S	29°1'58.32E	Farm Portion
202	OORLOGSFONTEIN	45	148	24°14'10.82S	29°1'34.21E	Farm Portion
203	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	35	24°8'1.97S	29°0'37.67E	Farm Portion
204	OORLOGSFONTEIN	45	13	24°13'3.53S	29°1'54.35E	Farm Portion
205	OORLOGSFONTEIN	45	8	24°12'37.62S	29°2'5.7E	Farm Portion
206	CONTERBERG	665	10	24°44'17.46S	29°1'38.11E	Farm Portion
207	GILLIMBERG	861	7	23°57'16.59S	29°3'17.15E	Farm Portion
208	CLAREMONT	734	4	24°55'29.98S	29°8'5.05E	Farm Portion
209	ROOIPOORT	46	0	24°15'20.55S	29°1'20.65E	Farm Portion
210	OORLOGSFONTEIN	45	96	24°13'8.72S	29°1'31.89E	Farm Portion
211	CLAREMONT	734	9	24°55'56.87S	29°8'21.42E	Farm Portion
212	KLIPGAT	618	3	24°39'11.27S	29°0'32.09E	Farm Portion
213	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	176	24°9'50.58S	29°1'31.05E	Farm Portion
214	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	140	24°9'28.22S	29°1'50.09E	Farm Portion
215	WELGEGUND	693	0	24°49'49.63S	29°6'13.48E	Farm Portion
216	OORLOGSFONTEIN	45	9	24°12'42.48S	29°1'55.31E	Farm Portion
217	CLAREMONT	734	8	24°55'35.59S	29°8'51.33E	Farm Portion
218		12	120	25°1'33.19S	29°15'29.68E	Farm Portion
219	ROOIPOORT	46	24	24°16'0.72S	29°1'23.94E	Farm Portion
220	DE BULTS PUNT	582	2	24°40'6.34S	28°59'8.78E	Farm Portion
221	CONTERBERG	665	8	24°45'59.2S	29°1'56.95E	Farm Portion
222	CLAREMONT	734	7	24°55'49.67S	29°9'20.19E	Farm Portion
223	DE HOOP	617	1	24°37'51.62S	28°59'41.17E	Farm Portion
224	OORLOGSFONTEIN	45	152	24°14'24.45S	29°1'49.78E	Farm Portion
225	GELUKSFONTEIN	547	11	24°35'17S	28°59'17.57E	Farm Portion
226	MACALACASKOP	243	0	24°6'51.19S	28°58'46.64E	Farm Portion
227	KLIPGAT	618	0	24°40'26.45S	29°1'1.59E	Farm Portion
228	CONTERBERG	665	16	24°46'34.35S	29°3'14.64E	Farm Portion
229	OORLOGSFONTEIN	45	149	24°13'39.74S	29°2'2.13E	Farm Portion
230	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	34	24°7'54.07S	29°0'26.46E	Farm Portion

231	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	175	24°9'34.86S	29°2'22.2E	Farm Portion
232		12	206	25°3'46.44S	29°17'1.1E	Farm Portion
233		12	781	25°0'22.89S	29°14'58.11E	Farm Portion
234		12	549	24°59'36.63S	29°13'16.24E	Farm Portion
235	CONTERBERG	665	24	24°47'37.84S	29°6'12.6E	Farm Portion
236	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	36	24°8'9.29S	29°0'49.21E	Farm Portion
237	RHENOSTERFONTEIN	731	0	24°57'0.85S	29°8'48.22E	Farm Portion
238	VIER EN TWINTIG RIVIER	49	6	24°14'57.01S	29°2'29.07E	Farm Portion
239	VLAKPAN	136	0	24°22'41.69S	29°1'38.86E	Farm Portion
240		12	568	25°0'21.16S	29°15'56.88E	Farm Portion
241	HENDRIKSRUST	621	0	24°42'12.5S	29°1'39.74E	Farm Portion
242	DE HOOP	617	4	24°37'41.04S	29°0'9.61E	Farm Portion
243	DRONKFONTEIN	724	0	24°54'34.92S	29°9'7.79E	Farm Portion
244		12	642	25°1'31.41S	29°16'6.47E	Farm Portion
245	ROOIPOORT	46	10	24°16'30.59S	29°1'58.01E	Farm Portion
246	OORLOGSFONTEIN	45	3	24°13'39.43S	29°1'57.57E	Farm Portion
247	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	140	24°10'13.98S	29°1'22.29E	Farm Portion
248		96	1	24°21'32.11S	29°0'10.31E	Farm Portion
249	DRONKFONTEIN	724	1	24°53'54.99S	29°8'20.04E	Farm Portion
250	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	48	24°8'52.06S	29°1'59.14E	Farm Portion
251	GRUYSBANK	5	1	24°58'7.74S	29°10'56.35E	Farm Portion
252		12	1086	25°1'19.4S	29°15'20.15E	Farm Portion
253	DOELEN	327	0	24°23'39.86S	28°59'43.72E	Farm Portion
254		12	988	25°0'50.34S	29°15'43.62E	Farm Portion
255	OORLOGSFONTEIN	45	88	24°14'2.88S	29°1'13.09E	Farm Portion
256	OORLOGSFONTEIN	45	6	24°12'25.94S	29°1'49.08E	Farm Portion
257	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	135	24°12'27.56S	29°1'22.14E	Farm Portion
258	DOELEN	327	6	24°21'51.21S	29°0'15.97E	Farm Portion
259		12	782	25°0'37.07S	29°15'4.9E	Farm Portion
260		12	780	25°0'9.13S	29°14'51.11E	Farm Portion
261		12	694	25°5'12.06S	29°17'24.55E	Farm

						Portion
262		12	786	24°59'49.65S	29°12'44.62E	Farm Portion
263	WOLVENKRAAL	13	14	25°3'32.09S	29°17'36.07E	Farm Portion
264	GRASVALLY	293	71	24°20'37.26S	28°59'51.92E	Farm Portion
265		12	1016	25°4'40.68S	29°17'24.04E	Farm Portion
266	MAPOCHSGRONDE	733	2	24°58'1.56S	29°8'45.59E	Farm Portion
267		12	550	24°59'43.67S	29°13'31.24E	Farm Portion
268		12	548	24°59'29.17S	29°13'1.75E	Farm Portion
269		12	1107	25°1'8.58S	29°15'40.6E	Farm Portion
270	WELTEVREDE	670	0	24°48'59.57S	29°3'38.26E	Farm Portion
271	DOORNPAN	694	2	24°50'25.25S	29°4'51.13E	Farm Portion
272	DE BULTS PUNT	582	1	24°39'36.47S	28°58'58.77E	Farm Portion
273		96	1	24°21'32.11S	29°0'10.31E	Farm Portion
274	OORLOGSFONTEIN	45	169	24°13'35.25S	29°1'54.96E	Farm Portion
275		11	5	25°3'24.13S	29°16'57E	Farm Portion
276	HARTEBEESTFONTEIN	355	1	24°28'33.27S	28°56'57.31E	Farm Portion
277	OORLOGSFONTEIN	45	167	24°13'24.84S	29°1'54.92E	Farm Portion
278	UITLOOP	3	50	24°5'55.13S	29°0'30.54E	Farm Portion
279		12	1085	25°0'52.67S	29°15'12.37E	Farm Portion
280	DOELEN	327	1	24°22'42S	29°0'6.78E	Farm Portion
281		12	641	25°1'55.89S	29°16'18.04E	Farm Portion
282		12	189	25°4'34.74S	29°17'5.14E	Farm Portion
283	ZOETVELD	294	7	24°21'32.11S	29°0'9.24E	Farm Portion
284		12	698	25°3'2.67S	29°17'30.65E	Farm Portion
285	WOLVENKRAAL	13	33	25°3'44.26S	29°17'23.3E	Farm Portion
286		12	787	24°59'43.82S	29°12'16.75E	Farm Portion
287	GRUYSBANK	5	0	24°58'46.51S	29°10'6.5E	Farm Portion
288		12	190	25°4'11.67S	29°16'58.93E	Farm Portion
289		12	1083	25°1'8.58S	29°14'31.67E	Farm Portion
290		12	1017	25°4'48.02S	29°17'17.05E	Farm Portion
291		12	788	24°59'53.08S	29°11'56.58E	Farm Portion

292		12	547	24°59'24.84S	29°12'37.19E	Farm Portion
293		12	689	25°5'30.32S	29°18'21.24E	Farm Portion
294		12	1256	25°4'31.86S	29°17'39.81E	Farm Portion
295		12	686	25°4'43.79S	29°17'40.37E	Farm Portion
296	FRISCHGEWAAGD	88	0	24°13'35.6S	29°1'55.56E	Farm Portion
297	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	184	24°9'53.52S	29°1'24.46E	Farm Portion
298	HARTEBEESTFONTEIN	355	2	24°29'29.68S	28°57'34.18E	Farm Portion
299	VLAKLAAGTE	544	0	24°33'17.16S	28°58'16.68E	Farm Portion
300	BLINKWATER	331	8	24°24'38.29S	28°59'2.35E	Farm Portion
301	CLAREMONT	734	12	24°56'53.84S	29°9'45.93E	Farm Portion
302	VLAKLAAGTE	544	2	24°32'41.39S	28°58'3.37E	Farm Portion
303	GILLIMBERG	861	30	23°57'20.97S	29°0'37.24E	Farm Portion
304	HAARDEKRAAL	547	10	24°35'49.67S	28°58'51.31E	Farm Portion
305	PLATDOORNS	333	1	24°27'15.86S	28°56'57.74E	Farm Portion
306	GILLIMBERG	861	0	23°52'17.28S	28°55'40.35E	Farm Portion
307		12	1116	25°1'47.83S	29°17'24.57E	Farm Portion
308		12	1050	25°1'13.12S	29°15'50.06E	Farm Portion
309		12	890	25°0'58.32S	29°15'30.02E	Farm Portion
310		12	783	25°0'13.71S	29°14'15.54E	Farm Portion
311		12	552	24°59'58.17S	29°14'1.48E	Farm Portion
312		12	186	25°4'15.22S	29°16'41.66E	Farm Portion
313		12	1084	25°1'15.89S	29°14'55.27E	Farm Portion
314	DRONKFONTEIN	724	1	24°53'54.99S	29°8'20.04E	Farm Portion
315		995	1	24°53'5.74S	29°7'44.5E	Farm Portion
316	HARINGBULT	699	8	24°52'23.5S	29°6'44.05E	Farm Portion
317		12	351	24°59'55S	29°11'28.97E	Farm Portion
318		12	795	25°0'36.36S	29°14'23.75E	Farm Portion
319	ZOETVELD	294	0	24°21'1.05S	28°58'43.46E	Farm Portion
320		12	699	25°2'59.85S	29°17'52.68E	Farm Portion
321		12	1082	25°1'3.64S	29°14'9.55E	Farm Portion
322		12	695	25°5'14.08S	29°17'10.25E	Farm

						Portion
323		12	481	24°59'23.88S	29°11'59.46E	Farm Portion
324		11	4	25°2'58.94S	29°16'54.46E	Farm Portion
325		12	629	25°2'36.2S	29°16'32.22E	Farm Portion
326	GRUYSBANK	5	4	24°59'40.22S	29°9'30.4E	Farm Portion
327	BOKPOORT	328	1	24°23'57.97S	28°58'8.11E	Farm Portion
328	GILLIMBERG	861	8	23°58'2.12S	28°59'38.21E	Farm Portion
329	MAPOCHSGRONDE	733	2	24°58'1.56S	29°8'45.59E	Farm Portion
330		12	1205	25°4'53.5S	29°18'22.66E	Farm Portion
331	DOELEN	327	3	24°22'53.87S	28°59'35.38E	Farm Portion
332	VLAKLAAGTE	544	1	24°33'54.98S	28°58'23.72E	Farm Portion
333	DERDEKRAALPOORT	543	0	24°30'12.76S	28°58'37.4E	Farm Portion
334	UITLOOP	3	55	24°6'53.04S	29°0'49.56E	Farm Portion
335	KLAVERVALLEY	542	0	24°31'35.56S	28°57'21.76E	Farm Portion
336	BOKPOORT	328	0	24°23'40.68S	28°57'28.88E	Farm Portion
337	DAL JOSAPHAT	461	102	24°16'6.19S	29°0'25.74E	Farm Portion
338	OORLOGSFONTEIN	45	172	24°13'39.31S	29°1'53.49E	Farm Portion
339	UITLOOP	3	27	24°5'58.73S	29°0'56.41E	Farm Portion
340		995	2	24°52'41.73S	29°7'53.85E	Farm Portion
341		12	333	24°59'59.31S	29°10'59.97E	Farm Portion
342	UITLOOP	3	21	24°6'28.63S	29°0'29.59E	Farm Portion
343	GILLIMBERG	861	10	24°2'3.75S	28°59'6.66E	Farm Portion
344	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	121	24°8'59.92S	29°2'5.21E	Farm Portion
345	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	38	24°8'2.68S	29°1'12.98E	Farm Portion
346	UITLOOP	3	35	24°7'43.89S	29°1'12.75E	Farm Portion
347	UITLOOP	3	40	24°7'31.73S	29°0'54.97E	Farm Portion
348	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	45	24°8'25.6S	29°1'43.75E	Farm Portion
349	UITLOOP	3	39	24°7'8.71S	29°0'37.24E	Farm Portion
350		12	194	25°3'51.01S	29°17'32.19E	Farm Portion
351	MAPOCHSGRONDE	733	1	24°57'23.3S	29°9'40.68E	Farm Portion
352		12	1208	25°5'15.8S	29°17'47.68E	Farm Portion

353		12	1258	25°4'27.57S	29°17'36.38E	Farm Portion
354		12	1198	25°4'27.24S	29°18'9.08E	Farm Portion
355	OORLOGSFONTEIN	45	168	24°13'45.14S	29°1'50.65E	Farm Portion
356		12	1261	25°4'13.22S	29°17'21.37E	Farm Portion
357	HARTEBEESTFONTEIN	355	4	24°28'19.76S	28°57'49.04E	Farm Portion
358	ZOETFONTEIN	330	0	24°24'35.22S	28°56'5.7E	Farm Portion
359	HAARDEKRAAL	547	6	24°34'31.43S	28°58'54.49E	Farm Portion
360	GEGUND	332	2	24°25'36.33S	28°57'43.67E	Farm Portion
361	DOELEN	327	4	24°23'7.44S	28°59'5.43E	Farm Portion
362	OORLOGSFONTEIN	45	175	24°13'25.26S	29°1'53.8E	Farm Portion
363	OORLOGSFONTEIN	45	18	24°13'21.14S	29°1'52.98E	Farm Portion
364	PIET POTGIETERSRUST TOWN AND TOWNLANDS 4	44	80	24°11'21.32S	28°58'1.36E	Farm Portion
365	HARINGBULT	699	5	24°53'32.22S	29°5'53.4E	Farm Portion
366	ONVERWACHT	698	1	24°51'59.11S	29°5'9.18E	Farm Portion
367	HARINGBULT	699	5	24°53'32.22S	29°5'53.4E	Farm Portion
368	ONVERWACHT	698	0	24°51'31.15S	29°5'29.64E	Farm Portion
369		996	0	24°51'38.51S	29°7'56.56E	Farm Portion
370		12	281	25°0'58.35S	29°16'9.87E	Farm Portion
371		12	282	25°1'8.75S	29°16'38.42E	Farm Portion
372	CONTERBERG	665	23	24°48'7.23S	29°5'13.05E	Farm Portion
373	CONTERBERG	665	15	24°45'21.96S	29°1'35.47E	Farm Portion
374	GELUKSFONTEIN	547	1	24°35'47.28S	28°59'40.27E	Farm Portion
375	GELUKSFONTEIN	547	5	24°34'41.14S	28°58'39.04E	Farm Portion
376	DOELEN	327	2	24°22'13.41S	28°59'31.42E	Farm Portion
377	VLAKPAN	136	1	24°22'52.89S	29°0'36.67E	Farm Portion
378		12	121	25°1'43S	29°15'39.26E	Farm Portion
379	GRASVALLY	293	72	24°21'30.93S	29°0'9.23E	Farm Portion
380	MAPOCHSGRONDE	733	1	24°57'23.3S	29°9'40.68E	Farm Portion
381		12	551	24°59'50.26S	29°13'47.13E	Farm Portion
382		12	1117	25°1'41.58S	29°16'59.35E	Farm Portion
383		12	643	25°1'37.28S	29°16'35.15E	Farm

						Portion
384		12	784	25°0'21.75S	29°13'47.96E	Farm Portion
385		12	785	25°0'6.5S	29°13'16.63E	Farm Portion
386		12	638	25°2'44.32S	29°17'19.83E	Farm Portion
387		12	630	25°2'30.29S	29°16'59.4E	Farm Portion
388		12	640	25°2'8.84S	29°16'58.06E	Farm Portion
389	GEGUND	332	4	24°24'54.15S	28°58'22.17E	Farm Portion
390		12	652	25°0'50.55S	29°15'49.11E	Farm Portion
391	HARTEBEESTFONTEIN	355	0	24°29'11S	28°58'21.87E	Farm Portion
392	DOELEN	327	8	24°21'55.83S	29°0'17.38E	Farm Portion

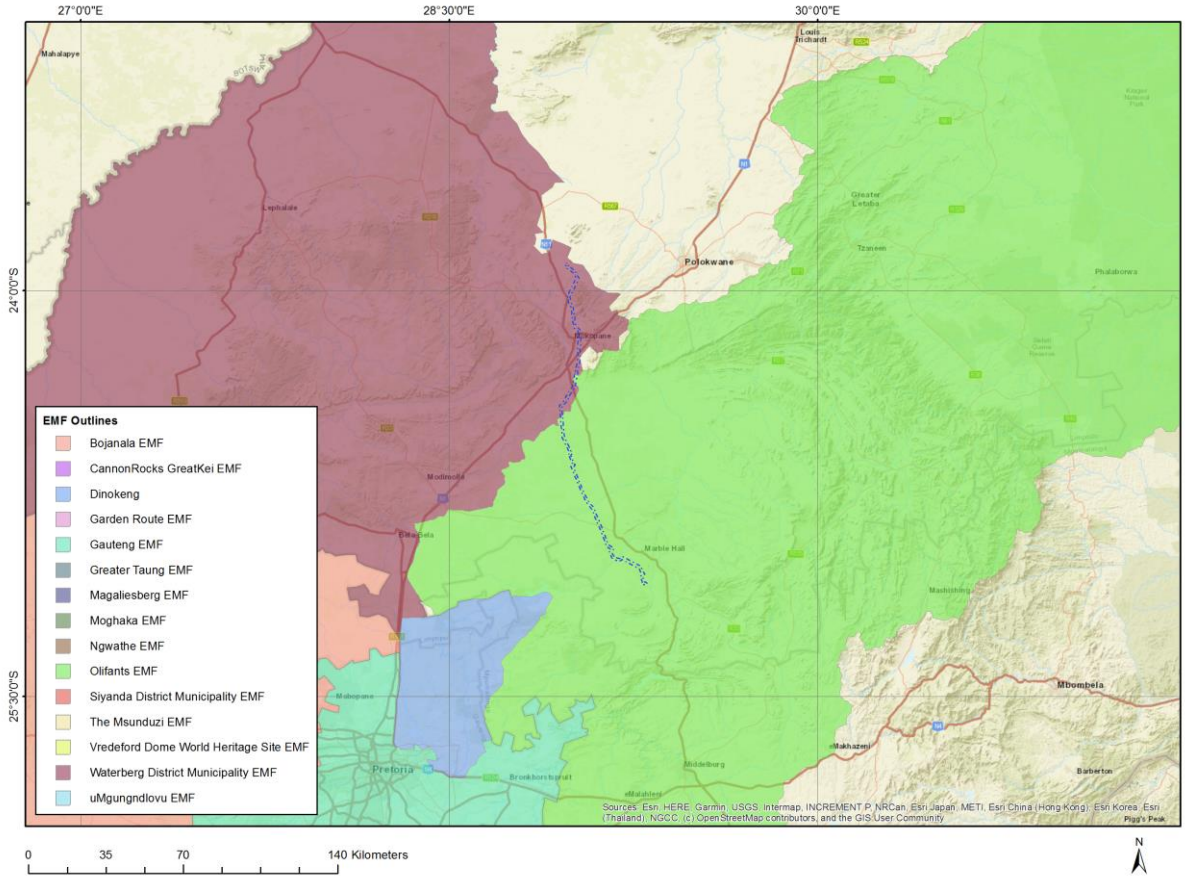
Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/415/AM1	Solar PV	Approved	20
2	14/12/16/3/3/1/1476	Solar PV	Approved	9.3
3	14/12/16/3/3/1/634	Solar PV	Approved	0
4	14/12/16/3/3/2/737	Solar PV	Approved	30
5	12/12/20/2352	Solar PV	Approved	1.8
6	14/12/16/3/3/2/415	Solar PV	Approved	20
7	12/1/9/2-W89	Solar PV	Approved	1.2
8	14/12/16/3/3/2/2158	Solar PV	Approved	25.1

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Waterberg District Municipality EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/WDEMF_Final_EMF_Report.pdf
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46_67_78_80_92_103_122_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Utilities Infrastructure|Electricity|Distribution and Transmission|Powerline**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction	Implication

or prohibition	
Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
Air Quality-Waterberg-Bojanala Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/gg39489_nn1207a.pdf
Main Electricity Transmission Substation	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Distribution_Transmission.pdf
Main Electricity Distribution Substation	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Distribution_Transmission.pdf
South African Protected Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPAD_OR_2023_Q4_Metadata.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme		X		
Defence Theme			X	
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

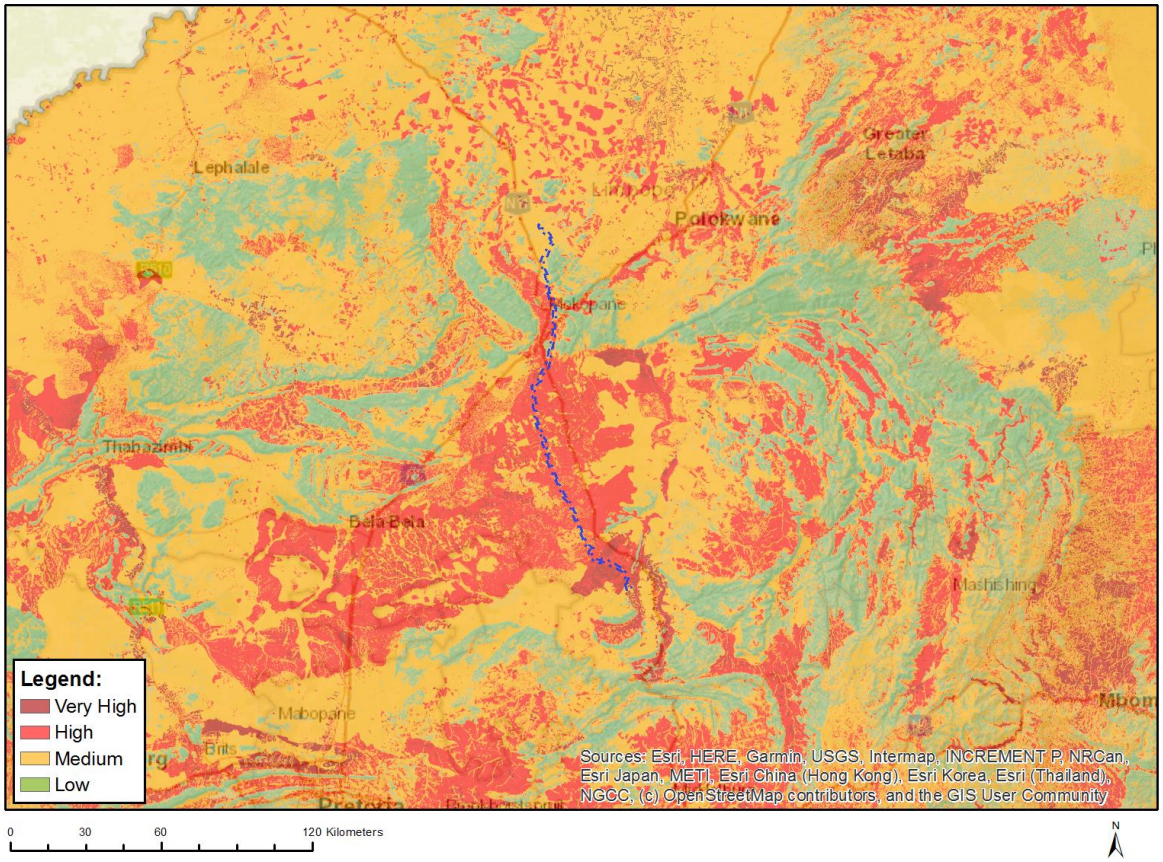
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_P

		rotocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Avian Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Avifauna_Assessment_Protocols.pdf
8	Civil Aviation Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf
9	RFI Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
12	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



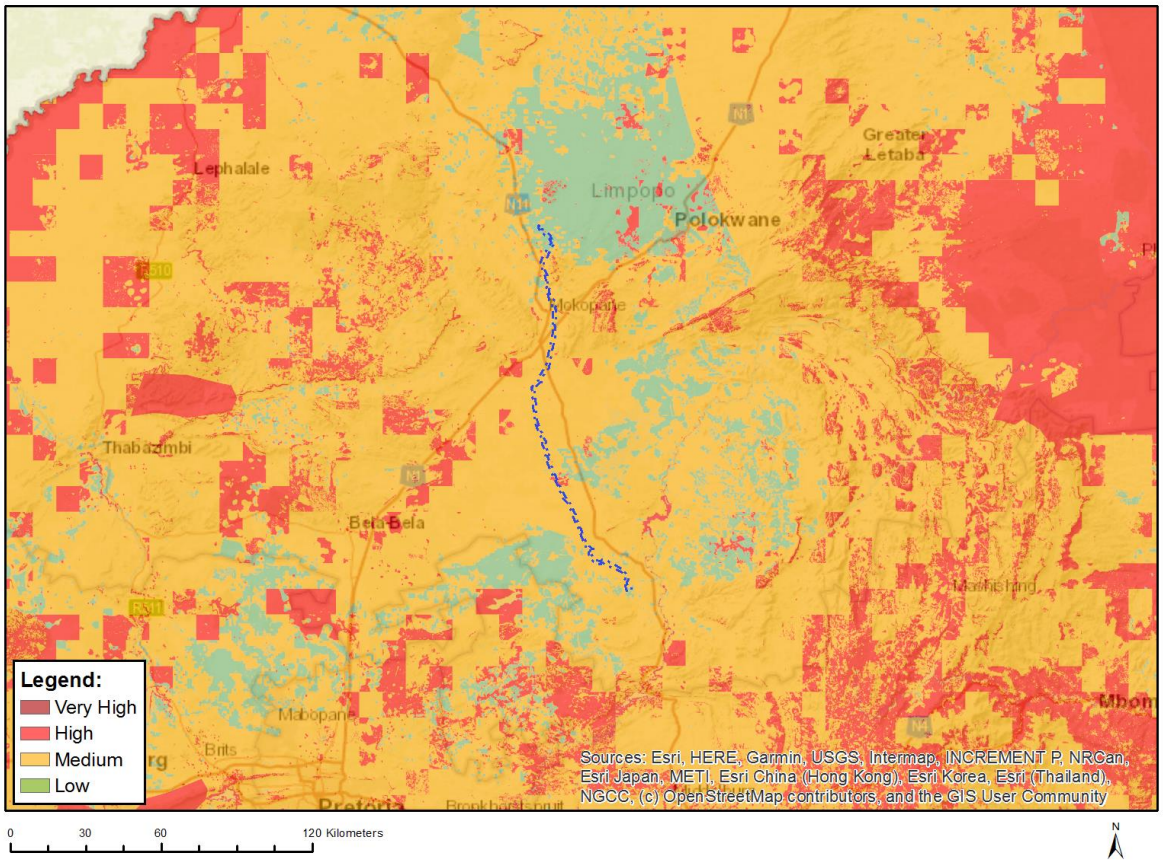
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Old Fields;Land capability;09. Moderate-High/10. Moderate-High
High	Old Fields;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

Very High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high
Very High	Horticulture / Viticulture;Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high
Very High	Horticulture / Viticulture;Land capability;09. Moderate-High/10. Moderate-High
Very High	Pivot Irrigation;Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high
Very High	Pivot Irrigation;Land capability;09. Moderate-High/10. Moderate-High
Very High	Pivot Irrigation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

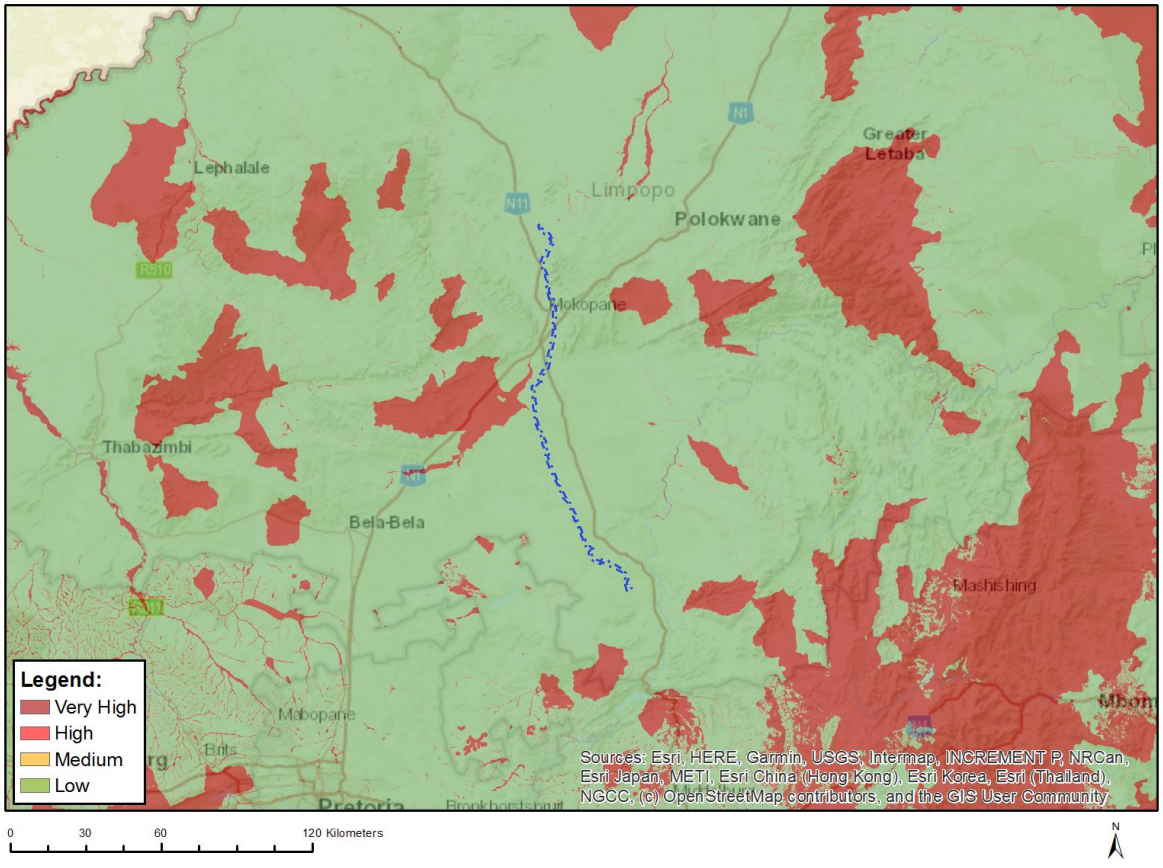
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Aquila rapax
High	Aves-Sagittarius serpentarius
High	Aves-Mycteria ibis

High	Mammalia-Redunca fulvorufula fulvorufula
Low	Subject to confirmation
Medium	Aves-Hydroprogne caspia
Medium	Aves-Aquila rapax
Medium	Aves-Aquila verreauxii
Medium	Aves-Podica senegalensis
Medium	Aves-Sagittarius serpentarius
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Lycaon pictus
Medium	Mammalia-Neamblysomus julianae
Medium	Reptilia-Kinixys lobatsiana

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



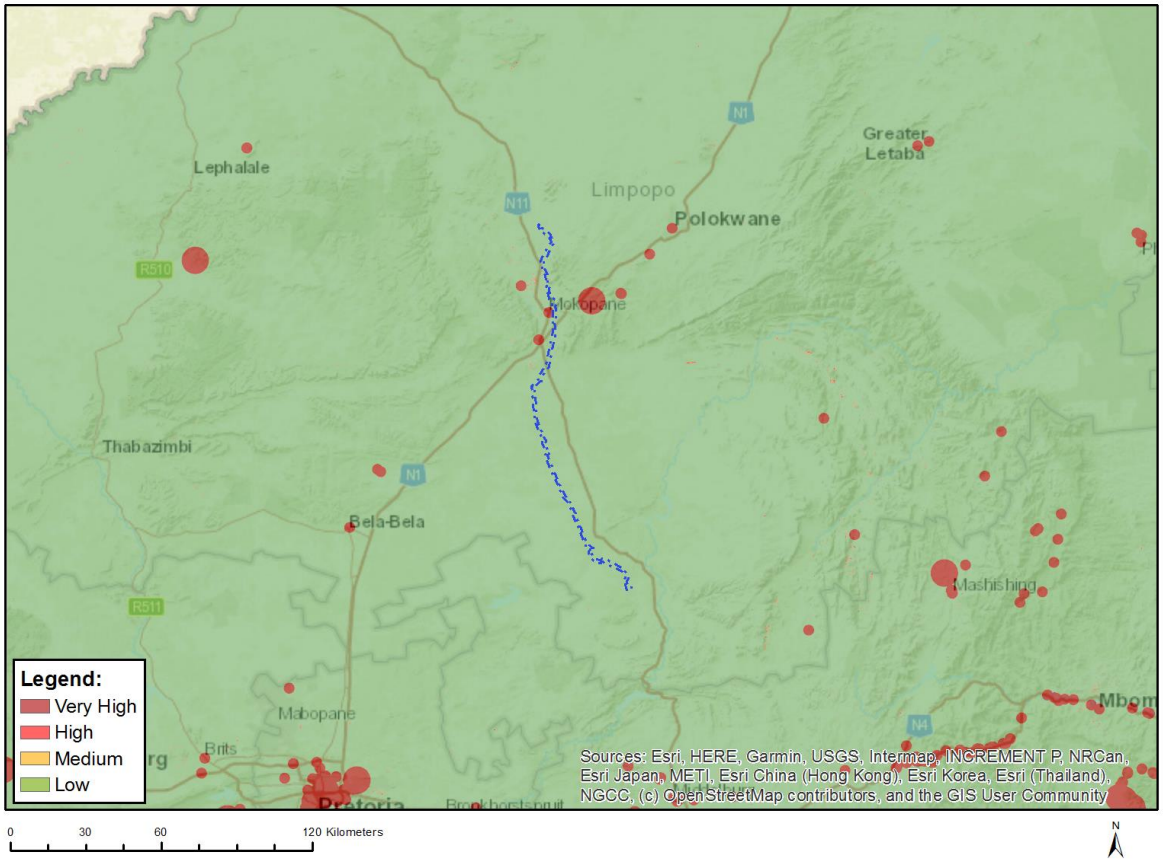
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Rivers_C
Very High	Rivers_D
Very High	Rivers_Z
Very High	Wetlands_Central Bushveld Bioregion (Seep)

Very High	Wetlands_Central Bushveld Bioregion (Valley-bottom)

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

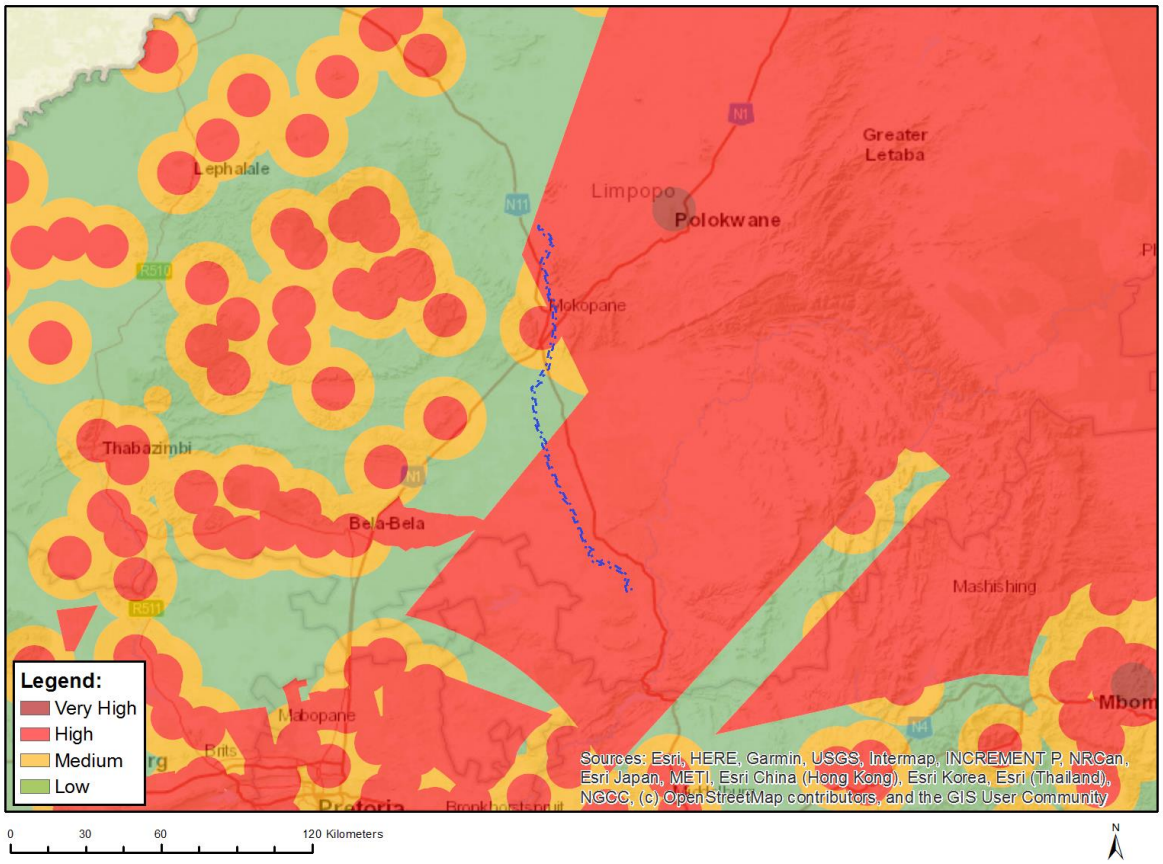


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 150m of a Grade IIIa Heritage site
High	Within 100m of a Grade IIIb Heritage site
High	Within 50m of a Grade IIIc Heritage site
Low	Low sensitivity
Very High	Within 2km of a Grade II Heritage site
Very High	Within 100m of an Ungraded Heritage site

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

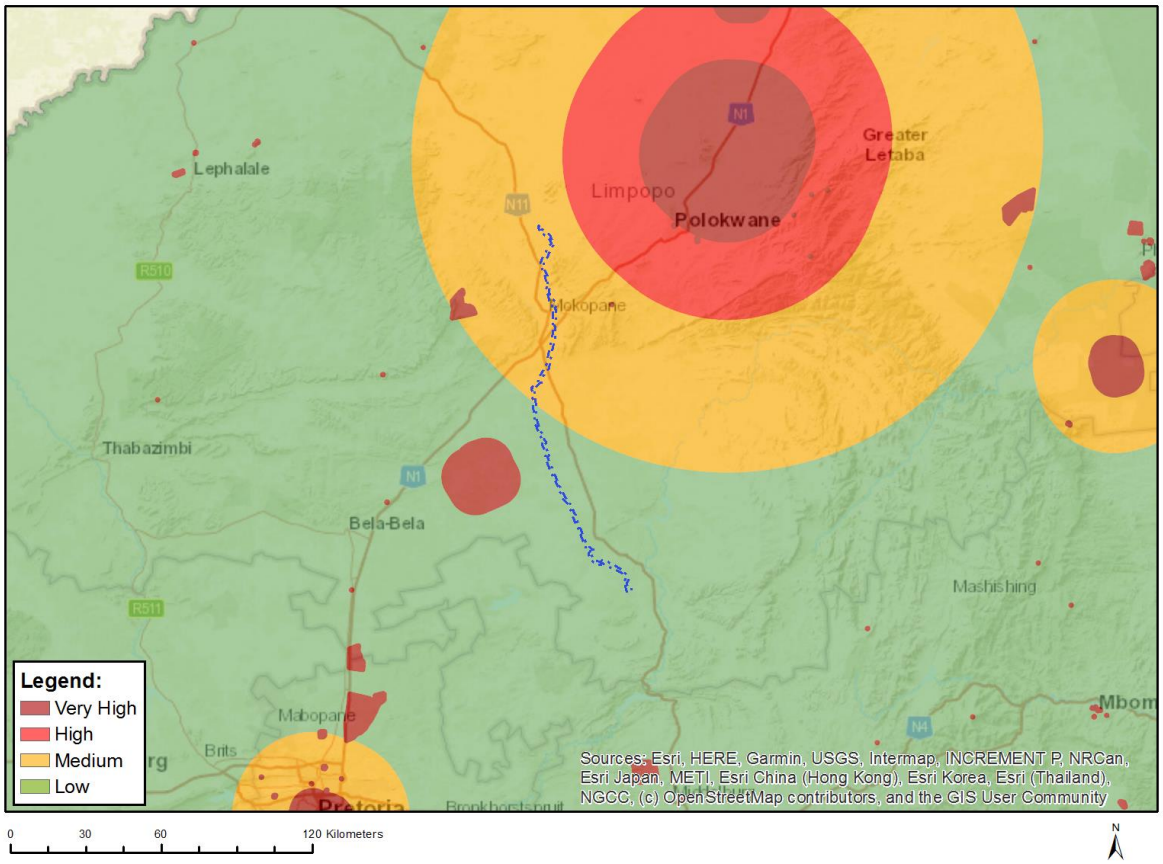


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
High	Dangerous and restricted airspace as demarcated
Low	Low sensitivity
Medium	Between 15 and 35 km from a civil aviation radar
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

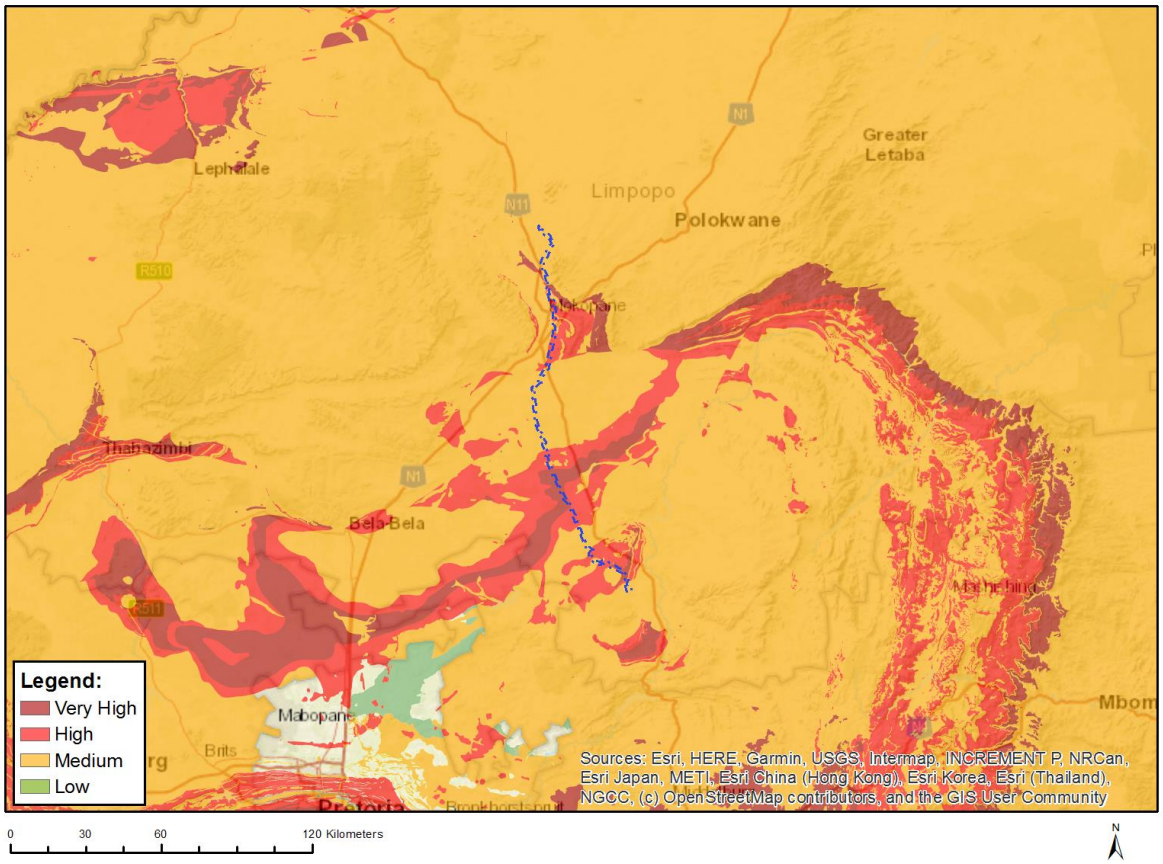


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Military and Defence Site

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

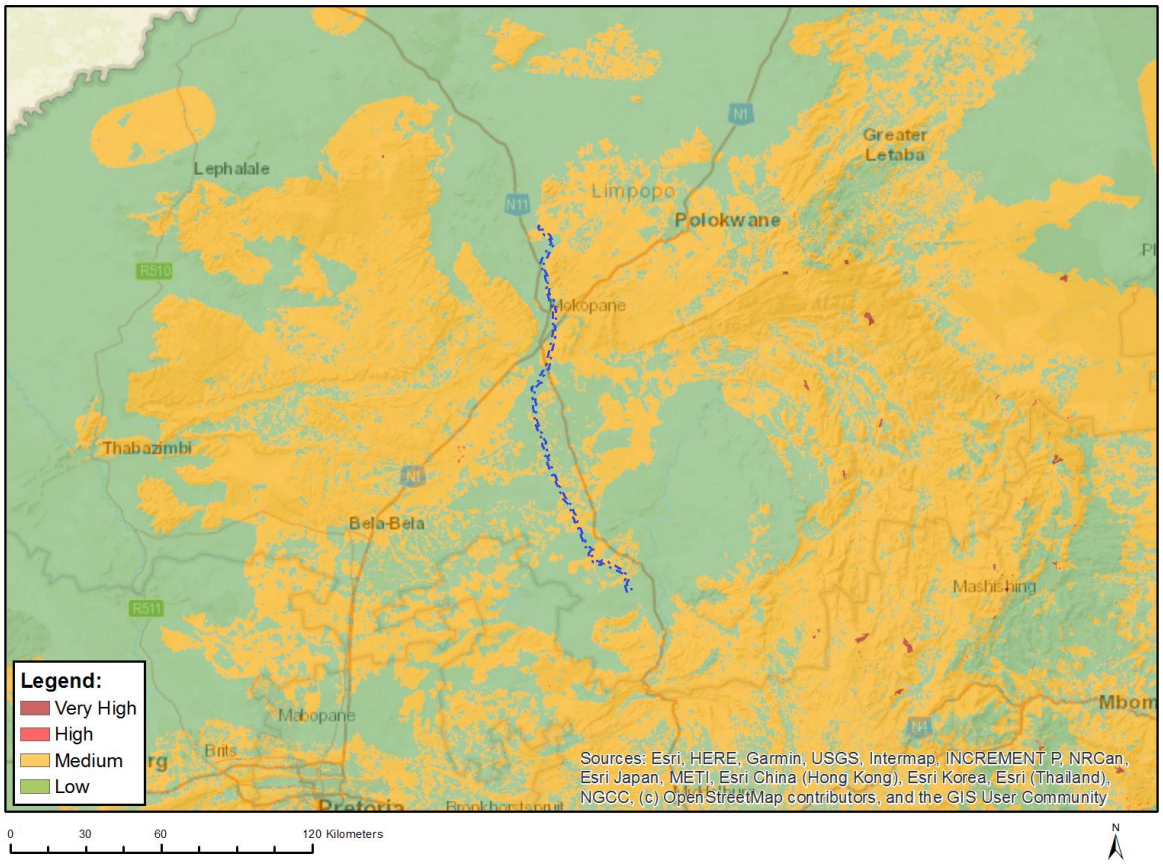


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Features with a High paleontological sensitivity
Low	Features with a Low paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



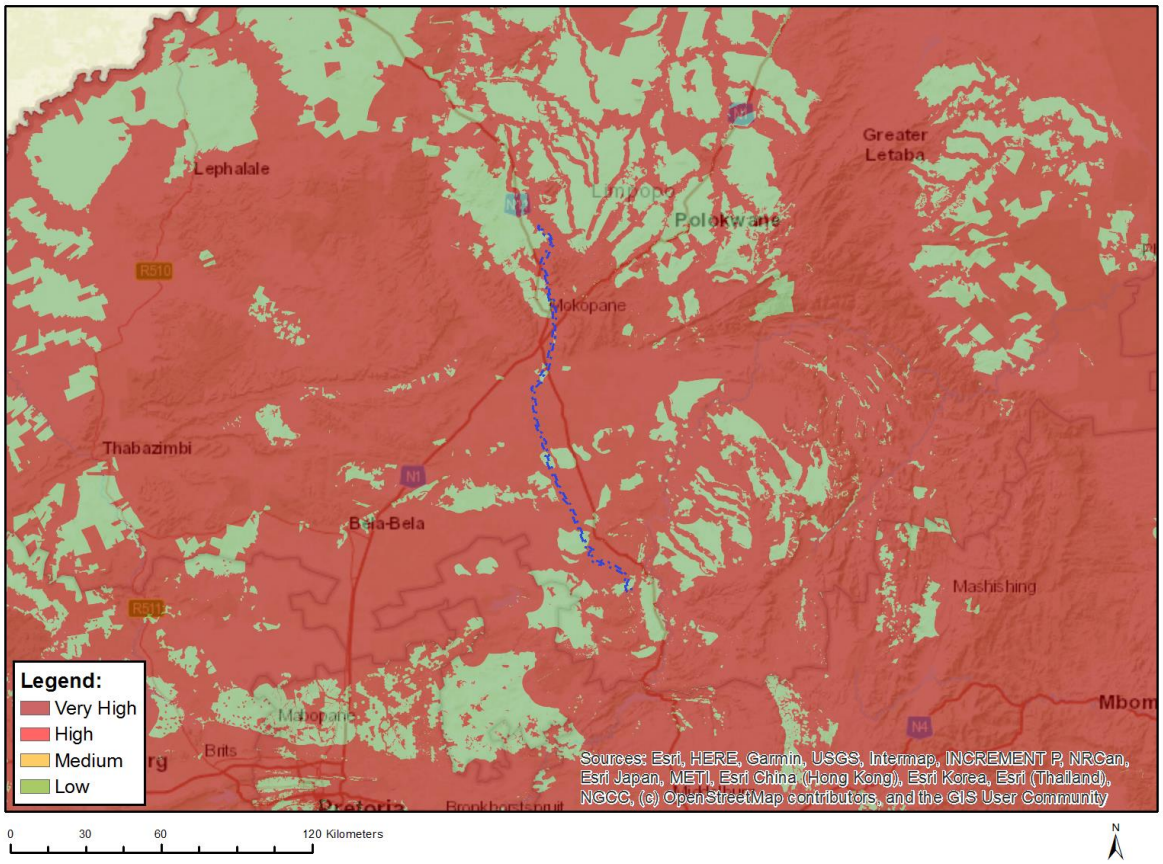
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Sensitive species 1278
Medium	Justicia minima
Medium	Sensitive species 1248
Medium	Prunus africana

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Witvinger Nature Reserve
Very High	Doelen Private Nature Reserve
Very High	Palmer Private Nature Reserve
Very High	Somerset Private Nature Reserve
Very High	Fossil Hominid Sites of SA
Very High	CBA 1
Very High	CBA 2
Very High	ESA 1
Very High	ESA 2
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	VU_Springbokvlakte Thornveld

Limpopo Conservation Plan v.2: Technical Report. Contract Number EDET/2216/2012. Report for Limpopo Department of Economic Development, Environment & Tourism (LEDET) by ECOSOL GIS.

Technical Report · January 2013

DOI: 10.13140/RG.2.2.19227.72484

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LIMPOPO

PROVINCIAL GOVERNMENT

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF

ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Limpopo Conservation Plan v2

Technical Report

(EDET/2216/2012)

SEPTEMBER 2013

Report Title: Limpopo Conservation Plan v.2: Technical Report

Date: 28 September 2013

Version: Final v2

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Principle funding agent: Limpopo Department of Economic Development, Environment & Tourism (LEDET)

Citation: Desmet, P. G., Holness, S., Skowno, A. & Egan, V.T. (2013) Limpopo Conservation Plan v.2: Technical Report. Contract Number EDET/2216/2012. Report for Limpopo Department of Economic Development, Environment & Tourism (LEDET) by ECOSOL GIS.

View of the Polokwane Plateau from Makapansgat Mountains (photograph: Philip Desmet)

Summary

The primary objective of this project was to produce a revised conservation plan for Limpopo Province that conformed to the Bioregional Planning guidelines published by SANBI in 2009.

This document describes how the Limpopo Conservation Plan version 2 (LCPv2), and its two primary products - the map of Critical Biodiversity Areas and associated land-use guidelines – were developed.

The existing Limpopo Conservation Plan (LCPv1) was completely revised by developing and executing a quantitative systematic spatial biodiversity planning methodology that: addresses the deficiencies of the current provincial plan; takes into account the most up-to-date spatial data and institutional and expert knowledge; aligns the methods and terminology of the plan with the national guidelines for the development of bioregional plans; takes into account existing spatial biodiversity planning products; and, involves skills transfer through working with LEDET staff on the development of the CBA map and GAP assessment.

The land cover and protected area data gathered shows that over three quarters of Limpopo is in a natural or near natural state (85%), with urbanisation (2.6%) and agriculture (11.4%) covering 15% of the province. Formal protected areas cover just over 11% of Limpopo.

There are 56 vegetation types in Limpopo. Of these, 24 (42%) are endemic to the province. According to NEMBA 2009, 7 of the 56 vegetation types found in Limpopo are threatened; 1 of these is considered critically endangered (Woodbush Granite Grassland) and 6 are considered vulnerable (Springbokvlakte Thornveld, Rand Highveld Grassland, Northern Escarpment Dolomite Grassland, Lowveld Riverine Forest, Tzaneen sour Bushveld and Legogote Sour Bushveld). This represents 8.7% of the Limpopo Province. On the basis of the provincial focus of this assessment we motivate for Tzaneen Sour Bushveld to be considered endangered (from Vulnerable), and for Sekhukhune Plains Bushveld to be considered vulnerable (from least threatened).

There are also 5 listed threated, non-vegetation type ecosystems in Limpopo, namely: Malmani Karstlands, Sekhukune Mountainlands, Sekhukune Norite Bushveld, Blouberg Forest and Mapungubwe Forest. Together these ecosystems make up just over 1% of the province

The protected areas gap analysis which assesses protection levels of the habitats in the province indicates that an ***additional*** area equivalent to 85% of the current protected area network (~ 11619km^2) needs to be added to the protected area estate in order to achieve the biodiversity targets. How to achieve this objective is the subject of the provincial protected area expansion strategy

The systematic conservation planning process resulted in 40% of the province being identified as Critical Biodiversity Areas (CBA1 22% and CBA2 18%). Ecological Support Areas cover a further 22% of the province, of which 16% are intact natural areas (ESA1) and 7% are degraded or areas with no natural remaining which are nevertheless required as they potentially retain some value for supporting ecological processes (ESA2).

The Critical Biodiversity map links to the land-use guidelines tables which are based on a combination of products from Mpumalanga, KNZ, and Gauteng provinces. These guidelines and recommendations are aimed at informing strategic decision making and facilitating biodiversity conservation in priority areas outside the protected area network.

Table of Contents

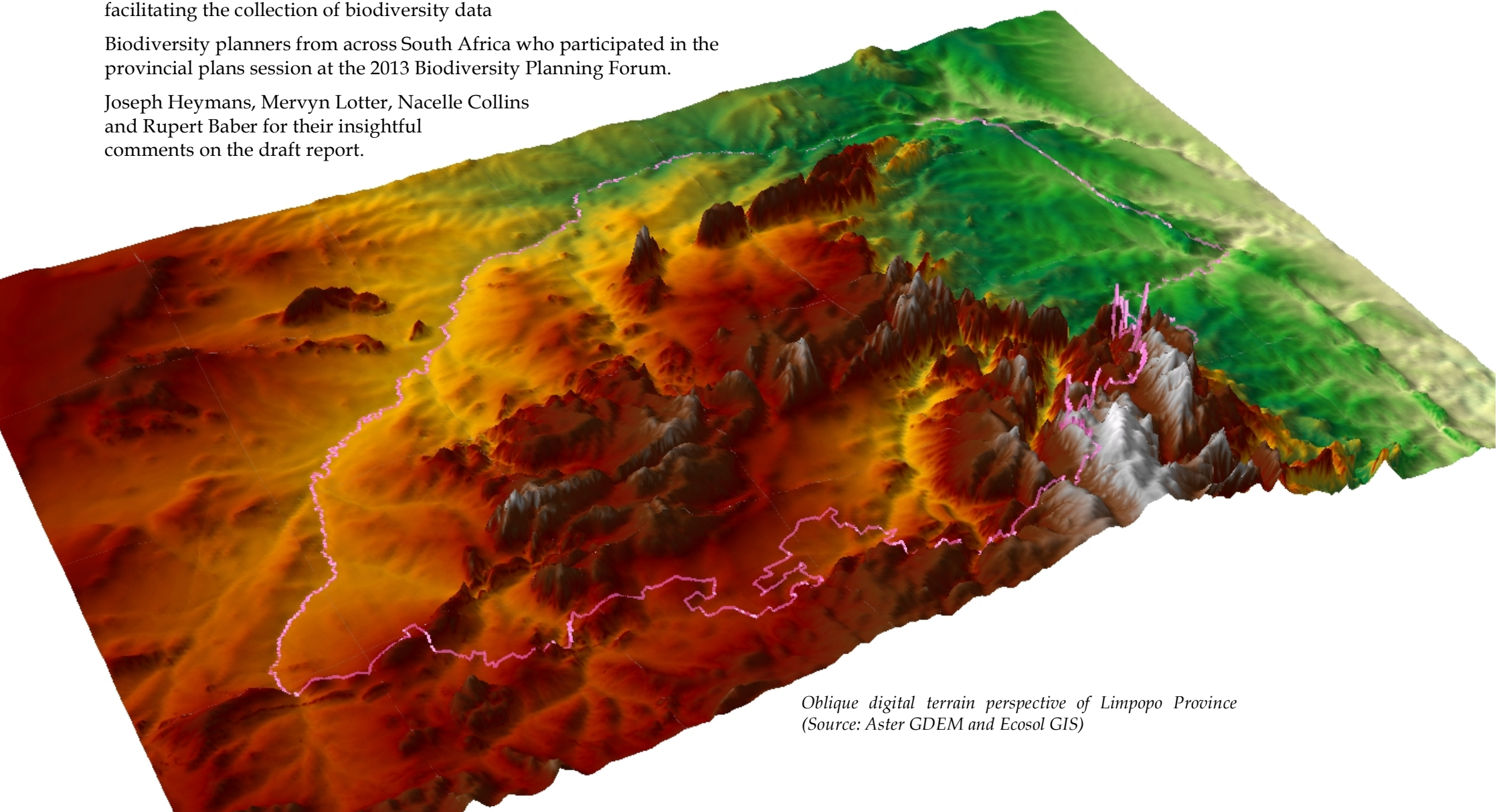
Acknowledgements

Our thanks must be extended to a large group of officials and interested parties who contributed opinion, data and comments without which this plan would not have been possible.

Bronwyn Egan, John Burrows, Mervyn Lotter, Ian Gaigher, Jabu Linden, Joseph Heymans, Donald Gibson, Ernst Retief, Warwick Tarboton, Derek Engelbrecht, Riaan Visagie, Lize von Staden, Kelly Marnewick, Lizaan Nel are thanked for facilitating the collection of biodiversity data

Biodiversity planners from across South Africa who participated in the provincial plans session at the 2013 Biodiversity Planning Forum.

Joseph Heymans, Mervyn Lotter, Nacelle Collins and Rupert Baber for their insightful comments on the draft report.



Oblique digital terrain perspective of Limpopo Province (Source: Aster GDEM and Ecosol GIS)

Introduction

This document describes how the Limpopo Conservation Plan version 2 (LCPv2), and its two primary products - the map of Critical Biodiversity Areas (CBAs) and associated land-use guidelines – were developed.

The objectives of this project were to revise the existing Limpopo Conservation Plan (LCPv1) by developing and executing a quantitative systematic spatial biodiversity planning methodology that:

- Addresses the deficiencies of the current provincial plan;
- Takes into account the most up-to-date spatial data and institutional and expert knowledge;
- Aligns the methods and terminology of the plan with the national guidelines for the development of bioregional plans (DEAT 2009);
- Takes into account existing spatial biodiversity planning products; and,
- Involves skills transfer through working with LEDET staff on the development of the CBA map and GAP assessment.

Purpose of the Conservation Plan

The purpose of the LCPv2 is to develop the spatial component of a bioregional plan (i.e. map of Critical Biodiversity Areas and associated land-use guidelines).

Bioregional plans are one of a range of tools provided for in the Biodiversity Act[1] that can be used to facilitate biodiversity conservation in priority areas outside the protected area network. The purpose of a bioregional plan is to inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas or Critical Biodiversity Areas (CBA) together with accompanying land-use planning and decision-making guidelines. The conservation plan applies a target driven systematic spatial biodiversity planning methodology to develop this map and it is based on the best available biodiversity and context data, and an explicit set of biodiversity conservation targets. The resultant map represents the minimum area necessary to maintain biodiversity pattern and ecological processes in the landscape, i.e. ecologically functional landscapes.

Bioregional plans are intended to feed into a range of multi-sectoral planning and assessment processes such as Environmental Management Frameworks (EMFs), Spatial Development Frameworks (SDFs), Strategic Environmental Assessments (SEAs), Environmental Impact Assessments (EIAs), Biosphere Reserves, and to support and streamline environmental decision-making. A bioregional plan is not in itself a multi-sectoral planning or assessment tool, but rather is the biodiversity sector's input into other planning and assessment processes.

This conservation plan is consistent with NEMA principles and the Biodiversity Act. It is designed to support integrated development planning and sustainable development by identifying an efficient set of Critical Biodiversity Areas that are required to meet national and provincial biodiversity objectives, in a configuration that is least conflicting with other land uses and activities. Where alternatives are available, the Critical Biodiversity Areas are designed to avoid conflict with existing IDPs, EMFs and SDFs in the region by favouring the selection of sites that are least conflicting with other land-uses.

Limitations of the Conservation Plan

Incomplete biodiversity datasets and generally coarse mapping of biodiversity features impose limitations on this plan, which although they do not restrict the application of the plan, need to be recognized and appropriately accommodated when it is used:

[1] National Environmental Management: Biodiversity Act (No. 10 of 2004)

1. The conservation plan does not replace the need for site assessments, particularly for Environmental Impact Assessments. Although it is based on a systematic conservation plan using best available data, this does not remove the need for on-site verification of the identified Critical Biodiversity Areas. Further, due to incomplete knowledge of the distribution of biodiversity features, it is likely that additional or alternative areas will need to be identified in the future as we gain a better understanding of rare, threatened, cryptic and understudied species.;
2. This conservation plan is designed to be used at a scale of approximately 1:50 000. Although it can be used at a finer scale, this requires specialist interpretation of the specific biodiversity features identified in the systematic biodiversity plan;
3. Ongoing changes in land-use, especially loss of natural habitat, as well as changes in the distribution of biodiversity (e.g. in response to climate change), will impact on the identified network of Critical Biodiversity Areas. It is likely that in future additional areas would need to be designated as Critical Biodiversity Areas in order to meet biodiversity targets in future iterations of the plan.

Project Products

This project includes the following products:

1. All spatial data and a data dictionary (page 71)
2. Provincial Protected Area Network GAP analysis (page 17)
3. A map of Critical Biodiversity Areas (page 48)
4. Land-use guidelines associated with CBA categories (page 51)
5. A stand alone GIS viewer (separate DVD)
6. Delivery of the CBA map to SANBI's on-line biodiversity GIS viewer (BGIS)
7. Records of consultation documented in project progress reports (see project progress reports)

Input Data

This section summarises the input data used to develop the map of Critical Biodiversity Areas. A wide range of spatial data is used in the systematic conservation planning process. The primary types of data are: land cover and land use, map of protected areas, and maps depicting biodiversity pattern and ecological process features, and their proxies. Cost or "threat" layers indicating negative pressures on biodiversity are usually a combination of land cover and land use data sets from a wide range of sources; the protected area information is usually provided by the provincial conservation agency (in this case LEDET), and the biodiversity feature and process layers are built from multiple sources, some developed by ECOSOL GIS specifically for this project but mostly we have used existing datasets. We have mostly used existing data sources with limited modification where warranted. The current project had exteremely limited scope for the development of new spatial datasets and no scope for collection of field data. The project therefore concentrated on the key areas which would deliver an improved spatial product. These were: landcover, planning units, corridors, vegetation units in priority areas, aquatic data, and species distributions (especially threatened birds, plants, butterflies and reptiles).

Land Cover

Land cover is one of the most important information layers used in the conservation assessment. Areas with no natural habitat are generally considered to have very little biodiversity value, therefore a land cover map tells us at a coarse scale how much biodiversity is left and where this is located. In the absence of any actual biodiversity data we can still make inferences about the state of the natural environment and the probable distribution of remaining biodiversity features based purely on the land cover. An up-to-date representation of current land-cover is of key importance to the conservation and planning fraternity in the South Africa, who require a detailed land cover map to help inform decisions on land use. This information layer is the single most important informant in developing a strategy for the conservation of biodiversity in the province.

The land cover data used in this project was produced in July 2012, based on 2009 SPOT 5 imagery (GTI 2012). Limpopo Province is 125,872 km^2 in extent, 107, 1467 km^2 is in a natural or near natural state (85%). Table 1summarises the land cover at two levels of classification.

Table 1. Land cover of Limpopo based on 2009 SPOT 5 imagery (GTI 2012)

Level 1 (ha)			Level 2 (ha)		
Natural	10 717 467	85%	Natural	10 661 427	85%
			Wetlands/Water	16 991	< 1%
			Degraded	39 049	< 1%
Not Natural	1 869 816	15%	Infrastructure	317 794	3%
			Cultivation	1 454 300	12%
			Man Made Water	19 449	< 1%
			Plantation	78 273	1%
Total	**12 587 283**			**12 587 283**	

Protected Areas

The formal protected area net (PAN) work in Limpopo is 1,367,044 ha in extent (Table 2). The major contributor to this is the Kruger National Park, which contributes 72% to the provincial PAN. There are 62 formal protected areas (PAs) managed mostly by LEDET and SANParks (Appendix 2). It is important to note that no consolidated geo-referenced database of the protected area system in province exists, and that the dataset created for this study is based on a rapid compilation of information provided by LEDET. It is important that this is addressed in any future Provincial Protected Areas Expansion Strategy. The informal conservation area network in the province is very difficult to estimate as many areas registered as private nature reserve no longer are managed as such, and many active private conservation areas are not on any

official register. The current informal conservation area estimate is 561,185 ha. Note that the informal reserves are used for information purposes and to help guide spatial prioritization, but it is only the formal PAN which contributes towards meeting PAtargets.

Table 2. Summary of formal protected areas in Limpopo Province.

Protected Area Type	Agency	Number	ha	%
National Parks	SANParks	3	1067331	78,1
Provincial Nature Reserves	LEDET	46	271784	19,9
Declared Forest Reserves	DAFF/LEDET	6	6846	0,5
Local Authority Nature Reserves	Polokwane Municipality	1	1751	0,1
World Heritage Sites	LEDET/ SANParks	2	10857	0,8
Other Provincial Nature Reserves	MPTA / NWPTA	4	8473	0,6
Total		**62**	**1367044**	**100**

Existing Spatial Planning Products

A prerequisite of the CBA development process was alignment with existing spatial planning products in the province. The following spatial planning products were informed the developing this CBA map:

1. Limpopo Conservation Plan version 1 (Nel *et al.*, 2011)
2. Waterberg Biosphere Reserve (2011)
3. Kruger to Canyon Biosphere Reserve (2008)
4. Limpopo Province and District Municipality Spatial Development Frameworks (2007)
5. Olifants and Letaba river Catchment Area Environmental Management Framework (OLEMF, 2010)
6. Waterberg Environmental Management Framework (2010)
7. SIP 1 - Unlocking the northern mineral belt with Waterberg as the catalyst (2013)
8. Limpopo Geospatial Analysis Platform Application (July 2013)

Full alignment between the CBA map and existing spatial planning products is not always achieved for the following reasons:

- A key difference between the CBA map and all other existing spatial products is that whereas all other products are based on essentially expert-based assessments or overlay of input information layers, the CBA map is based on a quantitative systematic conservation planning analysis that is underpinned by a nationally accepted set of biodiversity targets and an extensive spatial dataset.
- The data quality and spatial resolution of this analysis is in most cases better than older planning products thereby allowing for more detailed identification of important areas for biodiversity.
- In some cases irreplaceable biodiversity features are located in areas of conflict with existing spatial plans, and although every attempt is made to avoid these areas, in these cases, no viable alternatives can be identified at a provincial scale. These conflict areaswill need to be subject to detailed site level assessment and planning to ensure that appropriate decisions are made.

It is important therefore when comparing the CBA map to other spatial planning products to understand the differences in the input data and methodology underlying the development different products. The underlying principles and intent are in most cases the same it is just the input data, spatial resolution and analysis methodology are different. In a geographic area all existing spatial planning products are relevant and need to be considered in the land-use planning and decision making process but it is essential to understand how each product was derived and their relative strengths and limitations.

Terrestrial Habitats

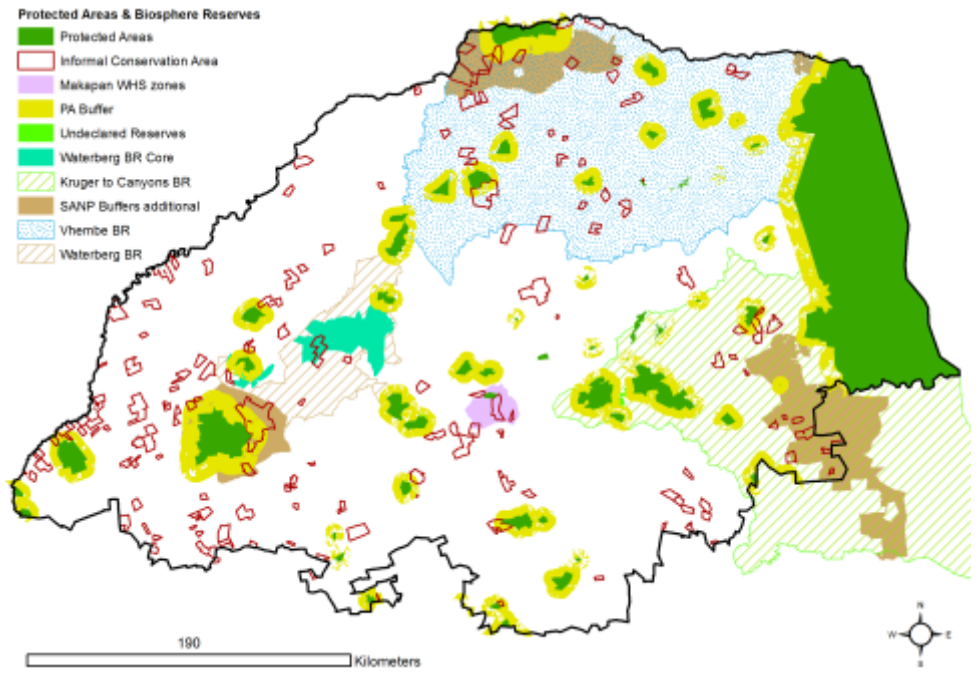
South African vegetation types (Mucina and Rutherford 2006) are the primary biodiversity pattern information layer used in the conservation plan. As no province-specific vegetation map exists the national map was used with modifications to the Woodbush Granite Grassland vegetation

type and some forest types. These modifications were made based on more detailed forest datsets and mapping of key units in conjunction with LEDET experts. There are 56 vegetation types in Limpopo Province. Of these, 24 (42%) are endemic to the province and a further 9 (16%) are near-endemic (i.e. >80% of national extent in Limpopo) (Figure 2).

Other Biodiversity and Context Data

Table 3 provides a brief summary of the data layers used in the conservation plan. TheConservation Planning Approach Section provides details on how this information was used in the plan and more details on the specific biodiversity datasets.. Appendix 3 is a data dictionary of all input and output data layers.

Table 3.Summary of input information layers used in systematic planning process, details of methodology can be found in next section.

<table>
<tr>
<td> 
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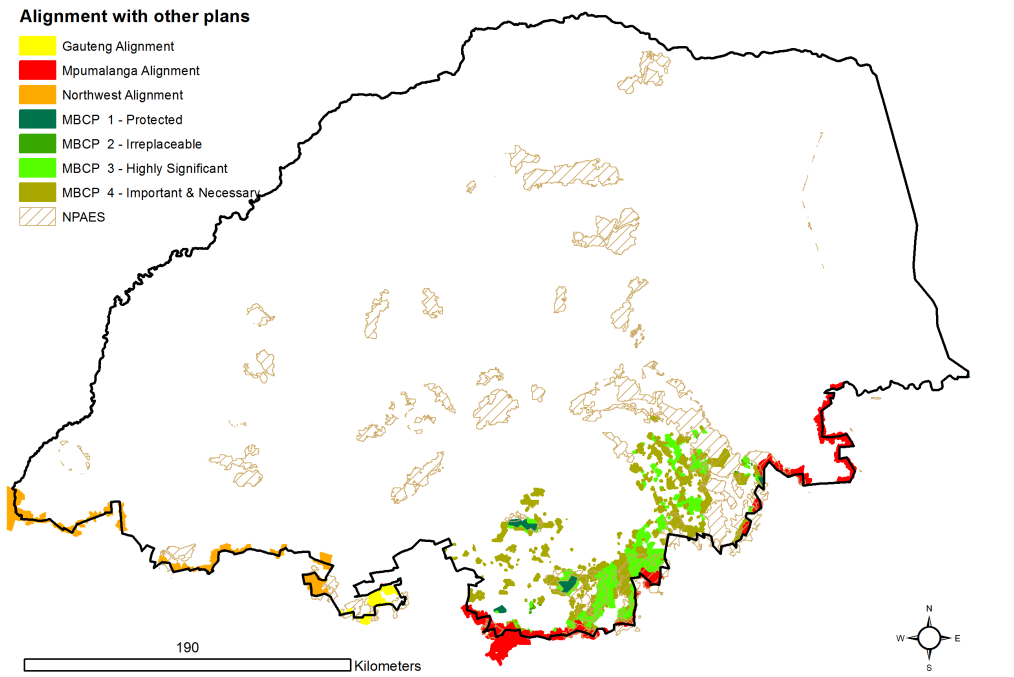
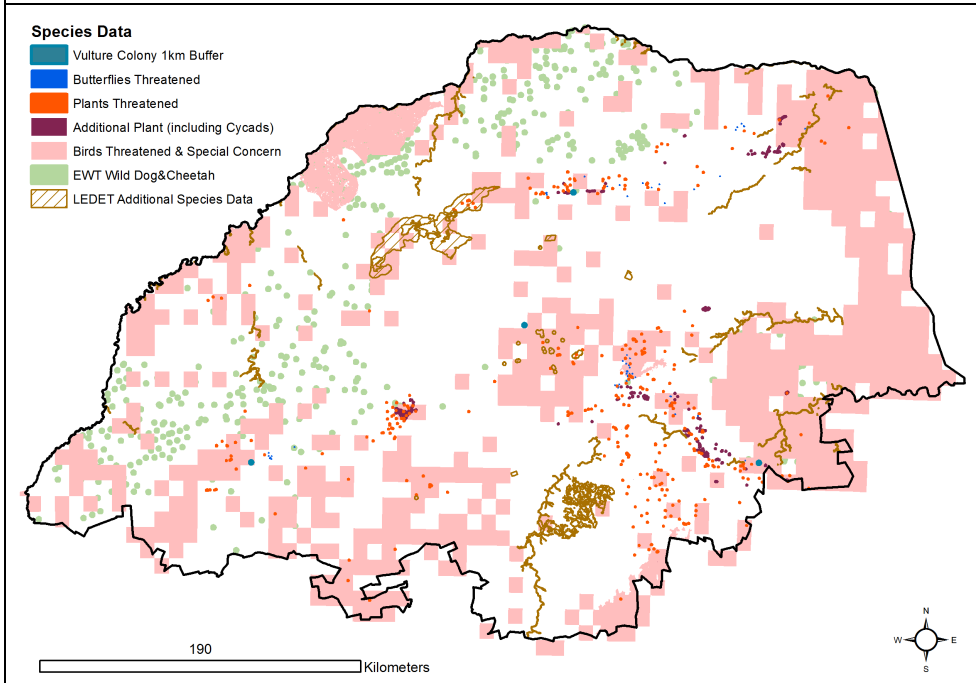
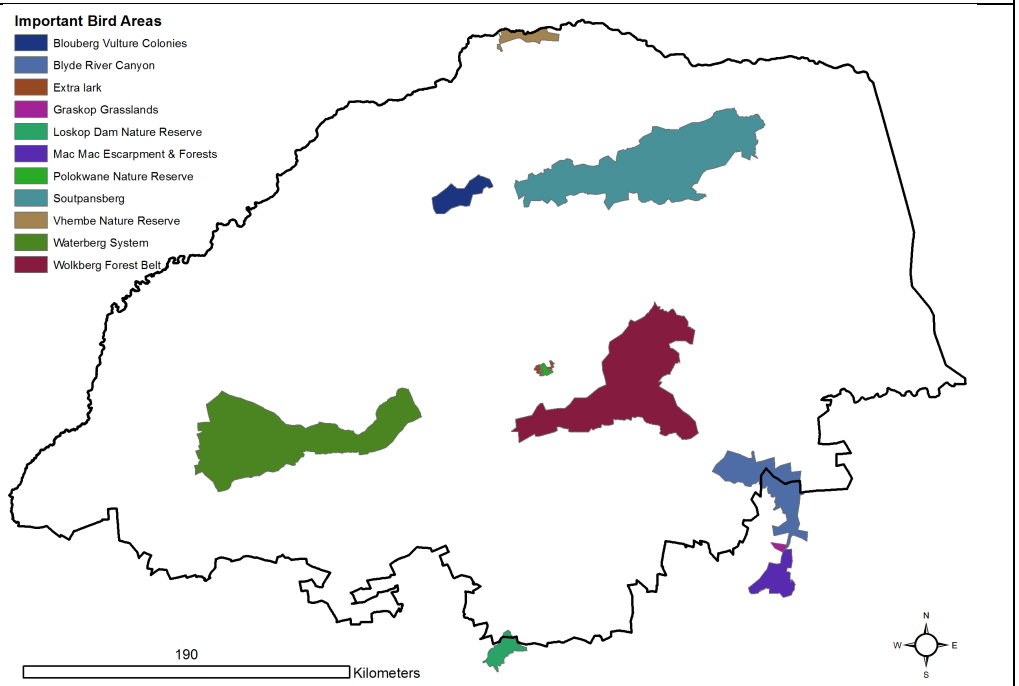
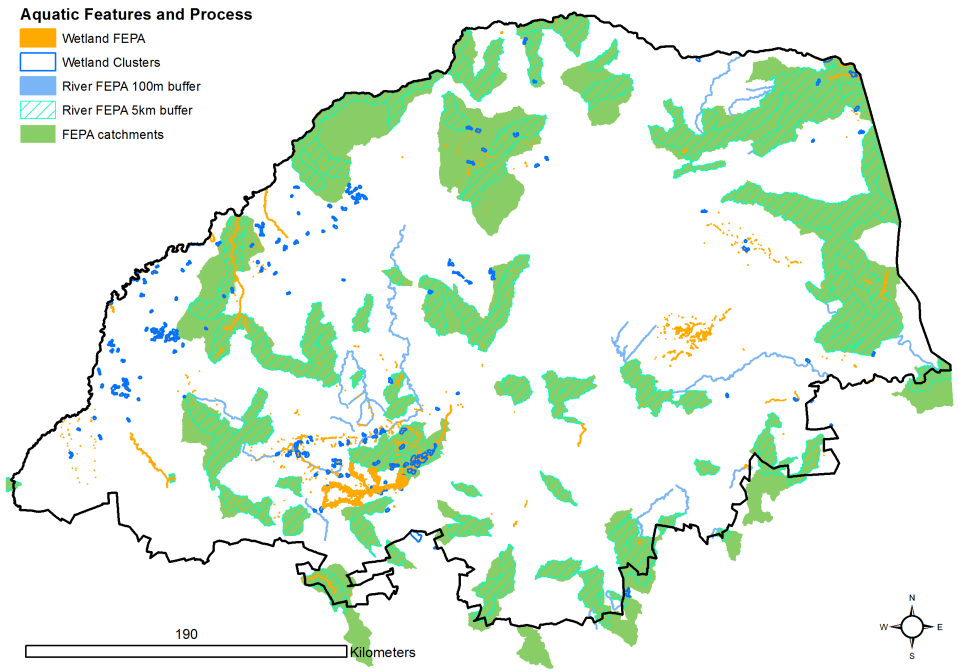
<td> 
</td>
</tr>
<tr>
<td>Protected areas and landscape conservation initiatives
Protected Areas (LIM_PA.shp)
PA Buffers (5km for provincial nature reserves and 10km for national parks) (id 134)
Undeclared Provincial and local reserves reserve (id 132)</td>
<td>Alignment with existing plans
Adjacent provincial systematic biodiversity assessments for Gauteng (id 141), North West (id 139) and Mpumalanga (id 142).
Sekhukhune land priorities from MBCP v1 (id 136-137).
National Protected Areas Expansion Strategy priority areas (id 140).</td>
</tr>
</table>

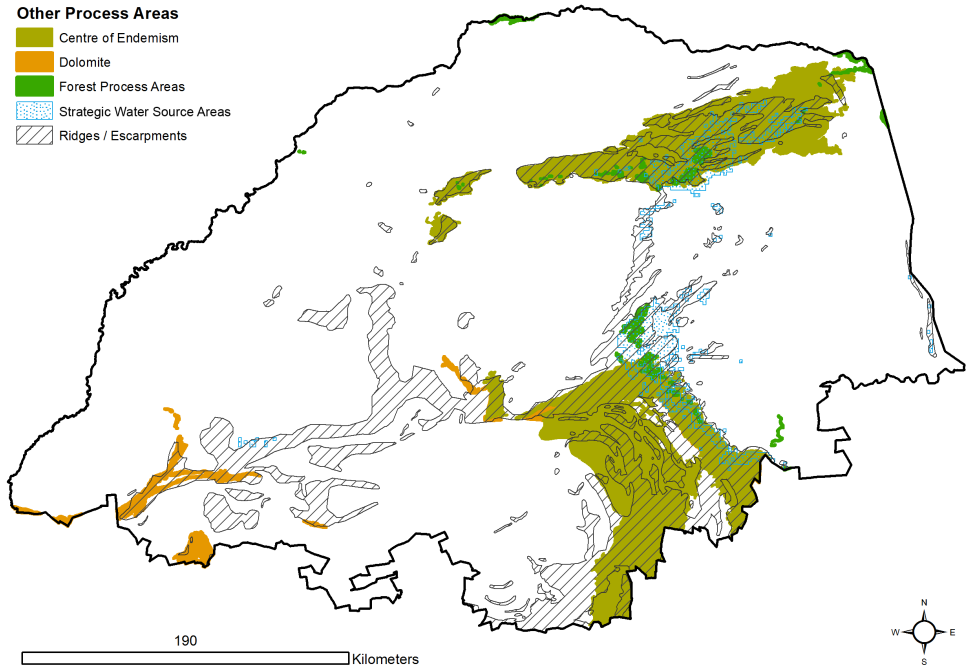
Core and Buffers of Waterberg biosphere reserve (id 133&182) Vhembe TFCA and Kruger to Canyons planning domains (id 180&181) Makapan and Mapungubwe WHS core and buffer (id 130) Additional SANP buffers (id 179) Informal conservation areas (id 178) Data References: Protected Areas, Undeclared Reserve, Biosphere Reserves, WHS & Informal Conservation Areas; LEDET 2013; Additional SANParks Buffer; SANParks 2013 PA Buffers; ECOSOL GIS 2013	Data References: Gauteng Bioregional Plan (City of Tshwane); ECOSOL GIS 2012 North West Biodiversity Assessment 2008 ; NWDACE 2008 Mpumalanga Biodiversity & Conservation Plan version 2; MPTA 2013 Mpumalanga Biodiversity and Conservation Plan version 1; MPTA 2008 National Protected Areas Expansion Strategy; DEA 2008
	
Plant and animal features SANBI threatened plant species data (id 80-121) Note that for clarity these are shown as a single feature on the map Additional threatened plant species data from Mervyn Lotter (id 268-275) Additional Cycad data from LEDET (id 276-284) Threatened bird species from SABAP2 & species of special concern (id 143-173)	**Important bird areas (ecological process)** IBA identified and refined through expert workshop with Bird Life and ECOSOL (id 188-199) Data References: Important Bird Areas; Bird Life Africa 2013 (modified by ECOSOL GIS)

LEDET additional herpetological data (id 69-78)
Wild Dog and Cheetah data from EWT (id 183-184)
Vulture Colonies (id 285)

Data References:
Plant Data; SANBI 2013, LEDET 2013, MBCP 2013.
Cycad Data; LEDET 2013; Bird Data; SABAP2 2013
Additional Herp Data; LEDET 2013; Wild Dog and Cheetah Data; EWT 2013
Butterfly Data; SANBI 2013; Vulture Colonies; Bird Life Africa 2013

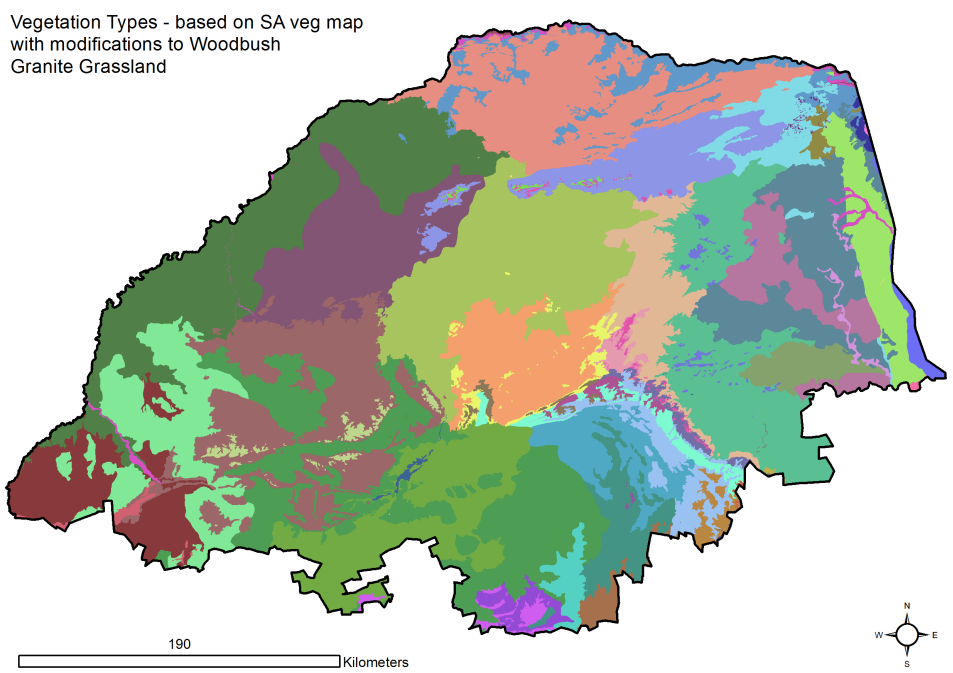
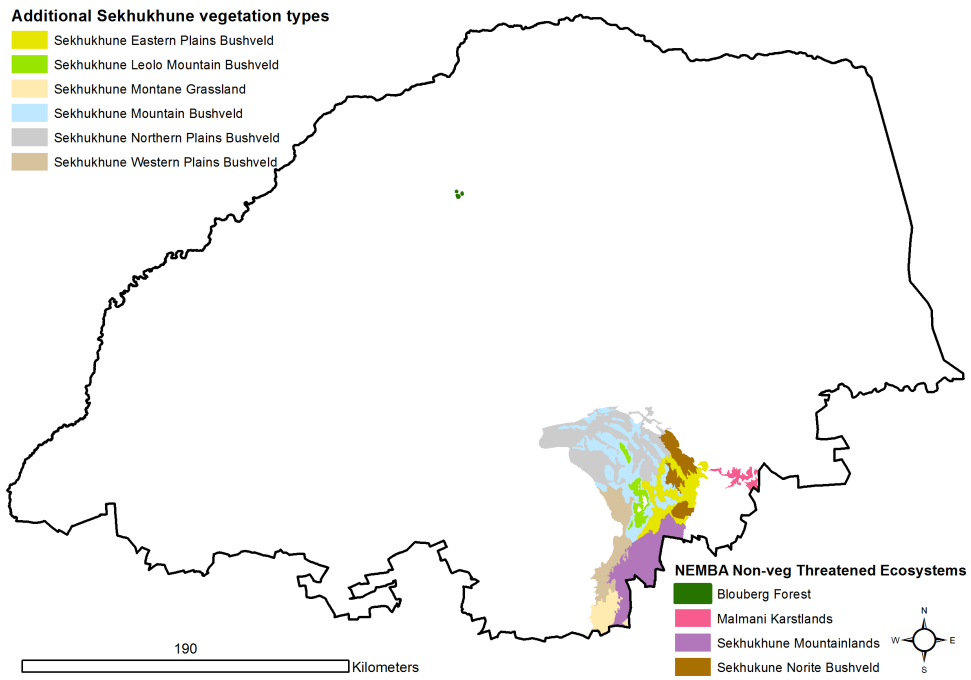


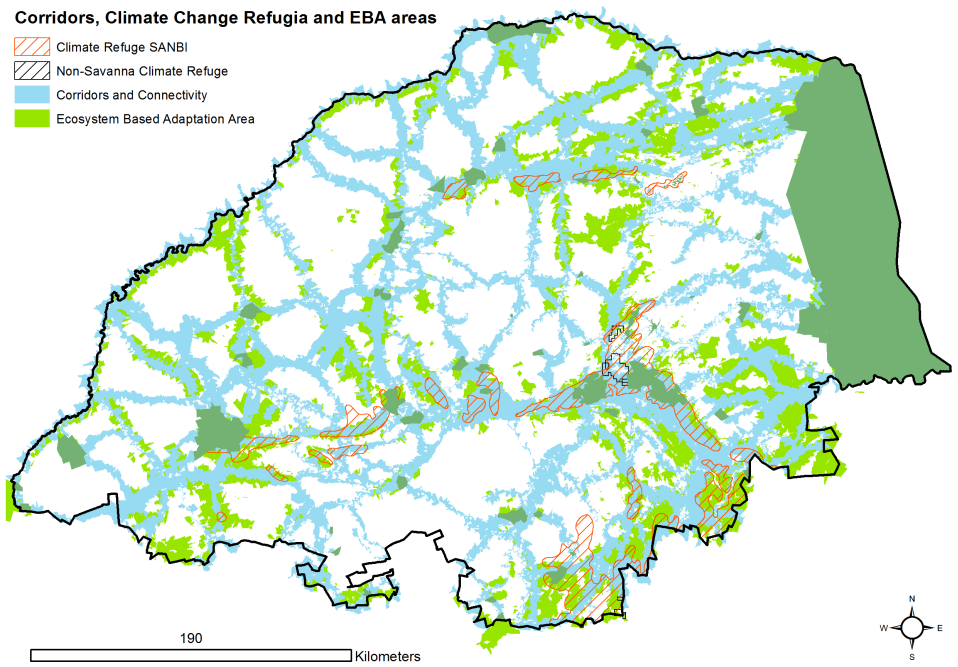
FEPA rivers, wetlands and catchments
Wetlands and wetland clusters identified in FEPA
Priority river reaches identified in FEPA buffered by 100m and 5km
Priority catchment areas identified in FEPA
All rivers identified as FEPAs for threatened fish species are included, similarly all Fish Corridor and Fish Support Area rivers are at very least included as ESA, and all Fish FEPA catchments are at least ESA.

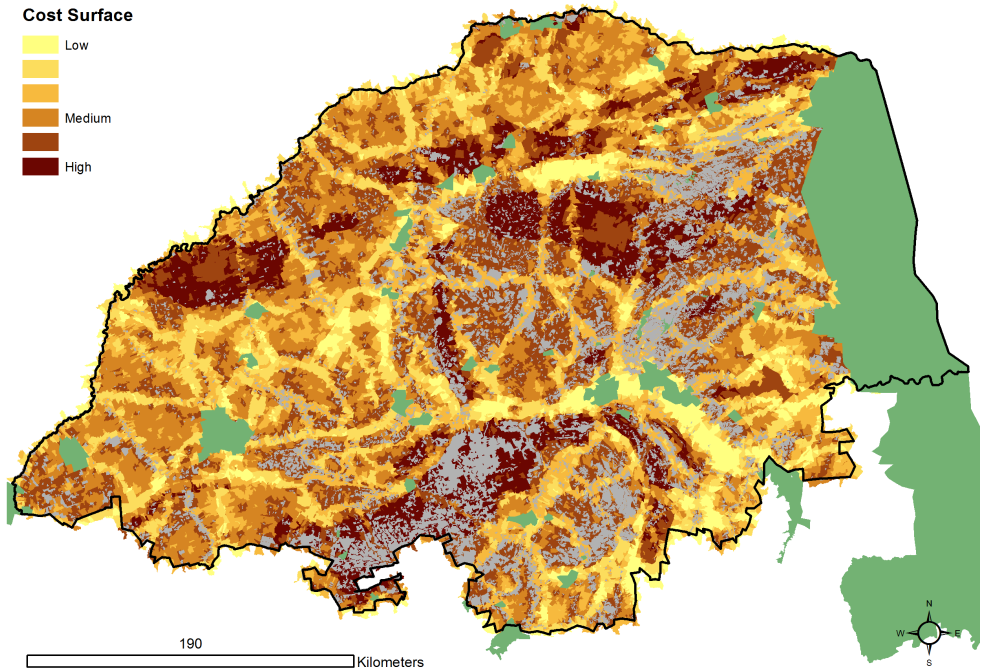


Ecological process layers
Centres of endemism
Dolomite regions with unique biodiversity
Forest pattern and process areas
Strategic Water Source Areas

Data References:

Data References: Fresh Water Ecosystem Priority Areas (FEPA) project: CSIR 2011	Centres of Endemism, Dolomitic areas and Ridges: LCPv1 Forest Pattern and Process Areas: DAFF Strategic Water Source Areas : CSIR 2013
	
Vegetation types South African vegetation types with modifications to Woodbush Granite Grassland Data References: SA Vegetation Map (Mucina and Rutherford, 2006)	**Additional vegetation and other priority listed ecosystems** Additional sub-SA vegetation types mapped for the Sekhukhune land centre of endemism as part of this projects based on Siebert (2001) NEMBA listed priority areas from provincial systematic conservation plans. Data References: Sub-SA vegetation: ECOSOL GIS (2013) NEMBA Listed Threatened Ecosystems, Non-veg types: SANBI 2009





Corridors, Climate Change Refugia, Ridges and EBAs

River corridors
Ecological corridors
Climate change refugia (savanna and non savanna)
Ecosystem based adaptation areas

Data References:
River Corridors: ECOSOL GIS 2013
Ecological Corridors- Least Cost Path Analysis and Expert Modifications: ECOSOL GIS 2013; Climate Change Refugia: NBA 2011
Ecosystem Based Adaptation Areas: NBA 2011
Ridge: LCPv1

Cost Surface

Proximity to transformation
Proximity to roads
Climate change adaptation and corridors
Transport routes
Mineral resources and and mining rights
High sediment yield areas
Gully erosion areas

Data References:
Transport and infrastructure: SIP data; Sediment Yield: Roux et al.
Erosion: Mararakanye & Roux (2012)

Ecosystem Status

Threat Status

Ecosystem threat status classification refers to the likelihood of an ecosystem, in this case defined as a vegetation type, persisting into the future given the current amount of that ecosystem that has already been converted to non-natural land uses. SANBI has developed a classification system that uses a suite of biodiversity loss indicators or criteria to assign national ecosystem status to South African vegetation types. The official list of threatened ecosystems published by SANBI in 2008 (provided for by the National Environmental Management: Biodiversity Act (No. 10 of 2004), is based largely on South African vegetation types and the degree to which they have been irreversibly lost, and forms the basis for the National Biodiversity Assessment 2011 - Ecosystem Status classification (Driver *et al.,* 2012). Our assessment uses only Threatened Ecosystem Criterion A1 irreversible loss of natural habitat (but see exceptions below) (http://bgis.sanbi.org/ecosystems/project.asp#4).

Based on the assessment conducted here 7 of the 56 vegetation types found in Limpopo are threatened; 1 of these is considered critically endangered (Woodbush Granite Grassland) and 6 are considered vulnerable (Springbokvlakte Thornveld, Rand Highveld Grassland, Northern Escarpment Dolomite Grassland, Lowveld Riverine Forest, Tzaneen sour Bushveld and Legogote Sour Bushveld) (Figure 3, Table 4). This represents 8.7% of the Limpopo Province area. The remaining extent of these ecosystems can be listed as "Threatened Ecosystems" in terms of the Biodiversity Act (Act 10 of 2004).

Ecosystem status Provincial adjustments for planning purposes

Ecosystem Threat Status is a metric applied to the national map of terrestrial habitats, and cannot be re-calculated on a purely provincial basis as many vegetation types exist beyond provincial boundaries. However, for planning purposes only, certain terrestrial habitats can be adjusted on a precautionary basis to have higher threat levels based on additional information available at a provincial level. For this analysis the ecosystem status for two terrestrial habitats have been adjusted to higher threat status levels:

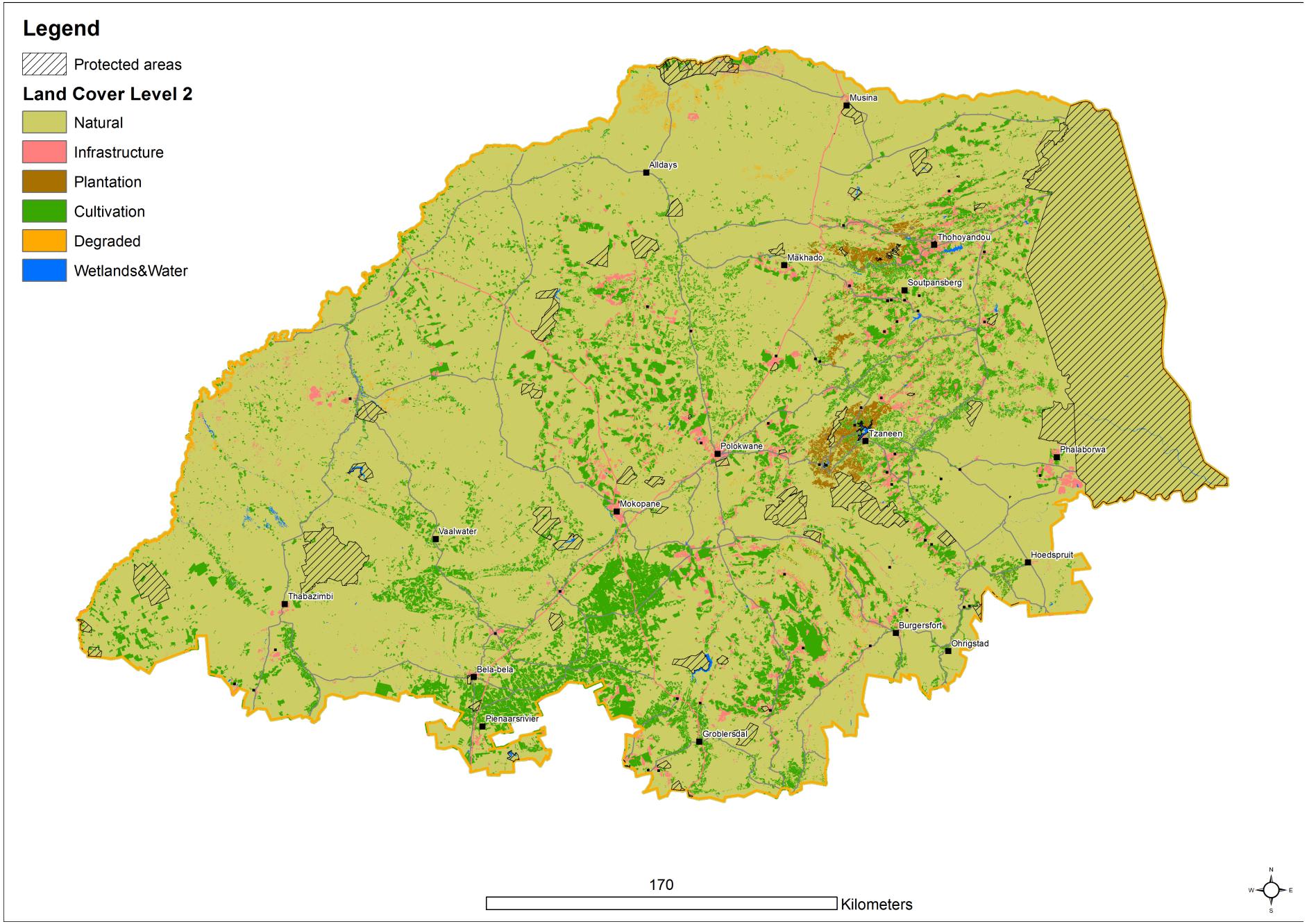
1. Tzaneen Sour Bushveld has been adjusted from Vulnerable (NBA2011) to Endangered, based on: a) high levels of natural habitat conversion (>35%), and b) high levels of degradation due to alien vegetation and proximity to rural settlements that is not captured in the land-cover. This is not an application of a new criterion for listing of threatened ecosystems but rather the application of existing criteria (A1 and A2) where the quantitative assessment using only land-cover has been adjusted based on expert information relating to incompletely mapped degradation.
2. Sekhukhune Plains Bushveld has been adjusted from Least Threatened to Vulnerable based on: a) high levels of natural habitat conversion (>30%); b) better finer-scale sub-vegetation type mapping of features; and, c) high endemism (Criterion D1).

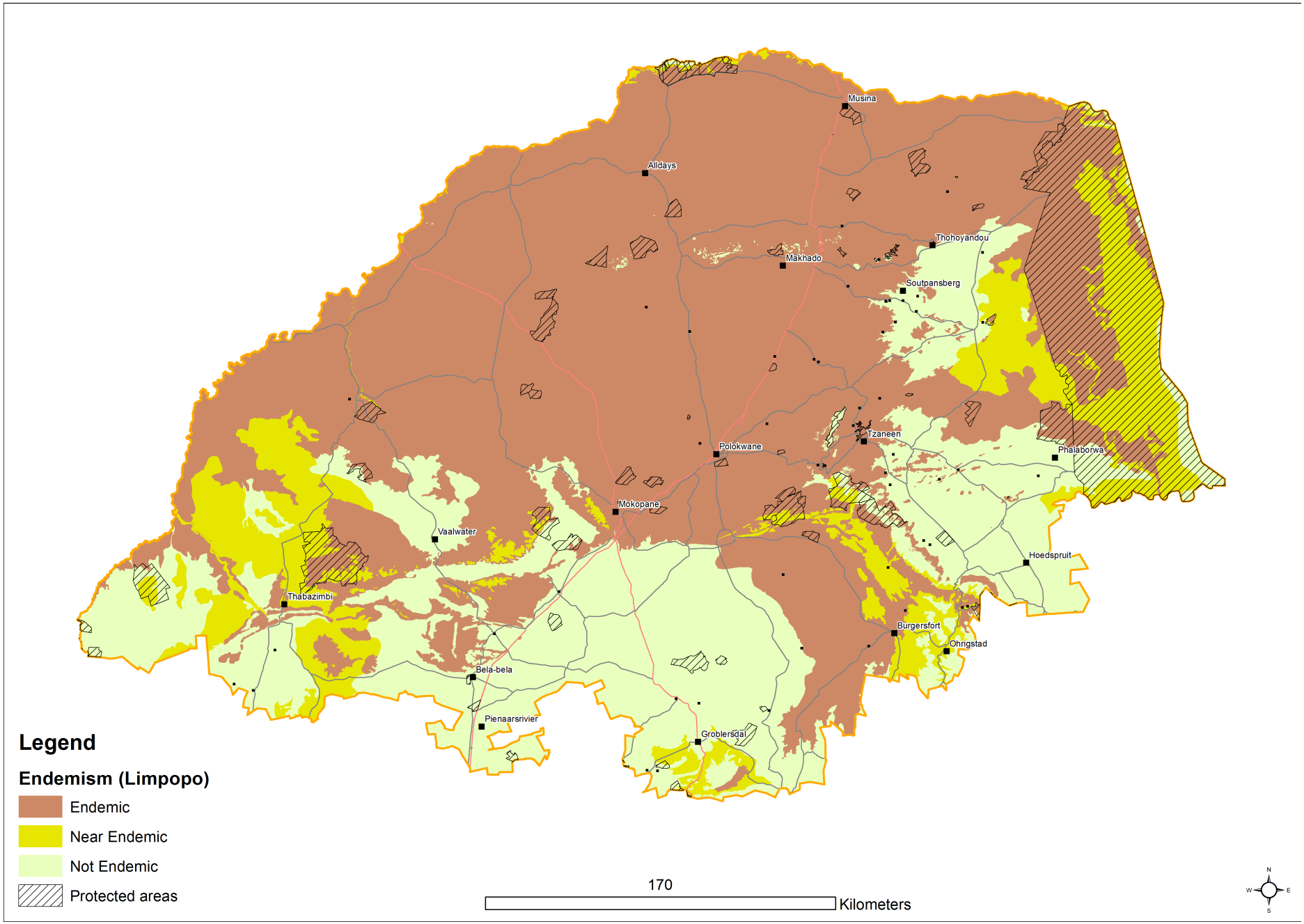
Additional non-vegetation listed threatened ecosystems

Certain threatened ecosystems listed under NEMBA 2009 are not vegetation types but rather identified priority areas from conservation planning processes; which cover a distinct area, and usually include more than one vegetation type. There are 5 5 additional threatend ecosystems in Limpopo, namely: Malmani Karstlands, Sekhukune Mountainlands, Sekhukune Norite Bushveld, Blouberg Forest and Mapungubwe Forest. Together these ecosystems make up just over 1% of the province (Figure 3).

Figure 1 (following page). Land Cover map of Limpopo, based on mapping by GTI (2012) using SPOT 5 imagery circa 2009.

Figure 2 (page after next). Endemism levels of Limpopo vegetation types. Endemic types are found only in Limpopo, Near Endemic have >80% of their extent in Limpopo.


Legend
Protected areas
Land Cover Level 2
Natural
Infrastructure
Plantation
Cultivation
Degraded
Wetlands&Water
Musina
Alldays
Thohoyandou
Makhado
Soutpansberg
Tzaneen
Polokwane
Phalaborwa
Mokopane
Vaalwater
Hoedspruit
Thabazimbi
Burgersfort
Ohrigstad
Bela-bela
Pienaarsrivier
Groblersdal
170
Kilometers
N
W
E
S


Musina
Alldays
Thohoyandou
Makhado
Soutpansberg
Tzaneen
Polokwane
Phalaborwa
Mokopane
Vaalwater
Hoedspruit
Thabazimbi
Burgersfort
Ohrigstad
Bela-bela
Pienaarsrivier
Groblersdal
Legend
Endemism (Limpopo)
Endemic
Near Endemic
Not Endemic
Protected areas
170
Kilometers
N
W
E
S

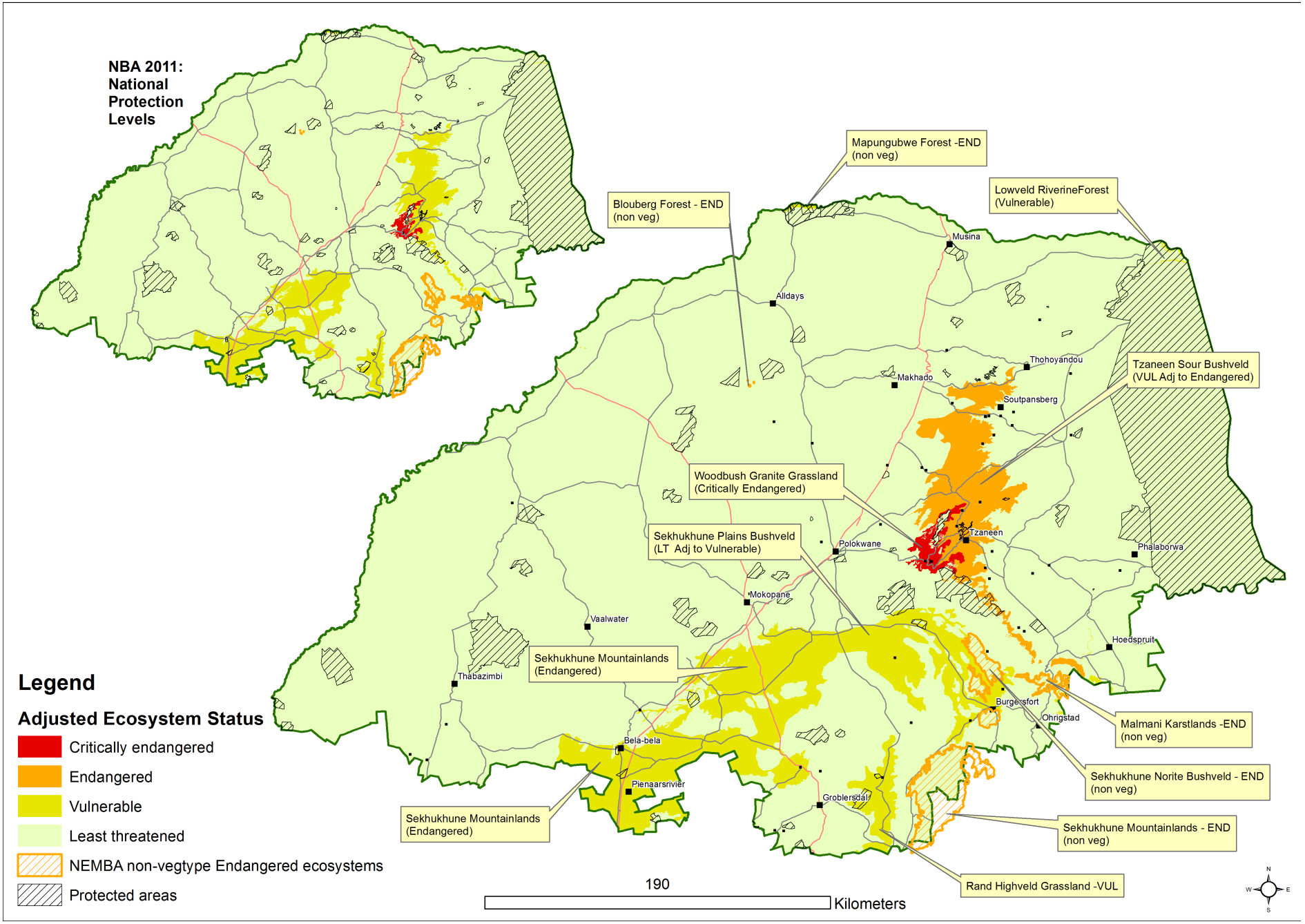

NBA 2011:
National
Protection
Levels
Mapungubwe Forest -END
(non veg)
Blouberg Forest - END
(non veg)
Lowveld RiverineForest
(Vulnerable)
Musina
Alldays
Thohoyandou
Makhado
Tzaneen Sour Bushveld
(VUL Adj to Endangered)
Soutpansberg
Woodbush Granite Grassland
(Critically Endangered)
Sekhukhune Plains Bushveld
(LT Adj to Vulnerable)
Tzaneen
Polokwane
Phalaborwa
Mokopane
Vaalwater
Hoedspruit
Sekhukhune Mountainlands
(Endangered)
Thabazimbi
Burgersfort
Ohrigstad
Malmani Karstlands -END
(non veg)
Bela-bela
Sekhukhune Norite Bushveld - END
(non veg)
Pienaarsrivier
Groblersdal
Sekhukhune Mountainlands
(Endangered)
Sekhukhune Mountainlands - END
(non veg)
Rand Highveld Grassland -VUL
Legend
Adjusted Ecosystem Status
Critically endangered
Endangered
Vulnerable
Least threatened
NEMBA non-vegtype Endangered ecosystems
Protected areas
190
Kilometers
N
W
E
S

Figure 3 (previous page). Terrestrial ecosystem threat map showing vegetation type based and other listed threatened ecosystems.

Protected Area Network GAP Analysis

Protection Levels

This section evaluates the current representation of vegetation types in the formal protected areas of Limpopo based on the biodiversity targets **Error! Reference source not found.** and the current protected area data layer developed for the current project.

As per the approach taken in the National Biodiversity Assessment 2011 (Driver *et al.*, 2012) the revised gap analysis was calculated against the full biodiversity target for an ecosystem rather than the ecosystem's protected area target (sensu NPAES; DEAT 2008), which sets a goal for how much of the ecosystem should be included in the protected area network by a certain date. The National Protected Area Expansion Strategy 2008 sets five-year and twenty-year protected area targets for each terrestrial ecosystem type, based on a portion of its biodiversity target.

The assessment of ecosystem protection level is made in relation to the biodiversity target, not the protected area target, which necessarily changes when the NPAES is revised every five years. The categories used were:

Level of Protection Category	Target Achievement Criterion
Not Protected	Zero or less than 5% of biodiversity target
Poorly Protected	5–49% of biodiversity target
Moderately Protected	50–99% of biodiversity target
Well Protected	>=100% of biodiversity target

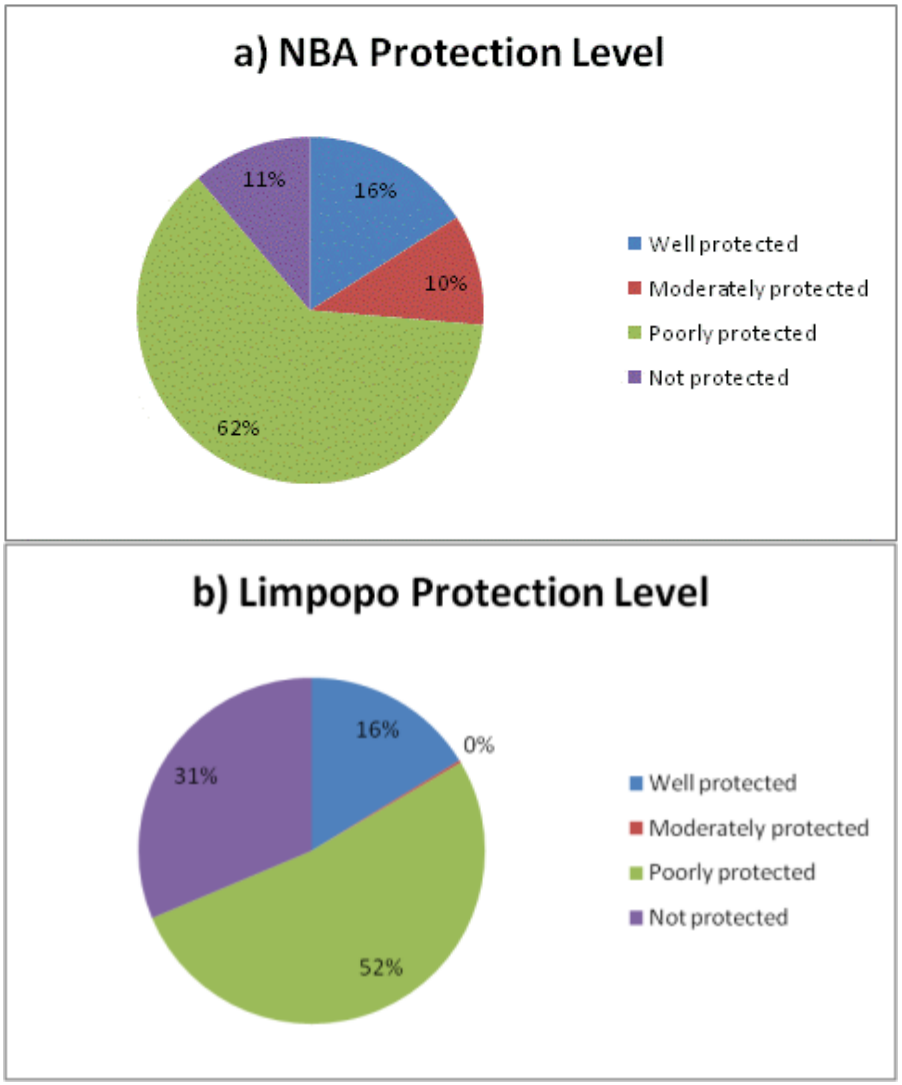
Observed protection levels should form the basis for a subsequent spatial prioritisation and identification of priority implementation areas. The NBA 2011 assessment and this Provincial assessment show that the majority of the Limpopo Province falls within habitat types that are classified as Poorly Protected (Figure 4). Some habitats that are adequately protected in North West, Gauteng or Mpumalanga are not represented in the Limpopo protected areas system, this results in minor divergence between the NBA 2011. which assesses the full extent of the habitat type, and the and provincial assessment (Figure 5). The provincial Protection Level assessment does not replace the national assessment, however, the provincial assessment is a key informant of the provincial Protected Area Expansion Strategy aimed at creating a provincial protected area network that is fully representative of the province's biodiversity.

GAP Analysis

The GAP analysis provides an indication of how representative the current protected area network is in Limpopo. A fully representative protected area network is one that achieves the biodiversity targets for all biodiversity features occurring in the province. The difference between the observed or current extent of the protected area network and the biodiversity target is an indication of the additional area that needs to be added to the protected area network in order to create a network that is fully representative of all biodiversity occurring in the province.

The National Biodiversity Assessment 2011 (Driver *et al.*, 2012) provides a useful overall picture of the protected area network in Limpopo. The analysis presented here, however, does differ from that presented in the NBA as there are discrepancies between the national and the provincial datasets used in the GAP analysis. It is assumed that the provincial data is more accurate as it considers the landscape at a finer-scale and the datasets used reflect the most up-to-date information on vegetation and protected areas. Also, this GAP analysis is relative to the province and does not consider the status of biodiversity features elsewhere.

Figure 4. Summary of the protection level of vegetation types in Limpopo Province. a) NBA 2011 Protection Levels; b) Adjusted Limpopo Province Protection Levels (labels are percentage extent of province)



Further discrepancies between the national and provincial analyses can arise as a result of cross-border issues such as where, for example, features are well protected in Limpopo but poorly protected elsewhere.

Table 4 summarizes the results of the gap analysis of the Limpopo protected area network. These figures were obtained by using the biodiversity targets used in this provincial conservation plan (Appendix 1), and the current provincial protected area network GIS data maintained by LEDET. The remaining area required to meet targets for each habitat type was obtained by subtracting the current area of each feature occurring within protected areas from the provincial biodiversity target for each feature. Where no additional area is required to meet the biodiversity target, this is indicated as "Well Protected". In cases where the provincial target has not been met, but the feature is Well Protected according to the National Biodiversity Assessment, we have indicated this as "Target met nationally". In these cases, although the Limpopo protected area system is not fully representative, in the context of limited resources it would be more efficient to include other higher priority areas before aiming to have a fully representative provincial protected area system.

An estimated total additional area of 11 556 km^2 is required to meet the biodiversity targets for all vegetation types in Limpopo. As the current protected area network in the province covers around 13 670 km^2, the magnitude of the task required to attain a fully representative protected area network is significant. An ***additional*** area equivalent to 85% of the current protected area network needs to be added to the protected area estate in order to achieve the biodiversity targets. How to achieve this objective is the subject of the provincial protected area expansion strategy.

Figure 5 (following page). Protection Levels of vegetation types in Limpopo. NBA 2011 PL are compared with PL recalculated for this assessment using an up-to-date protected areas layer and considering only Limpopo Province.

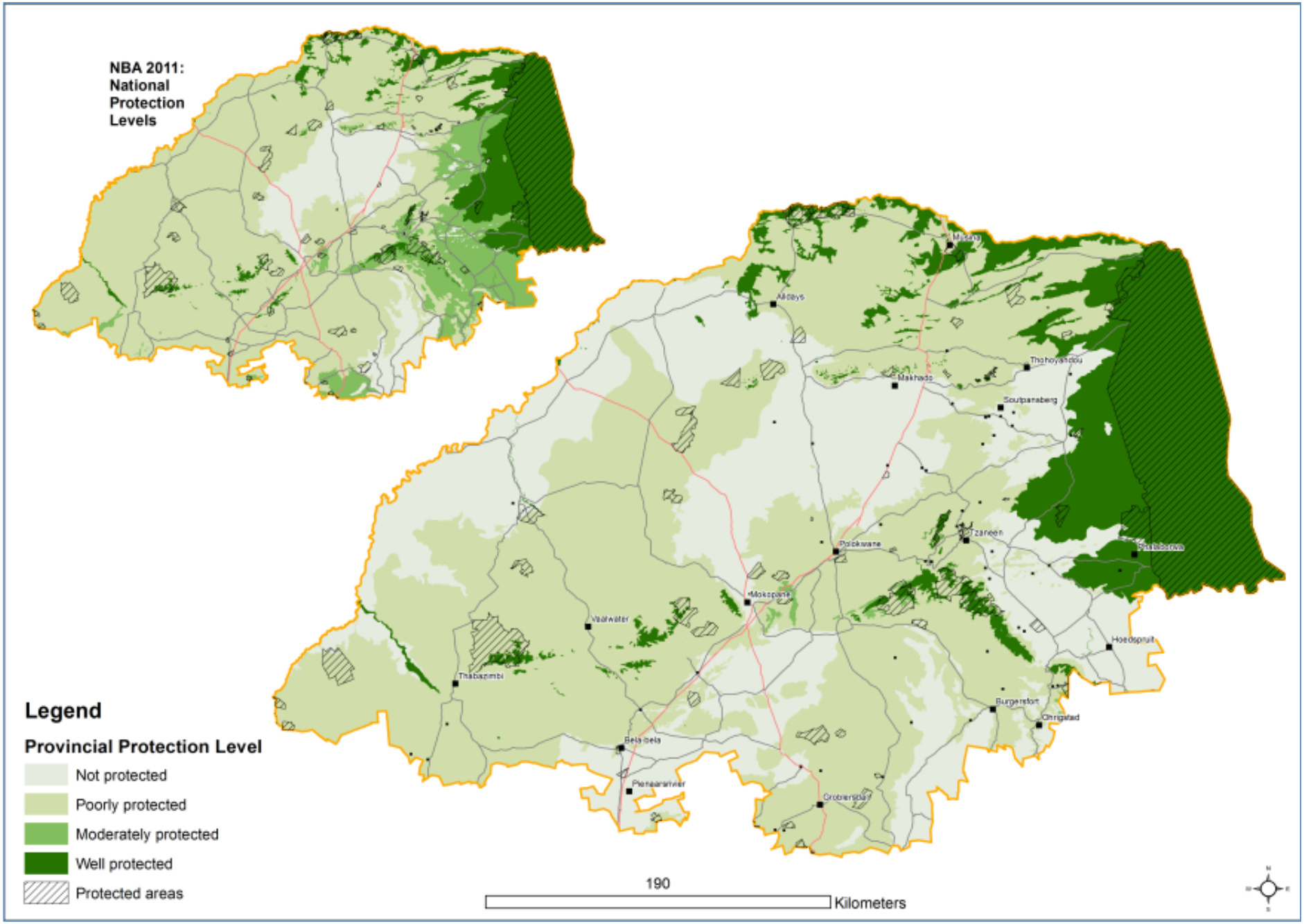

NBA 2011:
National
Protection
Levels
Legend
Provincial Protection Level
Not protected
Poorly protected
Moderately protected
Well protected
Protected areas
190
Kilometers
Musina
Alldays
Thohoyandou
Makhado
Soutpansberg
Tzaneen
Polokwane
Phalaborwa
Mokopane
Vaalwater
Hoedspruit
Thabazimbi
Burgersfort
Ohrigstad
Bela-bela
Pienaarsrivier
Groblersdal

Table 4. Summary of Ecosystem Status and Protection Level for Limpopo Province vegetation types based on the NBA 2011 and the provincial assessment. Ecosystem Status: LT = Least Threatened, VU = Vulnerable (yellow), EN = Endangered (orange), CR = Critically Endangered (red). Protection Level: Not = Zero or less than 5 % of biodiversity target, Poorly = 5–49 % of biodiversity target, Moderately = 50–99 % of biodiversity target, Well = >=100 % of biodiversity target.

Habitat Type	Total Extent (ha)	Not Natural (%)	Protected (%)	Biodiversity Target	Ecosystem Status - NBA 2011	Protection Level - NBA 2011	Ecosystem Status - Provincial	Protection Level - Provincial	Endemism
Cathedral Mopane Bushveld	27695	0.1	100.0	19	LT	Well	LT	Well	Endemic
Central Sandy Bushveld	1097679	23.1	2.6	19	LT	Poorly	LT	Poorly	Not
Dwaalboom Thornveld	414049	14.8	4.1	19	LT	Poorly	LT	Poorly	Not
Granite Lowveld	777188	21.0	0.9	19	LT	Moderately	LT	Not	Not
Gravelotte Rocky Bushveld	32425	5.4	2.6	19	LT	Not	LT	Poorly	Endemic
Ironwood Dry Forest	4650	0.0	99.6	31	LT	Well	LT	Well	Endemic
Legogote Sour Bushveld	2683	1.5	0.1	19	VU	Poorly	VU	Not	Not
Leolo Summit Sourveld	2038	0.1	0.0	24	LT	Not	LT	Not	Endemic
Limpopo Ridge Bushveld	278375	1.0	20.6	19	LT	Well	LT	Well	Endemic
Limpopo Sweet Bushveld	1200516	6.9	0.6	19	LT	Poorly	LT	Not	Endemic
Loskop Mountain Bushveld	44892	1.6	7.3	24	LT	Moderately	LT	Poorly	Not
Loskop Thornveld	64983	20.5	1.4	19	LT	Moderately	LT	Poorly	Near
Lowveld Riverine Forest	7945	15.9	92.2	31	VU	Well	VU	Well	Not
Lowveld Rugged Mopaneveld	287667	14.9	31.9	19	LT	Well	LT	Well	Near
Lydenburg Montane Grassland	1219	0.0	0.0	24	LT	Poorly	LT	Not	Not
Lydenburg Thornveld	49036	3.3	0.0	24	LT	Poorly	LT	Not	Not
Madikwe Dolomite Bushveld	22498	2.1	4.5	19	LT	Moderately	LT	Poorly	Not
Makhado Sweet Bushveld	1011370	21.2	0.2	19	LT	Not	LT	Not	Endemic
Makuleke Sandy Bushveld	204796	18.9	34.6	19	LT	Well	LT	Well	Endemic
Mamabolo Mountain Bushveld	66976	4.4	7.9	24	LT	Poorly	LT	Poorly	Endemic
Mopane Basalt Shrubland	270459	0.1	100.0	19	LT	Well	LT	Well	Near
Mopane Gabbro Shrubland	27355	0.1	100.0	19	LT	Well	LT	Well	Near
Musina Mopane Bushveld	880218	4.3	2.2	19	LT	Poorly	LT	Poorly	Endemic
Northern Afrotemperate Forest	391	7.7	0.0	31	LT	Moderately	LT	Not	Not
Northern Escarpment Afromontane Fynbos	203	0.0	0.0	27	LT	Well	LT	Not	Not
Northern Escarpment Dolomite Grassland	2380	1.2	18.0	27	VU	Poorly	VU	Moderately	Not
Northern Escarpment Quartzite Sourveld	42606	5.5	29.5	27	LT	Moderately	LT	Well	Not
Northern Lebombo Bushveld	44551	0.1	99.9	24	LT	Well	LT	Well	Not
Northern Mistbelt Forest	26045	8.9	33.4	30	LT	Well	LT	Well	Not

Habitat Type	Total Extent (ha)	Not Natural (%)	Protected (%)	Biodiversity Target	Ecosystem Status - NBA 2011	Protection Level - NBA 2011	Ecosystem Status - Provincial	Protection Level - Provincial	Endemism
Nwambyia-Pumbe Sandy Bushveld	14282	0.0	100.0	19	LT	Well	LT	Well	Near
Ohrigstad Mountain Bushveld	182318	8.6	8.2	24	LT	Moderately	LT	Poorly	Near
Phalaborwa-Timbavati Mopaneveld	140124	10.3	29.0	19	LT	Well	LT	Well	Not
Polokwane Plateau Bushveld	444757	22.1	1.4	19	LT	Poorly	LT	Poorly	Endemic
Poung Dolomite Mountain Bushveld	89054	4.3	12.0	24	LT	Moderately	LT	Poorly	Endemic
Rand Highveld Grassland	80514	23.9	6.7	24	VU	Not	VU	Poorly	Not
Roodeberg Bushveld	649487	12.2	4.5	19	LT	Poorly	LT	Poorly	Endemic
Sand Forest	1477	0.0	99.9	24	LT	Poorly	LT	Well	Not
Sekhukhune Montane Grassland	55234	18.5	0.0	24	LT	Not	LT	Not	Not
Sekhukhune Mountain Bushveld	226850	13.4	0.5	24	LT	Not	LT	Not	Endemic
Sekhukhune Plains Bushveld	252583	32.0	1.2	19	LT	Poorly	VU	Poorly	Endemic
Soutpansberg Mountain Bushveld	412589	17.0	3.6	24	LT	Poorly	LT	Poorly	Endemic
Soutpansberg Summit Sourveld	8626	0.8	10.8	24	LT	Moderately	LT	Poorly	Endemic
Springbokvlakte Thornveld	617470	46.3	0.6	19	VU	Poorly	VU	Not	Not
Strydpoort Summit Sourveld	26828	0.3	16.0	24	LT	Moderately	LT	Moderately	Endemic
Subtropical Alluvial Vegetation	57127	16.4	49.8	31	LT	Well	LT	Well	Near
Subtropical Freshwater Wetlands	11279	3.7	7.9	24	LT	Well	LT	Poorly	Not
Subtropical Salt Pans	455	16.1	47.3	24	LT	Well	LT	Well	Not
Tsende Mopaneveld	533408	7.3	67.3	19	LT	Well	LT	Well	Endemic
Tshokwane-Hlane Basalt Lowveld	3500	0.6	100.0	19	LT	Well	LT	Well	Not
Tzaneen Sour Bushveld	341536	39.6	2.7	19	VU	Poorly	EN	Poorly	Endemic
VhaVenda Miombo	33	3.1	0.0	30	LT	Not	LT	Not	Endemic
Waterberg Mountain Bushveld	881961	3.5	5.9	24	LT	Poorly	LT	Poorly	Endemic
Waterberg-Magaliesberg Summit Sourveld	50078	0.5	25.0	24	LT	Well	LT	Well	Near
Western Sandy Bushveld	544832	3.4	5.3	19	LT	Poorly	LT	Poorly	Near
Wolkberg Dolomite Grassland	26120	4.4	44.6	27	LT	Well	LT	Well	Endemic
Woodbush Granite Grassland	40823	54.7	1.8	27	CR	Moderately	CR	Poorly	Endemic
TOTAL	12586235	14.9	10.9						

Conservation Planning Approach

This section provides a technical description of the conservation features and systematic planning process that underlies the revision of the Limpopo Conservation Plan. It is not designed to be a description of the conservation features; an explanation of their importnace; or, an explanation of systematic spatial biodiversity planning.

Bioregional plan requirements of a systematic conservation plan

According to the "Guideline regarding the Determination of Bioregions and the Preparation and Publication of Bioregional Plans" (DEAT 2009) a bioregional plan needs to be a spatial plan showing terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning. A bioregional plan must be based on a systematic biodiversity plan, which is a rigorous, data-driven approach for assessing the location, status and importance of a range of biodiversity features. In addition to the general requirement for a systematic conservation plan, the guidelines specify a range of key characteristics that a conservation plan would need to have before it can be considered to be systematic, and further, details a range of specific issues that need to be addressed in the systematic conservation plan.

This section of the document is aimed at clearly establishing that the underlying process undertaken for the Limpopo Conservation Plan v2 was both systematic in general, and was undertaken in a way which satisfies the requirements outlined in the "Guideline regarding the Determination of Bioregions and the Preparation and Publication of Bioregional Plans" (DEAT 2009).

Is the Limpopo Conservation Plan v2 a systematic conservation plan and does it meet the guideline requirements?

The "Guideline regarding the Determination of Bioregions and the Preparation and Publication of Bioregional Plans" (DEAT, 2009) identifies the key characteristics of a systematic conservation plan as being representation, persistence, quantitative targets, and efficiency and conflict avoidance. The approach taken in the Limpopo Conservation Plan v2 is evaluated below in terms these key characteristics:

•**The principle of representation** - the plan needs to identify the areas needed to conserve a representative sample of all biodiversity pattern. Limpopo Conservation Plan v2 utilizes a revised and updated version of the vegetation types described in Mucina and Rutherford 2006. Data of the distribution of wetland and river systems was included. In addition to the broad habitats described above, detailed data on the distribution and habitat requirements of a range of threatened species were included. These species went through a robust filtering process to ensure that only appropriate species were included, and that the data quality was sufficient. Quantitative targets were set for all biodiversity features to assess the degree to which the identified CBA network sufficiently included all targets for biodiversity features was evaluated and reported on.

•**The principle of persistence** - the plan needs to identify the areas required to support ecological and evolutionary processes that allow biodiversity to persist in the long term. Limpopo Conservation Plan v2 focuses on three key areas to ensure that biodiversity persists into the future.

- *Climate change:* The plan identifies a comprehensive terrestrial and riverine corridors to ensure linkages are retained between key biodiversity features; areas supporting climate change resilience (e.g. refuge habitats and areas with diverse bioclimatic variables) were identified and included as features in the plan; and other features such as ridges which include important environmental gradients and linkages were included in the plan.
- *Hydrological processes:* Key wetland and river systems are include in the plan. In addition, targets were set for identified priority freshwater catchments and dolomite systems.

- *Species requirements:* Area requirements for each of the threatened species include in the plan were identified and incorporated into the plan.

•**Biodiversity targets** - quantitative targets are set for both biodiversity pattern and process features indicating how much of each feature is required to ensure representation and persistence. Targets were set for all features included within the plan. Targets ranged from 19% to 31% of original area for particular vegetation types (with most targets being in the range 19-24%), up to 100% of known habitat for key threatened species. The target setting process, is aligned with the processes used in other South African systematic plans.

•**Efficiency and conflict avoidance** - the configuration of priority areas must be spatially efficient and where possible to avoid conflict with other land uses. Limpopo Conservation Plan v2 utilizes a cost surface approach in MARXAN (Ball *et al.*, 2009) for selecting sites which were most important for meeting biodiversity targets for a range of features (this ensures spatial efficiency by selecting sites which meet targets for a range of features first, and then selecting the sites which are required for specific features only), while at the same time avoiding areas with high levels of conflict with other land uses. Conflict with other land uses was avoided both by being as efficient as possible in selecting sites, where possible avoiding sites with existing incompatible land uses, aligning with areas with compatible land uses and existing conservation initiatives (e.g. biospheres and transfrontier conservation areas), and as far as possible avoiding areas in close proximity to non-natural areas, roads and areas with mining rights or known mineral deposits.

Therefore, it is clear that Limpopo Conservation Plan v2 meets all the requirements for being a systematic conservation plan. In addition to these general requirements, the guideline also specifies that a systematic conservation plan must be undertaken at an appropriate scale for informing land-use planning and decision-making, include both terrestrial and aquatic features, identify a portfolio of critical biodiversity areas required to meet targets, use up to date spatial data, use appropriate methods and technology, and be accompanied by a technical report. The Limpopo Conservation Plan v2 meets all of these requirements, viz.:

•**Scale**: This conservation plan is designed to be used at a scale of approximately 1:50 000, which is appropriate for informing land-use planning and decision-making. Although it can be used at a finer scale, this requires specialist interpretation of the specific features identified in the systematic biodiversity plan. As with all conservation plans, site visits by biodiversity specialists are necessary for confirming the accuracy of data, and identifying the specific location and condition of the biodiversity features when decisions are made at a site level.

•**Terrestrial and aquatic features**: Both terrestrial and aquatic features are included. Although there is less detail on aquatic habitat types than is included for terrestrial habitats, variation within aquatic types is addressed by the inclusion of a range of river and wetland associated species. Priorities for both rivers and wetlands from the NFEPA project (Nel *et al.*, 2011) were included.

•**Identify a portfolio of critical biodiversity areas required to meet targets**: The set of Critical Biodiversity Areas described in the following section meet the biodiversity targets for all features. Ecological corridors and other areas important for ensuring long term persistence were included in the network of Critical Biodiversity Areas and Ecological Support Areas.

•**Use up to date spatial data**: Limpopo Conservation Plan v2 makes use of the most up-to-date, accurate, fine-scale GIS data available. In particular, the land-cover data was significantly improved and updated.

•**Use appropriate, scientifically sound, up-to-date methodology and techniques, including software and analyses**: Limpopo Conservation Plan v2 uses standard and accepted systematic conservation planning methodology and techniques aligned with those used in other systematic conservation planning initiatives.

Planning units

For the MARXAN analysis a new set of province-wide planning units were developed. The objective with the new planning unit layer was to create a sets of units that was at a scale aligned with the biodiversity features and data computationally tractable (i.e. less than 65 000 units), and that better reflected actual physical boundaries on the ground rather than arbitrary grid or hexagon units, as well as the areas on which planning decisions are made. User perceptions and interpretation of the product is enhanced by planning units that can be more easily related to actual features on the ground.

Table 5. The planning units were developed by merging the following four layers

Feature	Dataset	Data Type	Date	Source	Comment
Protected Area Layer for Province	PA_LIMP_v2	Shapefile Polygon	July 2013	LEDET modified by Ecosol	Updated PA layer from Province including actual areas of all areas. National Protected Areas were added to the provincial dataset. PAs were considered to be single planning units.
Simplified Land Cover	LC1_LIMP	GRID	February 2013	Ecosol based on GTI LC 092011	Reclassified GTI land cover (Non Natural, Natural, Degraded). Non natural units were included as planning units, but were considered to be unavailable in the Marxan analysis. Non natural units could nevertheless still be identified as Ecological Support Areas.
Limpopo local catchments	LIMP_Catch	Shapefile Polygon	May 2013	Ecosol based on GDEM 30m	Local fine-scale catchments (i.e. sub-units of FEPA catchments. These units are fully nested within FEPA subcatchments and hence the plan can easily be aligned with adjacent provincial plans.
Cadastres	Farm cadastres	Shapefile Polygon		Surveyor General	Note that only farm cadastres (farm portions) and not urban erven were used.

- Rationale:
  - A primary reason why the Limpopo conservation plan version 1 delivered non-optimal and sptailly hungry results was the use of very large planning units. This, combined with often quite small biodiversity features, resulted in inefficiencies. Any conservation planning process which attempted to meet targets would be forced to select far larger areas than necessary.

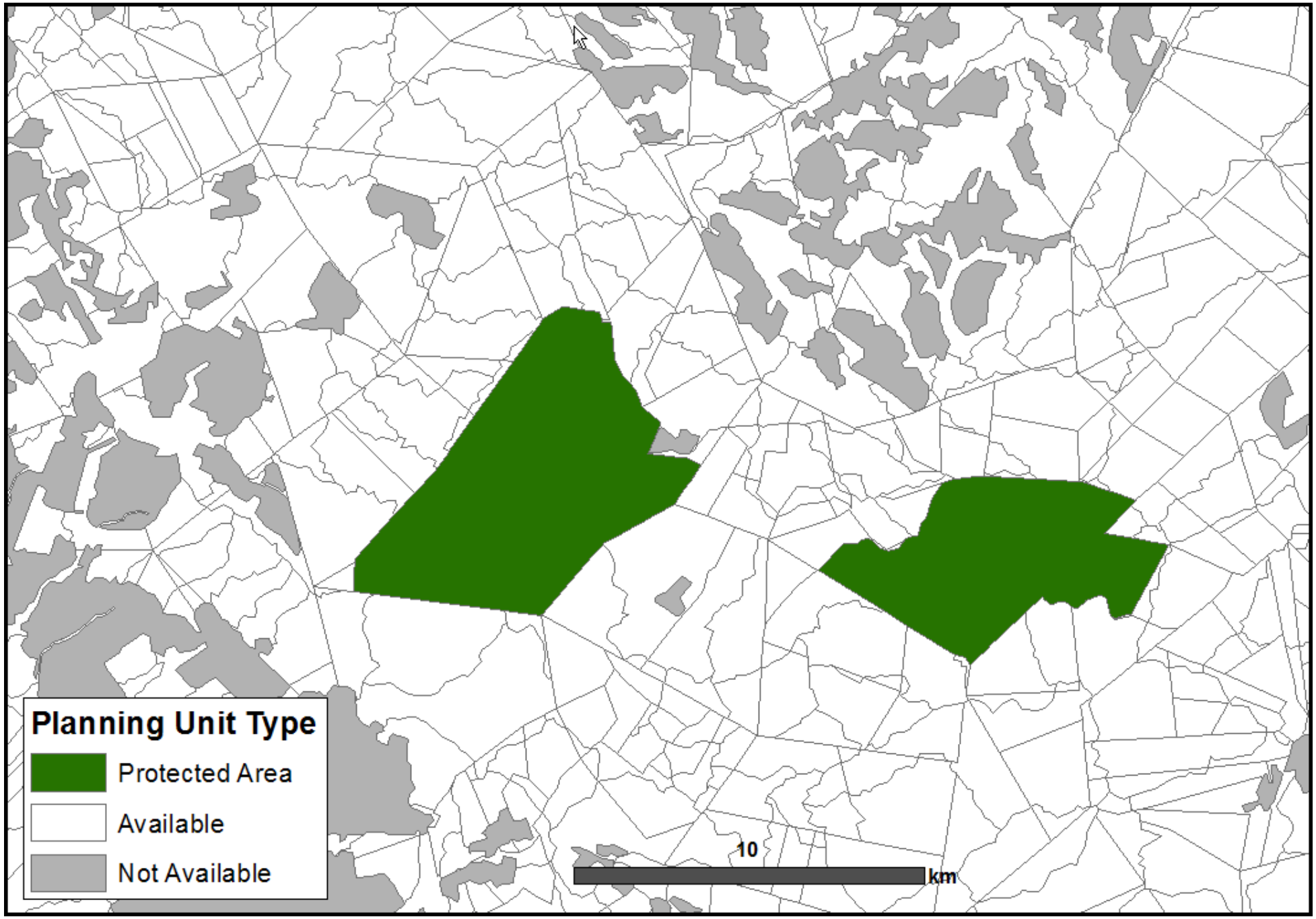
- The planning units developed for this plan were informed by:
    - Inputs from LEDET on their requirements. In particular, that land use planning decisions are often linked to property boundaries.
    - The primary informant of many land use planning decisions is whether the area is natural or non-natural. Therefore this characteristic was used to divide units.
    - River catchments are a primary ecological characteristic and are linked to landscape functional units. Nationally identified FEPA catchments (Nel et al 2011) were not used as they are effectively groups of the smaller "Limpopo local catchments". As these units are fully nested within FEPA subcatchments the plan can easily be aligned with adjacent provincial plans.

- Planning units:
    - Planning units were developed based on an intersection of the above 4 layers.
    - Protected areas were not subdivided further.
    - Some larger units were subdivided to give a maximum planning unit size of 2000 ha for available planning units (i.e. available natural units outside of Protected Areas).
    - Small units and slivers created by intersecting the layers were identified and included into adjacent units. Outside of Protected Areas, planning units had a minimum size of 10 ha unless they were non-natural (unavailable) in which case no size limit was applied.
    - The CSIR GAP mesozones were not used as these are a derivative of cadastres. As rural cadastres were used to generate planning units the resulting planning units nest well within mesozones and therefore it is easily possible to summarize planning unit data to the mesozone.
- Data archive:
    - The planning units are given in the shapefile Planning_units2.shp.

Table 6 Summary of Planning Units used to develop the Map of Critical Biodiversity Areas.

Planning Unit Category	Number of Units	Size (ha)		
		Median	Maximum	Minimum
Available	53625	93	1996	10
Available - PA edge	1963	172	1964	10
Protected	57	2948	1949573	4
Unavailable	4943	106	181768	1
Grand Total	**60588**			

Figure 6 (following page). An example of the planning units developed for this plan.


Planning Unit Type
Protected Area
Available
Not Available
10
km

Cost Surface

Table 7 . The cost surface is made up from the layers below

Feature	Dataset	Data Type	Date	Source	Comment	Inclusion	Description of usage
Ecological process layers linked to climate change resilience and adaptation	Summarized in Planning_units2.shp in the field EBA	GRID	2011	Holness	Developed based on NBA 2011 analysis.	Low cost	Layers used in cost calculation for planning units
Low proximity to impacts (including urban areas)	LC1_LIMP Summarized in Planning_units2.shp in the field AWAY	GRID	2013	Ecosol based on GTI (2012)	Developed based on Limpopo land-cover	Low cost for high distance areas	
Distance to roads	Summarized in Planning_units2.shp in the field ROADS10	GRID	2013	Ecosol	Developed based on Limpopo roads layer	Low cost for high distance areas	
Mining rights or known mineral deposits	Limpopo Plan 1 Summarized in Planning_units2.shp in the field MINE	Vector		MetroGIS	Converted to grid for inclusion as high cost in cost surface	High cost	
Degraded areas	ARC Erosion map and DAFF gullies map. Summarized in Planning_units2.shp in the field SED.	GRID		ARC and DAFF	Converted to grid for inclusion as high cost in cost surface	High cost	
Corridors	Areas in corridors identified in LCP v2. Summarized in Planning_units2.shp in the field CORRIDOR.	Vector	2103	Ecosol	Developed based on Limpopo corridor layer	Low cost	

- Cost surface inputs:
  - Climate change resilience and adaptation. The NBA 2011 layer on areas supporting climate change resilience was reclassified to a 0-10 range. A value for a planning unit was calculated based on the average climate change resilience and adaptation layer score for that unit. This value is included in the planning units shapefile (Planning_units2.shp) in the field EBA. The field CLIM was calculated as EBA/10. The area linked cost modifier for a planning unit was Planning unit area (ha)* CLIM, and is recorded in field CLIMMOD.

- Low proximity to impacts (including urban areas). A grid was developed of Euclidean distance in metres away from transformed areas. A maximum value of 30 000 metres was used. The grid was reclassified based on 10 quantiles, with the extremes being closest areas to transformation scored as 10, while furthest units scored 0. Summarized in Planning_units2.shp in the field AWAY. The area linked cost modifier for a planning unit was Planning unit area (ha)* (AWAY/10), and is recorded in field AWAYMOD.
- Distance to roads. A grid was developed of Euclidean distance in metres away from roads areas. The grid was reclassified based on 10 quantiles, with the extremes being closest areas to roads scored as 10, while furthest units scored 0. Summarized in Planning_units2.shp in the field Roads10. The area linked cost modifier for a planning unit was Planning unit area (ha)* (ROADS10/10), and is recorded in field ROADMOD.
- Areas with mining rights or known mineral deposits, based on the data include in LCP v1. These were allocated a modifier value of 10. Summarized in Planning_units2.shp in the field MINE. The area linked cost modifier for a planning unit was Planning unit area (ha)* 1 if MINE=10, and is recorded in field MINEMOD.
- Degraded and eroded areas. Areas with mapped erosion gullies were allocated a value of 10. Actual sediment production in t/hectare was calculated based on the ARC dataset. This value was divided by 300 to give an index with a maximum value of 1. Any planning unit with erosion gullies identified in the DAFF gullies dataset were reclassified as 1. Summarized in Planning_units2.shp in the field SED. The area linked cost modifier for a planning unit was Planning unit area (ha)* SED, and is recorded in field SEDMOD.
- Corridor planning units were defined as all units overlapping the identified corridors (see method described later). Units overlapping corridors are identified in the field CORRIDOR. All units within corridors were given a score equal to their area (ha) in the field CORRIDORMO.

- The cost of planning units was calculated based on:
  - Planning unit area cost = (Planning unit area in ha)– CLIMMOD – CORRODORMOD + AWAYMOD + ROADMOD + DEGMOD+ MINEMOD. Any resultant values under 1 were reclassified as 1.
- Effectively the above method made planning units in corridors and climate change adaptation areas extremely low cost in terms of inclusion into MARXAN, and hence these areas were strongly favoured for selection. Conversely, the approach avoided areas close to non-natural areas, close to roads, with high levels of degradation or with mining rights or known mineral deposits. Assuming that a planning unit is outside of corridors and climate change priority areas, and keeping all other variables constant: areas in closest proximity to development would be twice as high cost as the furthest away units; areas closest to roads would be twice as high cost as the furthest away units; areas with most degradation would be twice as high cost as the least degraded units; and units with mining rights or known minerals would be twice the cost of other units. Note that the costs are additive rather than exponential.
- The cost surface was calibrated after initial MARXAN runs to ensure appropriate levels of favouring of low cost areas and avoiding high cost areas.

Targets

- Quantitative targets are set for both biodiversity pattern and process features indicating how much of each feature is required to ensure representation and persistence. Targets were set for all features included within the plan. Targets ranged from 19% to 31% of original area for particular vegetation types (with most targets being in the range 19-24%), up to 100% of known habitat for key threatened species (especially for Critically Endangered and Endangered species with small known distributions). The target setting process, which is aligned with the processes used in other South African systematic plans.
- Targets for habitat types were those used in the National Biodiversity Assessment 2011. For "missing" forest targets values were used which were aligned with the revised forest targets calculated by Desmet (2008).
- See Appendix One for details.

Biodiversity features

All appropriately identified biodiversity features included in LCPv1 were included. Where an additional datasets has been included, or where a dataset has been updated, refined or replaced this has been noted.

Vegetation Types

Table 8. The primary biodiversity features included in the MARXAN analysis were terrestrial vegetation types

Feature	Dataset	Data Type	Date	Source	Comment	Proposed Target	Description of usage
Vegetation types	SANBI vegetation map with updated habitat units Vegetation_types_v2.shp	Shapefile Polygon	Various	SANBI and LEDET	Features individually included	Based on national habitat targets 19-31%	Included individually as biodiversity features.

Approach:

- The vegetation map was updated using the following method:
    - The vegetation map used for the NBA 2011 was used as the base map.
    - Forest types identified in the DWAF forest conservation plan were incorporated into the base habitat map. It was assumed that the finely mapped forest units were more accurate that the national units and they replaced them. This dataset was included in LCPv1.
    - Some missing units of Limpopo Riverine Forest were added to the above base map.
    - The Woodbush Granite Grassland SA vegetation type polygon was revised based on expert re-mapping of the SA vegetation map. It was assumed that the finely mapped unit was more accurate that the national units and it replaced them in areas of overlap.

Aquatic Features

Table 9. Aquatic features included in the systematic conservation plan

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
FEPA Rivers (1:500 000) – Phase One FEPAs	NFEPA_Rivers_1:500k	Shapefile Polyline	2011	CSIR - BGIS	Priority River Reaches	100% All FEPA prioritized reaches have a minimum category of ESA even if they are in non-natural or unavailable units.	Priority (phase one FEPA) river reaches with 100m buffer
FEPA Rivers (1:500 000) – Other FEPA types	NFEPA_Rivers_1:500k	Shapefile Polyline	2011	CSIR - BGIS	Other FEPA river types (Phase 2 FEPAs, Fish FSAs and Fish Corridors) excluding upstream areas.	30% All FEPA prioritized reaches have a minimum category of ESA even if they are in non-natural or unavailable units.	Other prioritized FEPA river reaches with 100m buffer
FEPA Sub quaternary catchments	River FEPAs	Shapefile Polygon	2011	CSIR - BGIS	Priority Sub quaternary catchments	40% for FEPA 30% for Phase 2 FEPA All FEPA prioritized catchments have a minimum category of ESA.	FEPA catchments
FEPA Rivers (1:500	NFEPA_Rivers_1:500k	Shapefile	2011	CSIR - BGIS	Areas in close proximity	60%	Priority reaches (both

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
000)		Polyline			FEPA prioritized River Reaches.	All FEPA prioritized areas have a minimum category of ESA.	FEPA and Phase 2 FEPA) with 5km buffer. This is clipped to the applicable FEPA catchment. This feature and targets is used to strongly prioritize selection of areas in close proximity to FEPA river reaches.
FEPA Wetlands	FEPA Wetlands	Shapefile Polygon	2011	CSIR - BGIS	Priority wetlands	100% All FEPA prioritized wetlands have a minimum category of ESA.	All identified FEPA Priority wetlands were included.
FEPA Wetland Clusters	FEPA Wetland Clusters	Shapefile Polygon	2011	CSIR - BGIS	Priority wetlands	100% All FEPA prioritized wetlands have a minimum category of ESA.	All identified FEPA Priority wetland clusters were included.
Other natural non-FEPA Wetlands	National Wetlands Inventory	Shapefile Polygon	2011	CSIR - BGIS	Other natural wetlands	All natural wetlands had a minimum category of ESA.	Other wetlands were included as ESA.
Strategic water source areas for RSA (Revised version of High Water Yield	ProEcoServ	GRID	February 2013	CSIR	Strategic water source areas for RSA	80% of remaining natural areas. All strategic	Natural areas above threshold runoff were included.

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
Areas)						water source areas had a minimum category of ESA.	

Approach:

- Rivers, wetlands, priority catchments and strategic water source areas form a critical spatial backbone to the LCPv2. This is desirable as hydrological features are a key part of overall landscape function. Further, the approach is necessary as terrestrial habitats are not finely differentiated and few specific areas necessary for threatened species exist.
- FEPA rivers, wetlands and catchments:
    - FEPA river reaches were buffered by 100m to avoid false non-inclusion (due to GIS inaccuracies) of river associated planning units. A full 100% target was set as these priority reaches were identified in the NFEPA project and needed to be included in their entirety. Any areas which could not be selected (as they were classified as non-natural) were included as Ecological Support Areas.
    - Other FEPA river types (Phase 2 FEPAs, Fish FSAs and Fish Corridors) excluding upstream areas were treated in a similar way (i.e. buffered by 100m). A lower target of 30% was set for these areas in order to preferentially select them, but not force them into a solution. Any areas which were not selected as Critical biodiversity Area were included as Ecological Support Areas.
    - Phase 1 and Phase 2 FEPA river reaches were buffered by 5km and these areas included with a moderately high target (60%). Any areas which were not selected as Critical biodiversity Area were included as Ecological Support Areas.
    - FEPA priority sub quaternary catchments (Phase 1 and Phase 2 FEPAs) were included, with higher targets (40%) for Phase 1 FEPA catchments and lower targets 30% for Phase 2 FEPA catchments. Any areas which were not selected as Critical biodiversity Area were included as Ecological Support Areas.
    - Identified FEPA wetlands and FEPA Wetlands clusters identified in the NFEPA project were fully included if they occurred in available planning units. Any areas which were not selected as Critical biodiversity Area were included as Ecological Support Areas.
    - Revised High Water Yield Areas (i.e. Strategic Water Source Areas) derived by the ProEcoServ project were included with an 80% target. Any areas which were not selected as Critical biodiversity Area were included as Ecological Support Areas.
- The above approach was designed to strongly force FEPAs and other identified priority hydrological features into the identified network of CBAs. Features were designed to overlap, with high targets set for the key features and lower targets as one moves into buffers and broader catchments. The relatively high targets used for aquatic features are designed to force selection of the broader terrestrial and species priorities into the aquatic priority areas. This is deliberately done to ensure a design which is ecologically sensible and support the key linking process that water related features support in the landscape. It is also spatially more efficient to use FEPA features with targets in the Marxan analysis rather than adding them in afterwards.
- Ecological Support Areas. All other natural wetlands and a minimum buffer of 1km around major rivers were included as Ecological Support Areas.

Priority Species

Table 10. Priority species, and associated areas included in the Marxan analysis

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
Expert biodiversity areas	Expert identified priority areas for *Pyxicephalus adspersus, Crocodylus niloticus, Euphorbia groenewaldii, Platysaurus inopinus, Platysaurus monotropis, Platysaurus fitzsimonsi*	Polygon	2013	LEDET	Expert workshop derived information on location of biodiversity in the province, to supplement the species data	The features were individually included with an 80% target for areas flagged as CBA and 30% for identified ESA areas.	Note that where areas had been buffered these were not included, but where there was a habitat based extrapolation these areas were included.
Butterflies	SANBI	Points buffered by 100m	2013	SANBI		100% of CR and EN	All units with confirmed records of CR and EN species were included. The planning unit with the single Vu species was also included as it was on a PA boundary.
Plants	SANBI	Points buffered by 100m	2013	SANBI		100% of CR and EN 50% of Vu species sites with species included individually	All units with confirmed records of CR and EN species were included. A target of 50% was used for each Vu species. This relatively high target was justified based on the small space requirement to meet this target.

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
Plants	LEDET and MTPA: LEDET and herbarium species points	Points buffered by 100m	2013	SANBI	Key locations for focal threatened plant species - many of these are cycads.	100%	Sites for priority species in available planning units were all included.
Birds	SABAP2 and Limpopo Conservation Plan 1.	Pentad linked access spreadsheet Additional species from LCP1.				30% for each species	SABAP 2 data was used to identify distribution of 32 Globally or regionally threatened species (Cr, En and Vu). Wattled Crane and Blue Swallows were also included based on local priorities based on data from LCP1.
Vulture Colonies	Colony locations	Shapefile Points buffered by 1km	2013	Birdlife		100%	The high target was justified on the basis that these areas are very small relative to the full distribution of the species, and that they are critical to its survival.
EWT Cheetah conservation plan	Cheetah points	Shapefile Points buffered by 1km	2013	EWT	Identified sightings of free-range cheetah	30%	Connected areas important for cheetah included as a proxy for landscape processes. Note that the broader areas flagged as priorities could not be included as they included potential habitat covering much of the province.

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
EWT Wild Dog conservation plan	Wild Dog points	Shapefile Points buffered by 1km	2013	EWT	Identified sightings of free-range wild dog	30%	Connected areas important for wild dog included as a proxy for landscape processes. Broader areas flagged as priorities could not be included as they included potential habitat covering much of the province.
Threatened Fish Species	FEPA	Shapefile Polyline	2011	CSIR - BGIS	Priority River Reaches	100 % All FEPA prioritized reaches have a minimum category of ESA even if they are in non-natural or unavailable units. 30% Other FEPA river types (Phase 2 FEPAs, Fish FSAs and Fish Corridors) excluding upstream areas. All areas are at least ESA.	All rivers identified as FEPAs for threatened fish species are included, similarly all Fish Corridor and Fish Support Area rivers are at very least included as ESA, and all Fish FEPA catchments are at least ESA.

Approach:

- Areas important for threatened species were identified and included. Threatened species were defined as Critically Endangered, Endangered and Vulnerable species.
- Expert identified management areas for key species were included. Where the area was identified by LEDET as being flagged as a Critical Biodiversity Area, an 80% target was used, and where it was expert identified as Ecological Support Area a lower target was used. Where specific areas had been identified based on habitat or occurrence, then these were included, but more generic buffered features were not included.
- Distributions of threatened plants and butterflies were obtained from SANBI. Plant distribution points from SANBI were supplemented by points from LEDET and MTPA. Points were buffered by 100m. A 100% target was set for these areas for CR and EN types, for both plants and butterflies. The very spatially limited distribution points for the single VU butterfly species were also fully included. For plants, Vulnerable types were individually included with a 50% target. This relatively high target was justified on the basis of the small space requirement necessary to meet the target.
- Distributions of globally and regionally Critically Endangered, Endangered and Vulnerable species were derived from the SABAP 2 database. This data was supplemented by data for Blue Swallow and Wattled Crane from the LCP1 datasets. Targets were set at 30% for each species. Note that the targets were set lower for birds than butterflies of plants of equivalent status because of the far wider distributions and more generic data. A 100% target was set for known vulture colonies.
- Data on the distributions of free range cheetah and wild dog were included.

Ecological Processes and Climate Change Adaptation

Table 11. Areas to support ecological processes (including climate change adaptation) included in the Marxan analysis

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
Aquatic features	Previously described (Table 9)						
Forest species assemblage and process (including Cape parrot core habitat)	Indigenous forest	Polygon	2013	DWAF	Forest used as a proxy for Cape Parrot and other forest associated species and processes	100%	Note that all areas of indigenous forest were included. This was done as the area requirement is small, and forest represents key refuge habitat for these species which range more widely. Additionally, these forest areas are all protected by the

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
							Forest Act and trigger significant authorization requirements for their removal.
Climate Change refugia (Biome stability)	NBA 2011	Polygon	2012	SANBI / Holness	The analysis of biome climate envelopes was used to identify areas of non-savanna habitat types which remain stable in the short (50year) and long term (100 year)	80% Non-selected areas have a minimum category of ESA.	Note that the high target was justified on the basis that these are areas of very limited extent which represent key grassland high altitude climate refugia.
Climate Change refugia	SANBI	Polygon	2013	SANBI	Identified SANBI climate refuge areas	60% Non-selected areas have a minimum category of ESA.	Note that the high target was justified on the basis that these are areas of very limited extent which represent key grassland and mountain bushveld climate refugia.
Areas supporting climate change resilience	NBA 2011	Polygon	2012	SANBI / Holness	These area areas of high diversity, topographic diversity, strong biophysical gradients (e.g. altitude, rainfall or temperature), climate refugia (kloofs & south facing slopes), and river corridors.	EBA5 = 80% EBA 3 = 60% EBA2 = 40% EBA1 = 30%	Average values from the SANBI layer were calculated for each planning unit. Then units with a value of above 5 were classified as EBA5, units with a value above 3 as EBA 3 etc. Note that the values are overlapping so a planning unit with a very high score will be included in the lower categories. This ensures strong preferential selection of high value areas to meet targets.
Conservation farms	Limpopo PA layer	Shapefile	May 2013	LEDET	Informal conservation	60%	Include to align selection with

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
and private nature reserves		Polygon			areas, with some known missing sites (e.g. Welgevonden/ Sterkfontein) added.		areas of compatible land use
Important bird areas (IBA)	Birdlife - Ecosol	Shapefile	April 2013	Ecosol	IBAs on intact habitat	30% each Non-selected areas have a minimum category of ESA.	The 11 IBAs linked to intact habitat were included individually. All key habitats are included.
Important bird areas (IBA) – Extra lark habitat around Polokwane NR	Ecosol	Shapefile	April 2013	Ecosol	5000ha of additional habitat for the Short Clawed lark were identified based on expert inputs.	80% Non-selected areas have a minimum category of ESA.	The high target is justified by the very specific identification of required area.
Geological features linked to biodiversity and key hydrological processes – dolomite		Shapefile Polygon		MetroGIS	Features individually included	50%	Important geological feature linked to specific biodiversity and hydrological processes.
Plant centres of endemism		Shapefile Polygon		MetroGIS	Features individually included	30% of each centre	
World Heritage Site Core						100%	Include to align selection with areas of compatible land use
Ramsar Sites		Shapefile Polygon		Various	Features separately included	100% Non-selected areas have a minimum category of	Included as biodiversity features

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
						ESA.	
Undeclared reserves	Limpopo Plan 1	Vector		MetroGIS		100%	Included as these areas will become part of the formal PA network.
Waterberg Biosphere core	Limpopo Plan 1	Vector		MetroGIS		100%	Areas zoned as core conservation areas included to align selection with areas of compatible land use
Biospheres	Various	Shapefile Polygon		Various	Biospheres individually included	30%	Include to align selection with areas of compatible land use
Buffers around areas	Ecosol	Shapefile Polygon		Ecosol	5km buffer around nature reserves, and 10km around National parks except where more specific buffers have been identified.	50% Non-selected areas have a minimum category of ESA.	* see details below table
NPAES area expansion priorities	SANBI focus areas layer	Shapefile Polygon		SANBI	Note that the focus areas were clipped by available units.	80%	NPAES priorities were included to ensure alignment. Identified areas were evaluated to ensure that they were contributing to other targets, and hence an area was never only selected because it was a NPAES focus area.
Provincial Conservation plan	Gauteng	Shapefile Polygon	2012	BGIS - GDARD - ECOSOL	Alignment of priorities across provincial boundaries	80%	Intact CBAs (i.e. CBA1) and PAs in neighbouring province buffered by 500m. Adjacent available Limpopo planning units selected. Manual removal of marginally linked planning units and addition of

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
							key additional units linking to ESA corridor. These remaining selected units included as a feature.
Provincial Conservation plan	Northwest	Shapefile Polygon	2008	BGIS - ECOSOL	Alignment of priorities across provincial boundaries	80%	CBAs and PAs in neighbouring province buffered by 500m. Adjacent available Limpopo planning units selected. Manual removal of marginally linked planning units and addition of key additional units linking to ESA corridor. These remaining selected units included as a feature.
Provincial Conservation plan	Mpumalanga	Shapefile Polygon	2013	MTPA	Alignment of priorities across provincial boundaries	80%	CBAs and PAs in neighbouring province buffered by 500m. Adjacent available Limpopo planning units selected. Manual removal of marginally linked planning units and addition of key additional units linking to ESA corridor. These remaining selected units included as a feature.
Features from previous conservation plan in areas which were in Mpumalanga MBCP	Mpumalanga	Shapefile Polygon		MTPA	Features identified at a fairly fine scale and using good data.	Irreplaceable = 100% Highly significant =60% Important and necessary = 30%	High targets used to ensure continuity, and full inclusion of targeted features.
Limpopo Ecological	Least costs pathways	Vector		Ecosol	** See details below	100%	** see details below

Feature	Dataset	Data Type	Date	Source	Comment	Target	Description of usage
Corridors layer	and expert pathways Corridors and connectivity.shp	developed from grid				Non-selected areas have a minimum category of ESA.	
River corridors based on FEPA Rivers	NFEPA_Rivers_1:500k	Shapefile Polyline	November 2011	CSIR - BGIS	All river reaches on rivers of order 3 and above, buffered by 100m. Non-available river corridor areas assigned to ESA.	100% of available units	Note this is part of the overall corridor network.
Key areas supporting climate change resilience	NBA 2011	Polygon	2012	SANBI / Holness	Key areas extracted from climate resilience layer with average values over 3. Non-selected areas have a minimum category of ESA.	80%	Note this is part of the overall corridor network.
Ridges and Escarpment	Ridges and Escarpment			MetroGIS	Areas have a minimum category of ESA.	No CBA target	Note that large areas of the ridges and escarpment layer are included in other feature types. This layer is used largely to ensure continuity with LCPv1 in small non-overlapping areas.

Buffers around PAs

- Buffers around protected areas as defined in "Listing Notice 3" are included (National Environmental Management Act, 1998 (Act No. 107 of 1998) Listing Notice 3: List of Activities and Competent Authorities Identified in Terms of Sections 24(2) and 24d No. R. 546 [As Corrected By "Correction Notice 2" (Gn No. R. 1159 of 10 December 2010)]. Government Gazette, 18 June 2010, No. 33306.). The buffers of 5km around nature reserves (LEDET) and 10km around national parks and world heritage sites are included at least as Ecological Support Area. Where additional

buffers have been formally defined (e.g. at Mapungubwe and Makapansgat WHS) these have been specifically included. The generic buffers as determined in "Listing notice 3" serve to protect the biodiversity and economic asset values of the provinces PA's by reducing the impacts of development adjacent to PA's. There are impacts on biodiversity (e.g. edge effects or introduction of alien species) and economic value (e.g. degradation of viewshed and sense of place).

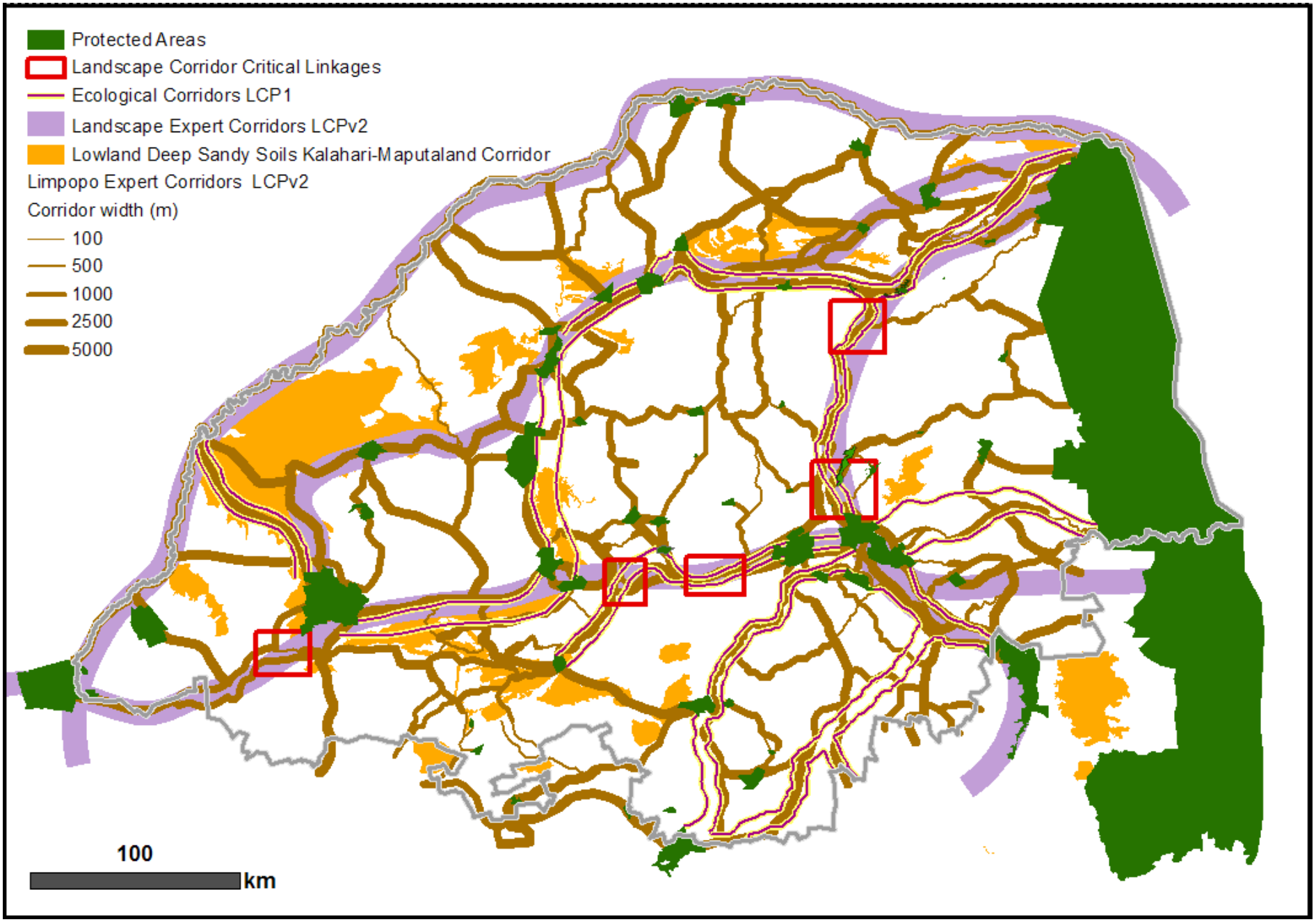
New least cost pathway corridor network developed.

- 500m resolution cost surface based on a.) Selection frequency in early Marxan analysis (formula = 100- selection frequency) to ensure that where possible the analysis is linking biodiversity features and also required areas, b.) Average Climate Change Resilience value for the planning unit (formula = 100 – 10*EbA value), c.) (a + b)/2 and then reclassify Excluded areas as 1000 and PA as 10.
- Corridor source nodes developed from PA network, Limpopo conservation plan 1, nodes from adjacent conservation plans, and Desmet other expert identified nodes.
- Iterative ArcGIS least cost routes developed between 44 key nodes. Continued until all nodes were connected and all nominal expert corridors included.

Expert pathways

- These represent a down-scaling or refinement of the provincial corridor network presented in LCP v1. The context information available (land-cover, mining, SIPS) was used to inform an expert least cost path exercise to identify specific corridors that link every existing PA in the province to every other PA. Rules used to operationalize these corridor concepts: 1. Link every existing PA to every other PA via shortest available distance (i.e. natural or near-natural vegetation, not earmarked for mining). 2. Follow NFEPA rivers where possible (some corridors follow river valleys whereas other follow interfluves). 3. Corridors include upland-lowland gradients. 4. Landscape macro-scale biogeographic corridors.
- The least cost and expert corridors were integrated in a manual design process to ensure connectivity, especially in the 5 limited opportunity areas. Identified corridors where then earmarked in Marxan to serve as the backbone of the analysis.
- High target justified based on detailed corridor design process and link between corridor and features.
- There are 4 macro-scale corridors guiding the overall layout of the network are: 1. E-W Kruger to Madikwe E-W landscape corridor, 2. N-S Eastern Escarpment landscape corridor, 3. Waterberg-Blouberg-Soutpansberg Mountain/Limpopo Valley ecotone landscape corridor (includes the Kalahari to Mozambique sand-plain connectivity), and 4. Limpopo River valley landscape corridor.
- There are 5 areas in the province where options for maintaining the macro or landscape connectivity are very limited due to other land-uses. In these areas it will be necessary to identify croplands or plantations as ESA just to maintain a minimum corridor width. These areas are: 1. Thabazimbi/Dwarsberg E-W corridor, 2.Modemole/Nyls River/Makapan E-W corridor, 3. Zebedelia/ Lebowagomo/Strydpoortberg E-W corridor, 4. Haenertsberg/Duiwelskloof N-S Escarpment, and 5. Elim N-S Escarpment.

Figure 7 (following page). The refined expert derived provincial ecological corridor network.


Protected Areas
Landscape Corridor Critical Linkages
Ecological Corridors LCP1
Landscape Expert Corridors LCPv2
Lowland Deep Sandy Soils Kalahari-Maputaland Corridor
Limpopo Expert Corridors LCPv2
Corridor width (m)
100
500
1000
2500
5000
100
km

Marxan Analysis Approach

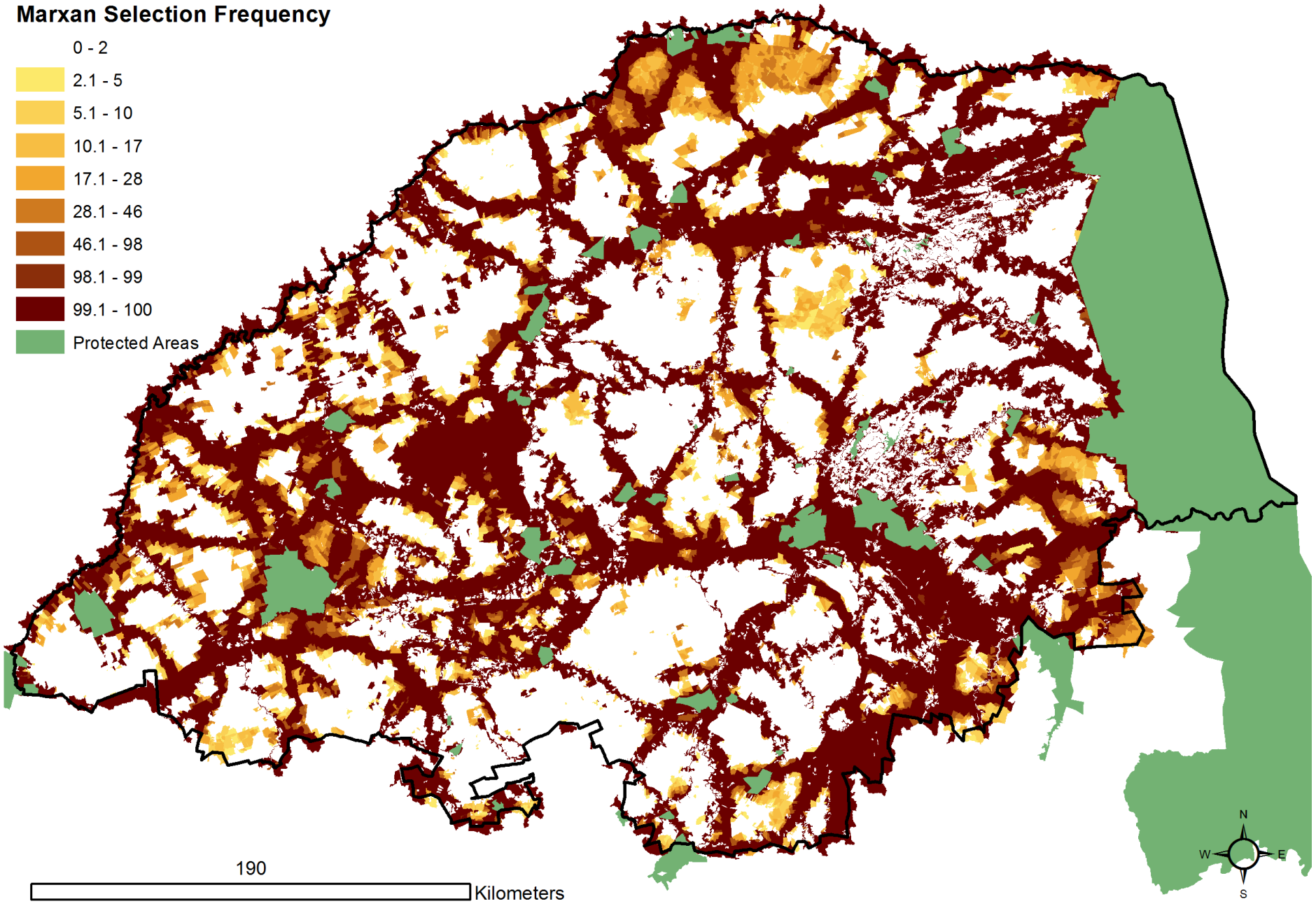
A standard two step MARXAN approach was taken to define Critical Biodiversity Areas:

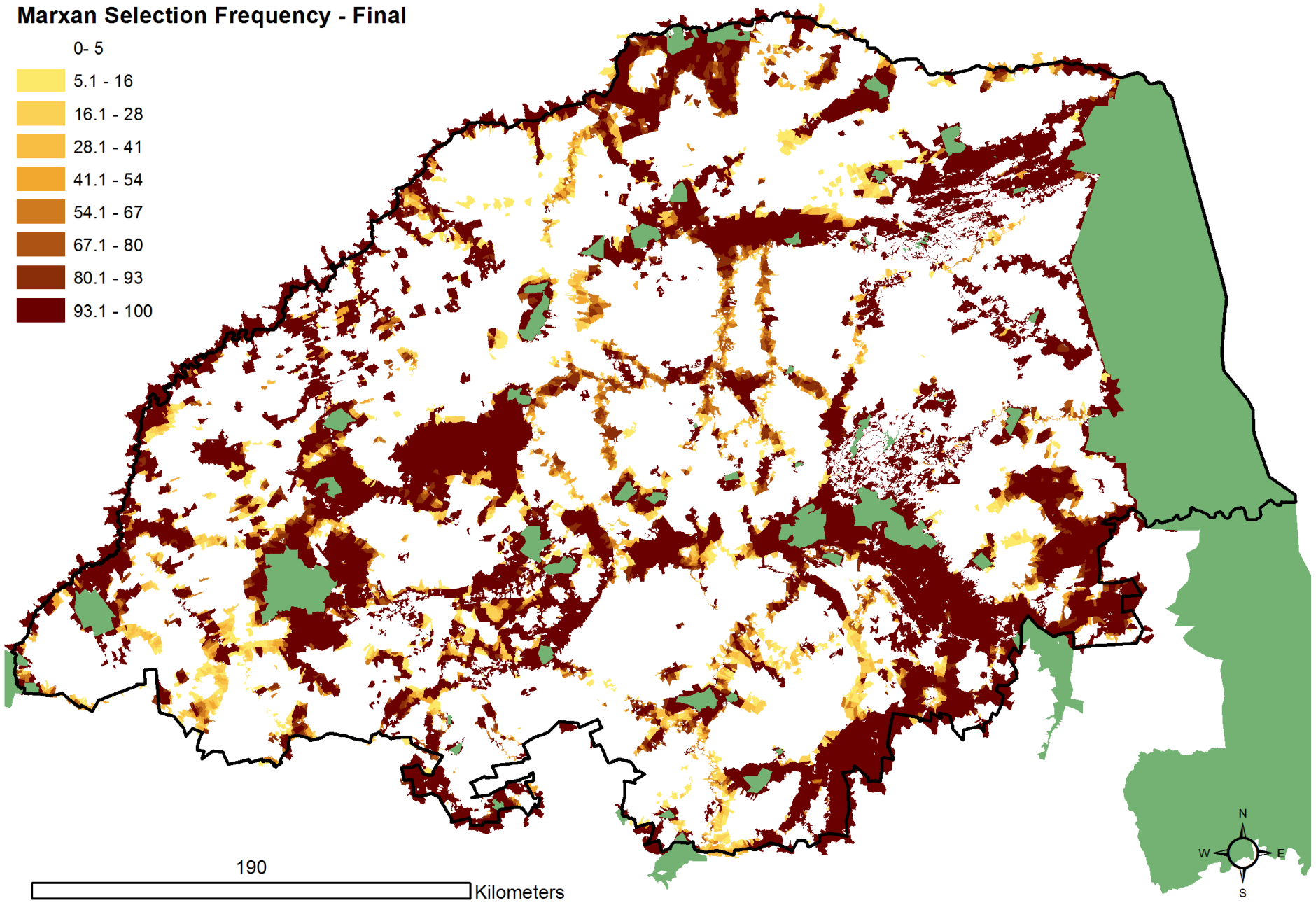
- The planning units, cost surfaces, and biodiversity feature layers (both pattern and process) were created as detailed above.
- Planning units were then categorized:
    - Planning units were categorized as Conserved (all formal Protected Areas), Excluded (All transformed units) and Available (Remaining units).
    - Excluded units could not be identified as Critical Biodiversity Area, but could be included as ecological Support Area.
    - Within Excluded areas, it is highly likely that some areas would be identified as Critical Biodiversity Area based on finer scale planning using more detailed and comprehensive biodiversity and land-cover data. If the location of a threatened species is not known or is not reflected in the datasets then it cannot be reflected in the Critical Biodiversity Area map. Hence it is important that site investigations are always undertaken to confirm the provincial mapping, and identify missing features which if known about would have triggered CBA status.
- Marxan v 2.1.1 by Ian Ball, Hugh Possingham and Matthew Watts was used in the analysis. CLUZ by Bob Smith run in ArcView 3.2 was used for data input. ArcGIS 10 by ESRI was used for most data processing. The QMarxan plug-in for QGIS was used for specific Marxan tasks.
- Marxan parameters:
    - QMarxan plug-in for QGIS was used to calculate boundary lengths, using fixed distance boundary lengths as recently used for the Mpumalanga conservation plan (Mpumalanga Biodiversity Sector Plan, Lotter 2013) rather than specific boundary distances. This approach was taken to ensure that adjacent areas were preferred even if their connections were small. This is a particularly valuable approach when the key issue is landscape connectivity rather than creating a highly clustered set of results.
        - Boundaries between Protected Areas and available units were set at 1000 units. This high value strongly encouraged selection of units adjacent to PAs, and hence ensured strong connectivity between the PAs and the remaining intact landscape.
        - Boundaries between other units were set at 100 units. As Excluded units are not available for selection, the boundaries between intact and transformed units were irrelevant.
        - Boundaries on edge units were discounted by 50%.
    - BLM calibration. The Boundary Length modifier was calibrated to ensure an efficient set of identified priority areas. In the end, a BLM of 3 efficiently identified areas required to meet targets.
    - SPF values of 1000000000 were iteratively identified to ensure sufficient inclusion of biodiversity features.
    - Running Marxan with 100 runs of 1000 000 iterations provided stable results.
    - The cost of inclusion of planning units was described in the costs surface section.
- Marxan Analysis stages:
    - The biodiversity features (both pattern and process) were inputted into the Marxan environment.
    - Because of the importance of the corridor network, units within the corridors were coded as Earmarked in the analysis to ensure that they formed the backbone of the Critical Biodiversity Area Network.

- Marxan was then iteratively run to calibrate input parameters. Initial Marxan outputs were presented to LEDET for comment, after which additional features were added and the corridor network redesigned.
- Achievement of targets was evaluated, and the Marxan analysis adjusted until satisfactory attainment of all key biodiversity feature targets was obtained.
- Planning units with a selection frequency of over 30% were then flagged for inclusion in a second Marxan run. This preliminary "CBA" footprint was evaluated in terms of its ability to meet key targets for biodiversity features. All other units were then flagged as either "Protected Area" or "Excluded".
- The corridor network was then removed from the Earmarked category (i.e. these units were just "Available" at the beginning of the run. The Marxan analysis was rerun with exactly the same specifications.
- For the second Marxan run, planning units with a selection frequency of over 90% were defined as CBA1. This cut-off was used as it satisfactorily included sufficient area to meet targets for the majority of features which were significantly location restricted or particularly significant (e.g. locations for highly threatened species found at one or two specific sites). In these areas, there is little or no choice if targets for pattern and process features are going to be fully met. The remaining areas were classified as CBA 2 (note that these areas had all met the CBA cut-off in the first round of the Marxan analysis. In these areas there is some choice of site to meet the targets, but these units nevertheless represent a rational, ecologically sensible and defendable set of areas in which they can be met.
- Achievement of targets was then evaluated again, and the Marxan analysis adjusted until satisfactory attainment of all key biodiversity feature targets was obtained.
- Remaining areas of corridors, non-selected natural wetlands, non selected river corridors, buffers on major rivers, and remaining unselected areas of FEPA catchments will all be classified as Ecological Support Area.
- Ecological Support Areas were then split based on current condition to give ESA1 = Natural areas not identified as CBA which are important for supporting ecological processes, and ESA 2 = Non-natural areas still important for supporting ecological processes.

- The categories, and associated land use guidelines of Critical biodiversity Area (1 & 2) and Ecological Support Areas (1 & 2) are described in the following sections. The level of representation of biodiversity features is summarized in the following section and detailed in Appendix One.

Figure 8 (following 2 pages). The initial and final selection frequency maps from the Marxan analysis.


Marxan Selection Frequency
0 - 2
2.1 - 5
5.1 - 10
10.1 - 17
17.1 - 28
28.1 - 46
46.1 - 98
98.1 - 99
99.1 - 100
Protected Areas
190
Kilometers
N
W
E
S


Marxan Selection Frequency - Final
0- 5
5.1 - 16
16.1 - 28
28.1 - 41
41.1 - 54
54.1 - 67
67.1 - 80
80.1 - 93
93.1 - 100
190
Kilometers
N
W
E
S

Map of Critical Biodiversity Areas

Critical Biodiversity Areas within the bioregion are the portfolio of sites that are required to meet the region's biodiversity targets, and need to be maintained in the appropriate condition for their category. A map of CBAs for Limpopo was produced as part of this plan and sites were assigned to CBA categories based on their biodiversity characteristics, spatial configuration and requirement for meeting targets for both biodiversity pattern and ecological processes (Table 12, Figure 11).

Based on the Limpopo Conservation Plan (Table 12, Figure 11), 40% of the province is designated as Critical Biodiversity Area. These CBAs have been split into CBA 1 and CBA 2 on the basis of selection frequency and the underlying characteristics of the biodiversity features which are being protected (i.e. location fixed features such as sites for CR species and flexible ones such as Least Cost Corridors). The majority of the CBAs in the province are CBA 1 (22 %), which can be considered "irreplaceable" in that there is little choice in terms of areas available to meet targets. If CBA 1 areas are not maintained in a natural state then targets cannot be achieved. CBA 2's are considered "optimal" as there is significant design involved in their identification, make up 18 % of the province. CBA 2's represent areas where there are spatial options for achieving targets and the selected sites are the ones that best achieve targets within the landscape design objectives of the plan.

An additional 23% of the province is designated as Ecological Support Area. This category has also been split on the basis of land-cover into ESA 1 (16%) and ESA 2 (7%), with ESA 1 being in a largely natural state while ESA 2 areas are no longer intact but potentially retain significant importance from a process perspective (e.g. maintaining landscape connectivity). Other Natural Areas make up 20% of the province and just over 11% is designated as formal Protected Area (Figure 11, Table 12). The relatively high portion of remaining natural habitats which have been designated in one of the priority categories is a function of the fully integrated terrestrial and freshwater assessment (i.e. unlike many provinces there is not a second additional map of freshwater priorities), the comprehensive corridor and climate change adaptation features, and the relatively poor overlap of features (i.e. priority areas for one taxa do not spatially correlate well with those of other taxa in most of the savanna areas).

Table 12 . The extent of Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) identified in the Limpopo Province

CBA Category	Extent (ha)	Extent (km2)	
Protected Area	1 360 410	13 604	11%
CBA1	2 780 864	27 808	22%
CBA2	2 238 430	22 384	18%
ESA 1	2 009 053	20 090	16%
ESA 2	933 802	9 381	7%
Total	**9 322 559**	**93 225**	**74%**

Target achievement in Critical Biodiversity Areas

An objective of the CBA map is to identify a network of areas, which if managed according to the land use guidelines would meet the pattern targets for all important biodiversity features, while at the same time ensuring the areas necessary for supporting necessary ecological processes remain functional. Hence, the key measure of whether a network of Critical Biodiversity Areas is sufficient, is the extent to which targets for biodiversity features are met. Details of the extent of each biodiversity feature in protected areas and each of the categories on the Critical Biodiversity Area map are given in Appendix One (page 64).

For ease of evaluation, the categories used were aligned with those used for evaluating habitats in the National Biodiversity Assessment (Driver et al 2012) (see page 17 PA GAP analysis)

When the current Protected Area network is examined in terms of the representation of features, it is clear that although the Protected Area network is fairly extensive, it is neither efficient nor fully representative (Figure 9). While 21% of the features have their targets met and are Well

Protected, a third of the features (74 of the 223 types) are Not Protected while another third (73 types) are Poorly Protected.

Securing the Critical Biodiversity Area network, however, in addition to the current Protected Areas, would protect a far more representative set of biodiversity features (Figure 10). 89% of features (199 out of 223 types) would be Well Protected, with the remaining 24 types being Moderately Protected.

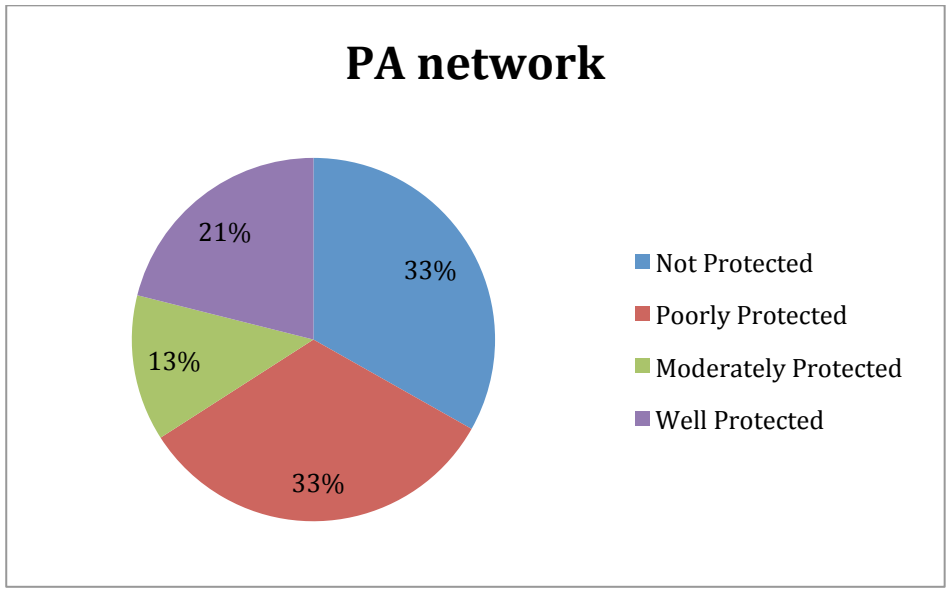


Figure 9: Targets for biodiversity features achieved by the current Protected Area network.

Of the Moderately Protected types, 18 had more than 90% of their target met, while an additional 5 types had more than 80% of their target met. In most of these cases insufficient intact habitat remained to meet targets, while in others meeting the last few percent of the target would result in an extremely land hungry CBA network. The only feature with less than 80 % of the target met in CBAs was the Strategic Water Source Areas, where insufficient intact habitat remained to meet the required target. However, all Strategic Water Source Areas were at least included as Ecological Support Areas.

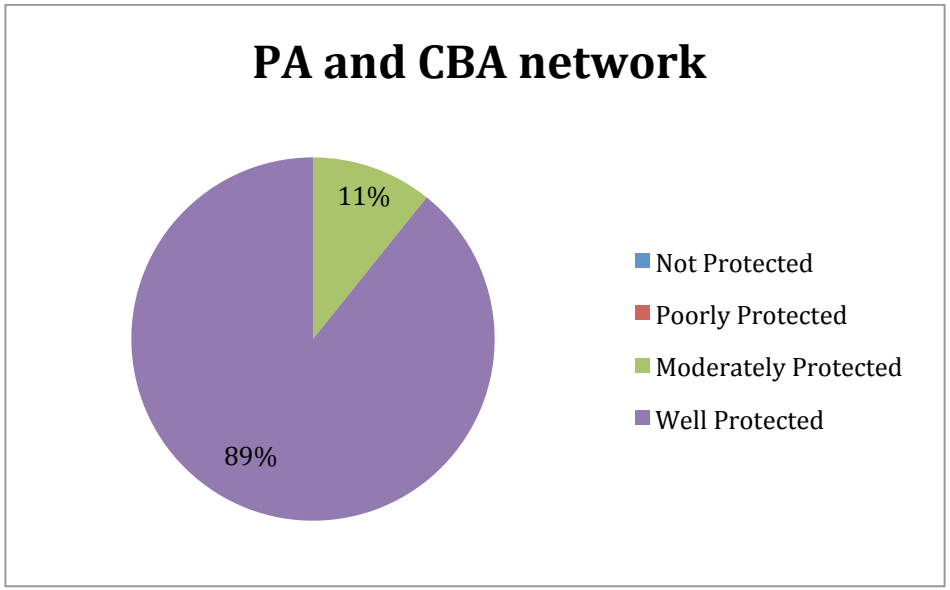
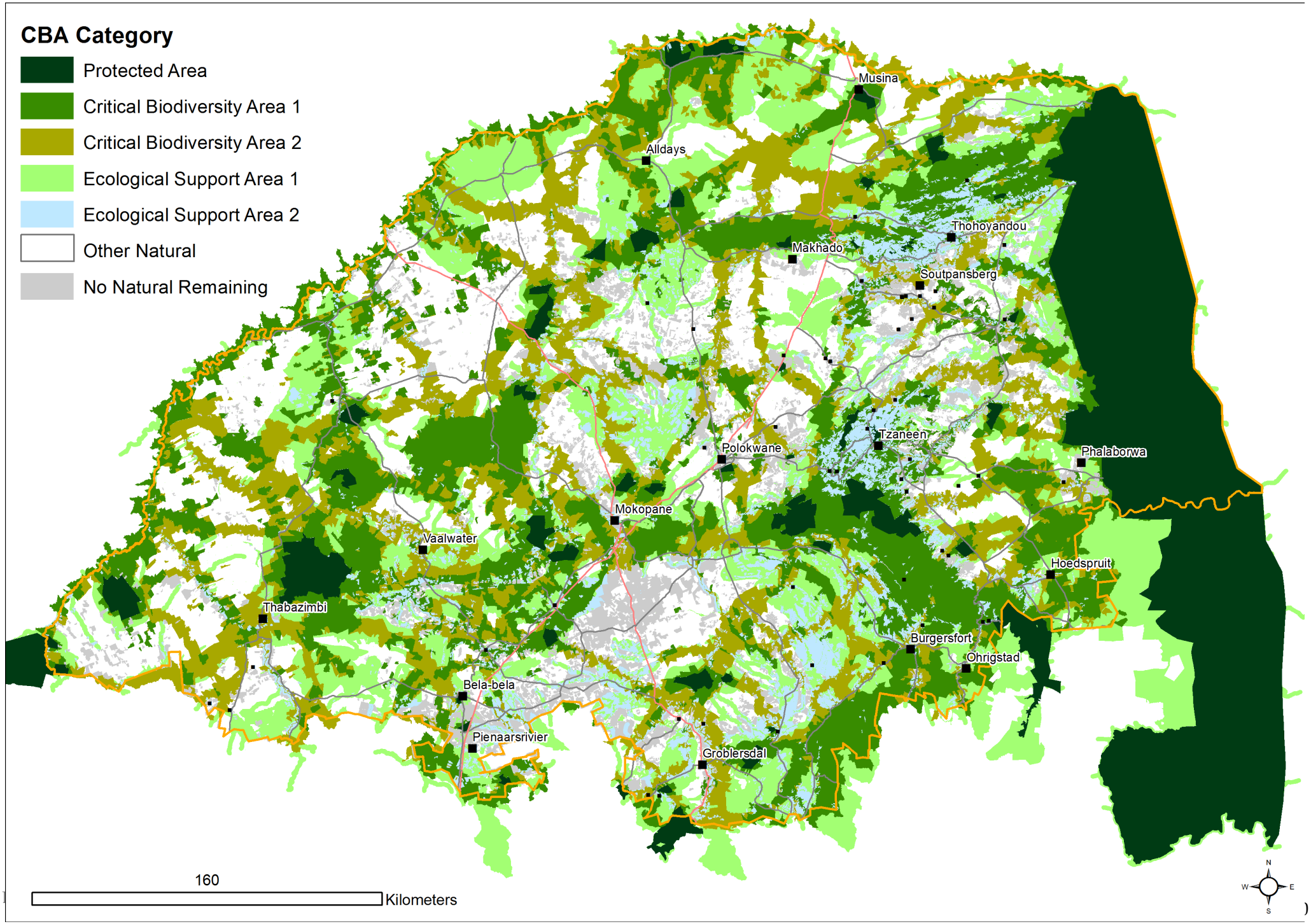


Figure 10: Targets for biodiversity features achieved by the current Protected Area network plus the identified network of Critical Biodiversity Areas.

Figure 11 (following page). Limpopo Province map of Critical Biodiversity Areas.


CBA Category
Protected Area
Critical Biodiversity Area 1
Critical Biodiversity Area 2
Ecological Support Area 1
Ecological Support Area 2
Other Natural
No Natural Remaining
Musina
Alldays
Thohoyandou
Makhado
Soutpansberg
Tzaneen
Polokwane
Phalaborwa
Mokopane
Vaalwater
Hoedspruit
Thabazimbi
Burgersfort
Ohrigstad
Bela-bela
Pienaarsrivier
Groblersdal
160
Kilometers
N
W
E
S

Land-Use Guidelines

The purpose of the land-use guidelines is to provide guidance on what types of land-use activities are compatible with the biodiversity management objectives of each CBA map category. These guidelines do not grant or take away existing land-use rights or the statutory requirement for permits and environmental authorizations. It is however recommended that any planned activity within the identified sensitive conservation areas, even those not requiring specified permits or authorisations, comply with the Duty of Care obligations of Section 28 of the National Environmental Management Act No 107 of 1998. At a minimum such activities should undergo an environmental impact scoping process and the development of an Environmental Management Programme (EMP) to ensure mitigation and management of identified impacts.

The CBA Map categories are not intended to align with Land Use Management Scheme categories. The intention of these recommendations is to provide an integrated biodiversity sector input layer into multi-sectorial decision making processes. It is recommended that during land-use planning and decision-making process these guidelines be used in combination with existing provincial or municipal LUMS. Where there is an existing LUMS the CBA map provides an "overlay" category that serves to inform and modify the underlying existing land-use category. Where a LUMS does not exist, for example in rural areas, the CBA map category should preferably take precedence when developing municipal LUMS.

The guidelines of compatible and incompatible land-uses are designed to aid planners to identify the appropriate zones and controls to impose on areas designated as Critical Biodiversity Areas or Ecological Support Areas when developing Spatial Development Frameworks, Environmental Management Frameworks, Land-Use Management Schemes or similar strategic land-use planning tools. The guidelines also give the evaluators of Environmental Impact Assessments an indication of appropriate land-use within each area.

Spatial Biodiversity Planning in South Africa is converging towards a common set of definitions for CBA categories as well as standardized recommendations for land-use activities. The intention with this conservation plan was not to re-invent province-specific land-use guidelines but rather to align with existing products. Therefore the guidelines presented are well aligned with conservation plans elsewhere in South Africa.

The following land-use guidelines documents informed the LCPv2 land-use guidelines

- Limpopo conservation plan version 1 (Nel *et al.*, 2011)
- Garden Route Biodiversity Sector Plan (Vromans *et al.*, 2010)
- Nelson Mandela Bay Municipality Draft Bioregional Plan (Stewart and Reeves 2010)
- KZN Province conservation plan land-use guidelines (Escott *et al.*, 2013)
- Mpumalanga Province land-use guidelines (Ferrar & Lotter, 2005)
- Gauteng West Rand Bioregional Plan (Holness and Skowno 2012)
- National Freshwater Ecosystem Priority Areas (Nel *et al.*, 2011)

Critical Biodiversity Area Map Categories Land Management Objectives

Table 13. General description of CBA Map categories and associated land management objectives

CBA Map Category	Description	Land Management Objective	Land Management Recommendations	Compatible Land-Use	Incompatible Land-Use
Protected Areas	Formal Protected Areas and Protected Areas pending declaration under NEMPA.	Maintain in a natural state with limited or no biodiversity loss. Rehabilitate degraded areas to a natural or near natural state, and manage for no further degradation. Development subject to Protected Area objectives and zoning in a NEMPAA compliant and approved management plan.	Maintain or obtain formal conservation protection.	Conservation and associated activities (e.g. eco-tourism operations), and required support infrastructure.	All other land-uses.
Critical Biodiversity Areas (1)	Irreplaceable Sites. Areas required to meet biodiversity pattern and/or ecological processes targets. No alternative sites are available to meet targets.	Maintain in a natural state with limited or no biodiversity loss. Rehabilitate degraded areas to a natural or near natural state, and manage for no further degradation.	Obtain formal conservation protection where possible. Implement appropriate zoning to avoid net loss of intact habitat or intensification of land use.	Conservation and associated activities. Extensive game farming and eco-tourism operations with strict control on environmental impacts and carrying capacities, where the overall there is a net biodiversity gain. Extensive Livestock Production with strict control on environmental impacts and carrying capacities. Required support infrastructure for the above activities. Urban Open Space Systems	Urban land-uses including Residential (including golf estates, rural residential, resorts), Business, Mining & Industrial; Infrastructure (roads, power lines, pipelines). Intensive Animal Production (all types including dairy farming associated with confinement, imported foodstuffs, and improved/irrigated pastures). Arable Agriculture (forestry, dry land & irrigated cropping). Small holdings

CBA Map Category	Description	Land Management Objective	Land Management Recommendations	Compatible Land-Use	Incompatible Land-Use
Critical Biodiversity Area (2)	Best Design Selected Sites. Areas selected to meet biodiversity pattern and/or ecological process targets. Alternative sites may be available to meet targets.	Maintain in a natural state with limited or no biodiversity loss. Maintain current agricultural activities. Ensure that land use is not intensified and that activities are managed to minimize impact on threatened species.	Avoid conversion of agricultural land to more intensive land uses, which may have a negative impact on threatened species or ecological processes.	Current agricultural practices including arable agriculture, intensive and extensive animal production, as well as game and ecotourism operations, so long as these are managed in a way to ensure populations of threatened species are maintained and the ecological processes which support them are not impacted. Any activities compatible with CBA1.	Urban land-uses including Residential (including golf estates, rural residential, resorts), Business, Mining & Industrial; Infrastructure (roads, power lines, pipelines). More intensive agricultural production than currently undertaken on site. Note: Certain elements of these activities could be allowed subject to detailed impact assessment to ensure that developments were designed to CBA2. Alternative areas may need to be identified to ensure the CBA network still meets the required targets.
Ecological Support Areas (1)	Natural, near natural and degraded areas supporting CBAs by maintaining ecological processes.	Maintain ecosystem functionality and connectivity allowing for limited loss of biodiversity pattern	Implement appropriate zoning and land management guidelines to avoid impacting ecological processes. Avoid intensification of land use. Avoid fragmentation of natural landscape	Conservation and associated activities. Extensive game farming and eco-tourism operations. Extensive Livestock Production. Urban Open Space Systems. Low density rural residential, smallholdings or resorts where development design and overall development densities allow maintenance of ecological functioning.	Urban land-uses including Residential (including golf estates), Business, Mining & Industrial; Infrastructure (roads, power lines, pipelines). Intensive Animal Production (all types including dairy farming associated with confinement, imported foodstuffs, and improved/irrigated pastures). Arable Agriculture (forestry, dry land & irrigated cropping). Note: Certain elements of these activities could be allowed subject to detailed impact assessment to ensure that developments were designed to maintain overall ecological functioning of ESAs.

CBA Map Category	Description	Land Management Objective	Land Management Recommendations	Compatible Land-Use	Incompatible Land-Use
Ecological Support Areas (2)	Areas with no natural habitat that is important for supporting ecological processes.	Avoid additional / new impacts on ecological processes.	Maintain current land-use. Avoid intensification of land use, which may result in additional impact on ecological processes.	Existing activities (e.g. arable agriculture) should be maintained, but where possible a transition to less intensive land uses or ecological restoration should be favoured.	Any land use or activity that results in additional impacts on ecological functioning mostly associated with the intensification of land use in these areas (e.g. Change of floodplain from arable agriculture to an urban land use or from recreational fields and parks to urban).
Other Natural Areas	Natural and intact but not required to meet targets, or identified as CBA or ESA	No management objectives, land management recommendations or land-use guidelines are prescribed. These areas are nevertheless subject to all applicable town and regional planning guidelines and policy. Where possible existing Not Natural areas should be favoured for development before "Other natural areas" as before "Other natural areas" may later be required either due to the identification of previously unknown important biodiversity features on these sites, or alternatively where the loss of CBA has resulted in the need to identify alternative sites.			
No natural habitat remaining	Areas with no significant direct biodiversity value. Not Natural or degraded natural areas that are not required as ESA, including intensive agriculture, urban, industry; and human infrastructure.				

Recommended Land-Use Management Guidelines

Table 14. Recommended land management guidelines for Critical Biodiversity Areas and Ecological Support Areas

CRITICAL BIODIVERSITY AREAS ONE (CBA1)
Keep in a **NATURAL STATE**
General Recommendations
• No further loss of natural habitat should occur i.e. land in this category should be maintained as natural vegetation cover as far as possible; • These areas of land can act as possible biodiversity offset receiving areas; • Prioritise CBAs for land care projects, Working for Water (WfW) and NGOs to direct their conservation projects, programmes and activities; • An Ecological Management Plan should be compiled where required for CBAs. EMP to include alien plant control, fire management etc.; • Control of illegal activities (such a hunting and dumping), which impact biodiversity should be prioritized in CBA areas.
Protection
• CBAs not formally protected should be rezoned where possible to conservation or appropriate open space zoning, and where possible declared in terms of NEM: Protected Areas Act. • The Stewardship program should prioritise privately owned erven in CBAs to be incorporated into the protected area network through Stewardship Agreements and incentives (e.g. rates rebates).
Rehabilitation
• Degraded or disturbed CBAs should be prioritized for rehabilitation through programmes such as Working for Water, Working for Wetlands.
Development Guidelines
Where infrastructure is proposed, the following guidelines should be implemented - • Rezoning of properties to afford additional land-use rights that will result in increased biodiversity loss should not be granted; • Permission to increase the permitted number of units per erf or per ha should not be granted; • Developments should be limited to existing developed / degraded footprints, if present; • Units carefully dispersed or clumped to achieve least impact, particularly with regard to habitat loss and fragmentation; • The installation of infrastructure in CBAs is not desirable and should only be considered if all alternative alignment and design options have been assessed and found to be non-viable. Under such conditions, at least a Basic Assessment (BA) should be undertaken, and if approved, a comprehensive EMP must

be developed and best-practice restoration efforts strictly implemented;

- Ecological Specialist to conduct the ecological assessment;

Where development proposals other than the preferred biodiversity-compatible land-uses (see table above are submitted in terms of the NEMA: EIA regulations or Land Use Planning Ordinance (LUPO):

- A Screening Exercise should be undertaken by a Biodiversity Specialist or Ecologist to verify the CBA map category on site;
- If the site is verified as a CBA, developments other than the preferred biodiversity-compatible land-uses should be investigated in detail and the mitigation hierarchy applied in full;
- If the application is pursued they should be informed by a specialist biodiversity assessment.

Aquatic Ecosystems

- Maintain water quality and flow regimes should be maintained as close to natural as possible;
- Where Environmental Reserves or Environmental Flow Requirements have been determined these should be strictly adhered to;
- All effluent (including municipal, mining and industrial waste water) as well as acid mine drainage should be treated to required specifications before release;
- Stormwater flow should be managed to avoid damage to CBA areas.
- Where CBAs include floodplains (e.g. areas within the 1:100 year floodline), riperian areas (e.g. as a minimum, a 32m buffer around rivers) or buffers around wetlands, particular attention should applied to ensure that these remain in a natural state or are rehabilited to this state. In addition to avoiding land transformation, other activities such as livestock access may need to be controlled and alien vegetaion managed to avoid damage to banks. Do not permit infilling, excavation, drainage, hardened surfaces (including buildings and asphalt), intensive agriculture or any new developments within a river or wetland.
- Areas that are degraded or disturbed should be rehabilitated, through programmes such as Working for Water, Working for Wetlands and a systematic alien vegetation eradication programme implemented.

CRITICAL BIODIVERSTIY AREA TWO (CBA2)
Keep in a **NATURAL STATE**
General Recommendations
• Loss of natural habitat should be minimized i.e. land in this category should be maintained as natural vegetation cover as far as possible; • These areas of land can act as possible biodiversity offset receiving areas; • Control of illegal activities (such a hunting and dumping), which impact biodiversity should be prioritized in CBA areas.
Protection
• CBAs not formally protected should be rezoned where possible to conservation or appropriate open space zoning, and where possible declared in terms of NEM: Protected Areas Act. • The Stewardship program should prioritise privately owned erven in CBAs to be incorporated into the protected area network through Stewardship Agreements and incentives (e.g. rates rebates).
Rehabilitation
• Degraded or disturbed CBAs should be prioritized for rehabilitation through programmes such as Working for Water, Working for Wetlands.
Development Guidelines
Where infrastructure is proposed, the following guidelines should be implemented - • Rezoning of properties to afford additional land-use rights that will result in increased biodiversity loss through conversion of land from agriculture should not be granted; • Permission to increase the permitted number of units per erf or per ha should not be granted; • Developments should be limited to existing footprints, if present, and should avoid encroaching on natural or agricultural landscapes; • Should additional infrastructure be required, the requirements of threatened species should be taken into account. At least a Basic Assessment (BA) should be undertaken for any development which results in the intensification of land use, and if intensification of land use is approved, a comprehensive EMP or must be developed to minimize impacts on threatened species; • Ecological Specialist to conduct the ecological assessment; ***Where development proposals other than the preferred biodiversity-compatible land-uses (see table above are submitted in terms of the NEMA: EIA regulations or Land Use Planning Ordinance (LUPO):*** • A Screening Exercise should be undertaken by a Biodiversity Specialist or Ecologist to verify the CBA map category on site;

- If the site is verified as a CBA, developments other than the preferred biodiversity-compatible land-uses should be investigated in detail and the mitigation hierarchy applied in full;
- If the application is pursued they should be informed by a specialist biodiversity assessment.

Aquatic Ecosystems

- Maintain water quality and flow regimes should be maintained as close to natural as possible.
- Where Environmental Reserves or Environmental Flow Requirements have been determined these should be strictly adhered to.
- All effluent (including municipal, mining and industrial waste water) as well as acid mine drainage should be treated to required specifications before release.
- Stormwater flow should be managed to avoid damage to CBA2 areas.
- Where CBA2s include floodplains (e.g. areas within the 1:100 year floodline), riperian areas (e.g. as a minimum, the 32m around rivers) or buffers around wetlands, particular attention should applied to ensure that these remain in a natural state or are rehabilited to this state in order to maintain ecological function. Do not permit infilling, excavation, drainage, hardened surfaces (including buildings and asphalt), intensive agriculture or any new developments within a river or wetland.
- Areas that are degraded or disturbed should be rehabilitated, through programmes such as Working for Water, Working for Wetlands and a systematic alien vegetation eradication programme implemented. Rehabilitation work should be undertaken in a way which does not negatively impact on the survival of threatened species.

ECOLOGICAL SUPPORT AREAS ONE (ESA1)

Maintain in an **ECOLOGICALFUNCTIONAL STATE**.

General Recommendations

- Maintain in a functional state, avoid intensification of land-uses, and rehabilitate to a natural or semi-natural state where possible. In transformed areas which are important for maintaining ecological processes, current land uses should be maintained, intensification of use (e.g. a transition from agriculture to urban) should be avoided, and where possible areas should be rehabilitated.
- No further loss of natural habitat should be allowed, and land in this category currently in a degraded state should be rehabilitated or restored to a natural or semi-natural state once the current land-use has ceased;
- Maintain current land uses where these play a role in supporting ecological processes;
- Ensure land use changes do not impact negatively on ecological processes.
- The maintenance of connectivity between CBAs, continued ecosystem functioning within the CBA corridors, and the prevention of degradation of adjacent

Critical Biodiversity Areas must be achieved;

- After the CBA1s, ESA1s should be prioritised for land care projects, Working for Water (WfW) and NGOs to direct their conservation projects, programmes and activities;
- An Ecological Management Plan should be compiled where required for ESAs. EMP to include alien plant control, fire management etc.

Development Guidelines

Where infrastructure is proposed, the following guidelines should be implemented -

- Rezoning of properties to afford additional land-use rights that will result in increased impact on ecological processes should not be granted, unless significant net conservation gains can be achieved, ecosystem functioning and connectivity of Ecosystem Support Areas (ESAs) will not compromised, and biodiversity impacts with regard to species and habitats are of at an acceptable significance and mitigated where possible.
- Developments should be limited to existing developed / degraded footprints, where possible;
- Units carefully dispersed or clumped to achieve least impact, particularly with regard to impacts on ecological processes.
- Ecological Specialist to conduct the ecological assessment.

Where development proposals other than the preferred biodiversity-compatible land-uses are submitted in terms of the NEMA: EIA regulations or Land Use Planning Ordinance (LUPO) for areas which remain intact:

- A Screening Exercise should be undertaken by a Biodiversity Specialist or Ecologist to verify the CBA map category on site.
- If the site is verified as an ESA, developments other than the preferred biodiversity-compatible land-uses should be carefully screened to ensure that developments are planned and activities undertaken in a way that minimizes impact on ecological processes. Impacts should be mitigated.
- If the application is pursued they should be informed by a specialist biodiversity assessment.

In transformed areas which are still important for supporting ecological processes, the following guidelines should be implemented -

- Current land uses should be maintained, intensification of use (e.g. a transition from extensive agriculture to urban) should be avoided, and where possible areas should be rehabilitated.
- Developments should be screened to ensure that they do not have an unacceptable impact on ecological processes.

Aquatic Ecosystems

- Water quality and flow regimes should be maintained as close to natural as possible.
- Where Environmental Reserves or Environmental Flow Requirements have been determined these should be strictly adhered to.
- All effluent (including municipal, mining and industrial waste water) as well as acid mine drainage should be treated to required specifications before

release.

- Stormwater flow should be managed to avoid damage to ESA areas.
- Where ESAs include floodplains (e.g. areas within the 1:100 year floodline), riperian areas (e.g. as a minimum, the 32m around rivers) or buffers around wetlands, partcular attention should applied to ensure that these remain in a natural state or are rehabilited to this state. In addition to avoiding land transformation, other activities such as livestock access may need to be controlled and alien vegetation managed to avoid damage to banks. Do not permit infilling, excavation, drainage, hardened surfaces (including buildings), intensive agriculture or any new developments within a river or wetland.
- Areas that are degraded or disturbed should be rehabilitated, through programmes such as Working for Water, Working for Wetlands and a systematic alien vegetation eradication programme implemented.
- Creation of berms, roads, culverts, canalisation, channelisation, alien vegetation, impoundment, abstraction, well points, storm-water or other point source inflows, irrigation return flows, grazing / trampling, agriculture, golf courses, suburban gardens, artificial deepening, and drainage, should be avoided where possible within the 1:20 year floodline.

ECOLOGICAL SUPPORT AREAS TWO (ESA2)

Maintain existing and restore **ECOLOGICAL FUNCTIONING**

General Recommendations

- Additional impacts on ecological processes should be avoided. In transformed areas, which are important for maintaining ecological processes, current land uses should be maintained, intensification of use (e.g. a transition from agriculture to urban) should be avoided, and where possible areas should be rehabilitated.
- The maintenance of connectivity between CBAs, continued ecosystem functioning within the CBA corridors, and the prevention of degradation of adjacent Critical Biodiversity Areas must be achieved;
- In some cases the rehabilitation of ESA2s may be the suitable for land care projects, Working for Water (WfW) and NGOs to direct their conservation projects, programmes and activities;

Development Guidelines

Where infrastructure is proposed, the following guidelines should be implemented -

- Infrastructure should be designed to avoid additional impacts on ecological processes.

In transformed areas which are still important for supporting ecological processes, the following guidelines should be implemented -

- Current land uses should be maintained, intensification of use (e.g. a transition from agriculture to urban) should be avoided, and where possible areas should be rehabilitated;

• Developments should be screened to ensure that they do not have an unacceptable impact on ecological processes.
Aquatic Ecosystems
• Water quality and flow regimes should be maintained as close to natural as possible. • Where Environmental Reserves or Environmental Flow Requirements have been determined these should be strictly adhered to. • All effluent (including municipal, mining and industrial waste water) as well as acid mine drainage should be treated to required specifications before release. • Stormwater flow should be managed to avoid damage to ESA2 areas. • Where ESA2s include floodplains (e.g. areas within the 1:100 year floodline), riperian areas (e.g. as a minimum, the 32m around rivers) or buffers around wetlands, partcular attention should applied to ensure that there is no additional impact on ecological functioning, and where possible these areas rehabilited to improve ecological functioning. In addition to avoiding intensification of land use, other activities such as livestock access may need to be controlled and alien vegetaion managed to avoid damage to banks. Do not permit infilling, excavation, drainage, hardened surfaces (including buildings), intensive agriculture or any new developments within a river or wetland. • Creation of berms, roads, culverts, canalisation, channelisation, alien vegetation, impoundment, abstraction, well points, storm-water or other point source inflows, irrigation return flows, grazing / trampling, agriculture, golf courses, suburban gardens, artificial deepening, and drainage, should be avoided where possible within the 1:20 year floodline.

Recommendations

It is general practice to update the conservation every 3-5 years. With this in mind we make the following recommendations for LEDET's consideration:

1. **The Product Name**. The name of the conservation plan should be change to "biodiversity assessment". A conservation plan implies that there is a spatial assessment, a spatial plan; and, a strategy to implement the plan. What was conducted in this project was only the spatial assessment. Changing the name would also bring the terminology of the product in line with what is being used by other provinces in South Africa.
2. **Systematically Improve Key Dataset**. Good data is the cornerstone of a good biodiversity assessment and ultimately achieving the conservation mandate of LEDET. It is imperative that LEDET have strategies in place to formalize the collection and curation of essential spatial data sets in preparation for future iterations of the assessment. The three essential groups of data include:
    a. **Protected Area Register**.
    b. **Land-cover Updates**.
    c. **Biodiversity Inventory, Mapping and Monitoring**.
3. **Market the Product**. In order for the CBA map to achieve its objectives, the biodiversity assessment, CBA map and land-use guidelines need to be used in land-use planning and decision making processes. It is incumbent on LEDET to ensure that all spheres of provincial government are aware of the plan and are encouraged to use it in informing their planning processes.
4. **Protected Area Expansion Strategy**. This assessment provides an excellent basis from which to develop a protected area expansion strategy for the province. It is important to ensure that when such a strategy is developed for the project that the data and analyses conducted as part of this project are used as key informants in this strategy.
5. **LEDET Capacity**. Given that spatial data and planning is a core component of biodiversity conservation in the province it is important that LEDET have GIS and spatial biodiversity planning capacity within the department with the ability especially to collate and manage the essential datasets required for planning.

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Appendix 1: Targets and their achievement for all biodiversity features

Feature Details			Target Details				Area (ha) per category							Percentage target per category					
Category	Feature name	ID	CBA target %	ESA target %	CBA target (ha)	ESA target (ha)	Protected Area	CBA	ESA 1	ESA 2	In excluded areas and not ESA2	In other natural areas	Total Extent	Protected Area	CBA	ESA 1	ESA 2	All PA and CBA	All PA CBA and ESA
Alignment	MBCP 1 - Protected	135	100	0	20639.9	0.0	19425.9	1213.9		0.0			20639.9	94	6	0	0	100	106
	MBCP 2 - Irreplaceable	136	100	0	4003.7	0.0	0.0	3862.2		141.5			4003.7	0	96	0	4	96	196
	MBCP 3 - Highly Significant	137	60	0	84310.0	0.0	1230.6	124950.6	12324.9	2010.6			140516.7	1	148	15	2	150	315
	MBCP 4 - Important & Necessary	138	30	0	41634.5	0.0	981.8	99999.3	33919.2	3881.5			138781.8	2	240	81	9	243	574
	Mpumalanga connection - Alignment across provincial boundaries	139	80	0	52219.9	0.0	1894.2	51515.2	11430.9	434.5			65274.9	4	99	22	1	102	224
	NPAES	140	80	0	573198.5	0.0	0.4	575580.0	140917.8	0.0	0.0		716498.2	0	100	25	0	100	225
	Northwest and Gauteng Alignment- Alignment across boundaries	142	80	0	36241.7	0.0	4878.5	27301.5	12844.9	277.2			45302.1	13	75	35	1	89	200
	Conservation farms and private nature reserves	178	60	0	287675.6	0.0	65.2	308936.6	46865.3	15666.4	14932.5	92993.3	479459.3	0	107	16	5	107	237
Aquatic	FEPA 100m	62	100	100	51917.2	51917.2	15315.7	35567.0	30.1	1004.3			51917.2	30	69	0	2	98	169
	Other FEPA 100m	63	30	100	11806.1	39353.6	4381.6	26219.1	5990.4	2762.5			39353.6	37	222	51	23	259	555
	FEPA	64	40	100	940554.2	2351385.4	584720.7	1061515.6	565101.7	140047.4	0.0	0.0	2351385.4	62	113	60	15	175	363
	Phase2FEPA	65	30	100	218968.1	729893.6	115937.3	241710.8	242847.9	129397.5	0.0	0.0	729893.6	53	110	111	59	163	444
	FEPA12 Buffer 5km clipped	66	60	100	1294018.2	2156697.0	563291.2	1056171.7	340766.0	196468.0	0.0	0.0	2156697.0	44	82	26	15	125	248
	Wetland FEPA	67	100	100	25495.7	25495.7	3512.8	20458.6	26.9	1497.4			25495.7	14	80	0	6	94	180
	Wetland Clusters	68	100	100	63027.5	63027.5	5318.6	51677.4	7.0	6024.5			63027.5	8	82	0	10	90	182
	Ramsar - Nyls Vlei	131	100	100	3923.2	3923.2	3860.7	62.4					3923.2	98	2	0	0	100	102
	Revised High Water Yield Areas	141	80	100	277169.0	346461.3	36946.6	176517.2		132997.5	0.0		346461.3	13	64	0	48	77	189
	Nyls Vlei Support areas	286	100	0	26622.5	0.0	3981.0	20957.2		1323.0	361.4		26622.5	15	79	0	5	94	177
	All natural wetlands	289	0	100	0.0	56983.5	7953.8	40146.2	5011.1	3872.5			56983.5	na	0	na	na	na	na
	Buffer on large rivers - 1km	291	0	100	0.0	2594206.9	307758.3	1365722.1	471777.2	448949.2	0.0		2594206.9	na	0	na	na	na	na
Climate Change	Non-Savanna Climate Refuge	123	80	100	18588.5	23235.7	1183.3	15849.6		6202.8			23235.7	6	85	0	33	92	210
	Climate Refuge SANBI	124	60	100	421002.5	701670.9	98555.3	420926.1	95239.5	86950.0		0.0	701670.9	23	100	23	21	123	267
	EBA1 - Areas supporting climate change resilience	174	30	0	1158092.5	0.0	251555.7	2701162.9	529349.3	29551.9	9644.1	339044.3	3860308.3	22	233	46	3	255	536
	EBA2 - Areas supporting climate change resilience	175	40	0	891016.0	0.0	205431.2	1684678.4	256977.0	6185.8	2947.3	71320.4	2227540.0	23	189	29	1	212	431
	EBA3 - Areas supporting climate change resilience	176	60	0	827043.6	0.0	171039.1	1072186.7	130294.1	3314.7	1571.5	0.0	1378406.1	21	130	16	0	150	296
	EBA5 - Areas supporting climate change resilience	177	80	0	354233.4	0.0	76588.1	347841.8	17585.6	776.3			442791.7	22	98	5	0	120	223
	High value EBA areas - additional	187	80	100	982722.6	1228403.3		1093918.6	134484.7			0.0	1228403.3	0	111	14	0	111	236
	Ridges and Escarpment	290	0	100	0.0	2154937.1	182253.0	1409548.8	232959.2	184074.8	30702.7	115398.7	2154937.1	na	0	na	na	na	na
Corridors	River Corridor	186	100	100	2382447.4	2382447.4	1208132.9	1113109.0	61205.5			0.0	2382447.4	51	47	3	0	97	147
	Corridors and connectivity	288	100	100	3643037.5	3643037.5		3630595.4		12442.2			3643037.5	0	100	0	0	100	200

Feature Details			Target Details				Area (ha) per category							Percentage target per category					
Category	Feature name	ID	CBA target %	ESA target %	CBA target (ha)	ESA target (ha)	Protected Area	CBA	ESA 1	ESA 2	In excluded areas and not ESA2	In other natural areas	Total Extent	Protected Area	CBA	ESA 1	ESA 2	All PA and CBA	All PA CBA and ESA
Designated Areas	World Heritage Site Core - Mapungubwe	130	100	0	30942.8	0.0	19776.1	9670.9		1495.9			30942.8	64	31	0	5	95	131
	Undeclared Reserves	132	100	0	114598.1	0.0	98750.3	15453.1	0.0	394.7	0.0		114598.1	86	13	0	0	100	113
	Waterberg Core - Biosphere core area	133	100	0	228830.8	0.0	77448.1	150084.1	0.0	1298.6	0.0		228830.8	34	66	0	1	99	166
	PA Buffer	134	50	100	555156.5	1110313.0	0.9	838216.4	272095.6	0.0	0.0	0.0	1110313.0	0	151	49	0	151	351
	SANP Buffers	179	60	100	442852.8	738088.0	34351.4	510632.4	181708.1	11396.1		0.0	738088.0	8	115	41	3	123	282
	Kruger to Canyons - Biosphere	180	30	0	534953.6	0.0	562729.4	687647.8	140849.0	141860.0	88035.3	162057.2	1783178.6	105	129	26	27	234	415
	Vhembe - Biosphere	181	30	0	911988.0	0.0	489334.0	1129430.7	601659.1	215090.1	129765.2	474680.7	3039959.9	54	124	66	24	177	391
	Waterberg - Biosphere	182	30	0	195591.9	0.0	97626.2	388427.8	46986.8	18154.4	17027.9	83750.0	651973.0	50	199	24	9	249	480
	Extra lark - IBA	188	80	100	3323.1	4153.9	0.1	4037.9	116.0				4153.9	0	122	3	0	122	247
	Vhembe Nature Reserve - IBA	189	30	100	5982.6	19941.9	15328.3	4129.0		484.6			19941.9	256	69	0	8	325	402
	Waterberg System - IBA	190	30	100	106448.2	354827.5	76594.1	206255.8	48161.6	23816.0	0.0	0.0	354827.5	72	194	45	22	266	527
	Nyl River Floodplain - IBA	191	30	100	13092.8	43642.7	3878.4	26869.6	2895.4	9999.4	0.0	0.0	43642.7	30	205	22	76	235	539
	Wolkberg Forest Belt - IBA	192	30	100	105624.1	352080.5	63409.0	181396.0	24031.8	83243.7	0.0	0.0	352080.5	60	172	23	79	232	505
	Soutpansberg - IBA	193	30	100	116991.8	389972.8	9582.2	258313.4	51961.1	70116.1	0.0	0.0	389972.8	8	221	44	60	229	554
	Blouberg Vulture Colonies - IBA	194	30	100	10882.4	36274.5	13355.7	20237.1	1974.0	707.7	0.0	0.0	36274.5	123	186	18	7	309	519
	Polokwane Nature Reserve - IBA	195	30	100	799.5	2665.0	698.7	1948.4	3.7	14.2			2665.0	87	244	0	2	331	577
	Blyde River Canyon - IBA	198	30	100	17239.4	57464.7	112.1	48204.3	2732.9	6415.4	0.0	0.0	57464.7	1	280	16	37	280	613
	Loskop Dam Nature Reserve - IBA	199	30	100	531.3	1770.9	1673.5	89.2	8.2				1770.9	315	17	2	0	332	350
	Blouberg Forest -NEMBA listed threatened (non-veg)	264	100	0	86.9	0.0		86.9					86.9	0	100	0	0	100	200
	Malmani Karstlands -NEMBA listed threatened (non-veg)	265	100	0	14337.8	0.0	1172.1	13081.1		84.5			14337.8	8	91	0	1	99	191
	Sekhukhune Mountainlands - NEMBA listed threatened (non-veg)	266	100	0	75902.7	0.0		75132.2	0.4	770.2			75902.7	0	99	0	1	99	199
	Sekhukune Norite Bushveld - NEMBA listed threatened (non-veg)	267	100	0	37606.8	0.0		35668.1		1480.0	458.7		37606.8	0	95	0	4	95	194
	Makapansgat WHS Zones	287	100	100	55522.2	55522.2		45091.8	9423.0	1007.4			55522.2	0	81	17	2	81	181
Process	Dolomite	125	50	0	104214.9	0.0	26847.4	141379.9	29456.3	10746.2			208429.9	26	136	28	10	161	336
	Centre of Endemism 0	126	30	0	162500.4	0.0	3981.6	294173.3	125094.7	118418.5	0.0		541668.1	2	181	77	73	183	514
	Centre of Endemism 1	127	30	0	190436.2	0.0	86821.9	358452.9	78178.5	111333.9			634787.2	46	188	41	58	234	522
	Centre of Endemism 2	128	30	0	87976.7	0.0	58947.9	200203.7	20737.3	13366.7			293255.6	67	228	24	15	295	561
	Forest	129	100	0	28743.8	0.0	14845.4	11205.6	1.3	2691.4			28743.8	52	39	0	9	91	139
Sekhukhune units	Sekhukhune Eastern Plains Bushveld	256	24	0	15059.2	0.0		30919.3	11068.5	20704.4	54.6		62746.8	0	205	73	137	205	622
	Sekhukhune Leolo Mountain Bushveld	257	24	0	4720.9	0.0		13594.2	5531.5	544.5			19670.2	0	288	117	12	288	705
	Sekhukhune Montane Grassland	258	24	0	7166.3	0.0		12565.2	7166.8	10127.6			29859.5	0	175	100	141	175	592
	Sekhukhune Mountain Bushveld	259	24	0	25824.9	0.0	1818.3	60429.4	38806.0	6489.6	60.6	0.0	107603.9	7	234	150	25	241	650
	Sekhukhune Mountainlands	260	24	0	22540.1	0.0		86893.2	6284.8	739.1			93917.1	0	386	28	3	386	802
	Sekhukhune Northern Plains Bushveld	261	24	0	35159.6	0.0	2165.0	40034.0	51715.1	52529.7	33.9	20.7	146498.5	6	114	147	149	120	530
	Sekhukhune Western Plains Bushveld	262	24	0	14413.4	0.0		29680.7	4232.7	26116.5	7.8	18.3	60056.0	0	206	29	181	206	622
	Sekhukune Norite Bushveld	263	24	0	9297.8	0.0		36870.7		1408.0	462.1		38740.8	0	397	0	15	397	808

Feature Details			Target Details				Area (ha) per category							Percentage target per category					
Category	Feature name	ID	CBA target %	ESA target %	CBA target (ha)	ESA target (ha)	Protected Area	CBA	ESA 1	ESA 2	In excluded areas and not ESA2	In other natural areas	Total Extent	Protected Area	CBA	ESA 1	ESA 2	All PA and CBA	All PA CBA and ESA
Habitat Type	Cathedral Mopane Bushveld	200	19	0	5262.0	0.0	27694.4	0.0	0.2				27694.6	526	0	0	0	526	526
	Central Sandy Bushveld	201	19	0	208559.7	0.0	27920.4	429949.1	173041.0	111194.4	132879.4	222698.2	1097682.4	13	206	83	53	220	562
	Dwaalboom Thornveld	202	19	0	78668.9	0.0	16788.1	110473.4	56789.6	10518.2	47208.6	172269.2	414047.0	21	140	72	13	162	388
	Granite Lowveld	203	19	0	147665.5	0.0	6367.9	354202.4	93869.8	72360.3	87580.9	162805.3	777186.7	4	240	64	49	244	597
	Gravelotte Rocky Bushveld	204	19	0	6160.9	0.0	838.5	16192.1	1819.7	214.0	1399.5	11962.0	32425.7	14	263	30	3	276	572
	Ironwood Dry Forest	205	31	0	1441.5	0.0	4630.2	20.0					4650.1	321	1	0	0	323	324
	Legogote Sour Bushveld	206	19	0	509.9	0.0	1.6	2302.3	380.0				2683.9	0	451	75	0	452	978
	Leolo Summit Sourveld	207	24	0	489.0	0.0		1934.7	102.9				2037.7	0	396	21	0	396	812
	Limpopo Ridge Bushveld	208	19	0	52891.6	0.0	55166.6	146059.6	37085.9	795.7	1078.3	38190.5	278376.6	104	276	70	2	380	728
	Limpopo Sweet Bushveld	209	19	0	228098.1	0.0	6554.0	495342.3	263239.0	30157.8	40301.7	364921.7	1200516.5	3	217	115	13	220	566
	Loskop Mountain Bushveld	210	24	0	10777.9	0.0	3281.3	23934.1	9026.9	32.7	146.2	8486.7	44907.8	30	222	84	0	253	559
	Loskop Thornveld	211	19	0	12346.8	0.0	887.6	25835.6	14999.7	9381.8	2984.8	10893.7	64983.1	7	209	121	76	216	623
	Lowveld Riverine Forest	212	31	0	2462.8	0.0	5324.7	1964.1		655.6			7944.4	216	80	0	27	296	402
	Lowveld Rugged Mopaneveld	213	19	0	54656.6	0.0	91746.6	100034.9	32652.4	11914.5	29100.0	22217.8	287666.3	168	183	60	22	351	615
	Lydenburg Montane Grassland	214	24	0	292.5	0.0		844.7	374.0				1218.8	0	289	128	0	289	705
	Lydenburg Thornveld	215	24	0	11768.7	0.0		29737.7	17838.9	1459.4		0.3	49036.2	0	253	152	12	253	669
	Madikwe Dolomite Bushveld	216	19	0	4274.6	0.0	1011.8	18492.5	2499.2	448.2	6.1	40.0	22497.8	24	433	58	10	456	958
	Makhado Sweet Bushveld	217	19	0	192160.1	0.0	1781.1	258612.9	201649.9	75027.2	132645.1	341652.5	1011368.8	1	135	105	39	136	414
	Makuleke Sandy Bushveld	218	19	0	38911.1	0.0	70713.1	60400.0	34968.7	38664.6	7.3	41.6	204795.3	182	155	90	99	337	681
	Mamabolo Mountain Bushveld	219	24	0	16074.4	0.0	4548.4	40561.0	11382.7	1701.3	633.6	8149.6	66976.7	28	252	71	11	281	614
	Mopane Basalt Shrubland	220	19	0	51387.2	0.0	270458.8	0.0	0.0				270458.8	526	0	0	0	526	526
	Mopane Gabbro Shrubland	221	19	0	5197.3	0.0	27354.4	0.0					27354.4	526	0	0	0	526	526
	Musina Mopane Bushveld	222	19	0	167241.4	0.0	17102.1	355049.2	275238.6	18458.7	13426.8	200942.3	880217.8	10	212	165	11	223	610
	Northern Afrotemperate Forest	223	31	0	121.2	0.0		268.0	3.6		12.2	107.2	391.1	0	221	3	0	221	445
	Northern Escarpment Afromontane Fynbos	224	27	0	54.7	0.0	0.0	202.6					202.6	0	370	0	0	370	741
	Northern Escarpment Dolomite Grassland	225	27	0	642.7	0.0	427.4	1572.3	354.3	26.3			2380.3	67	245	55	4	311	615
	Northern Escarpment Quartzite Sourveld	226	27	0	11503.7	0.0	12566.1	27649.1	1.3	2389.9			42606.4	109	240	0	21	350	611
	Northern Lebombo Bushveld	227	24	0	10682.7	0.0	44459.4	0.0	51.7				44511.1	416	0	0	0	416	417
	Northern Mistbelt Forest	228	30	0	7813.7	0.0	8692.7	15159.5	57.9	2128.9	6.5		26045.6	111	194	1	27	305	527
	Nwambyia-Pumbe Sandy Bushveld	229	19	0	2713.3	0.0	14277.7	0.0	2.8				14280.5	526	0	0	0	526	526
	Ohrigstad Mountain Bushveld	230	24	0	43756.6	0.0	14845.0	138958.3	12390.6	12248.1	1903.6	1973.4	182319.0	34	318	28	28	351	725
	Phalaborwa-Timbavati Mopaneveld	231	19	0	26623.5	0.0	40620.5	53183.6	24742.9	2109.4	12049.2	7418.0	140123.6	153	200	93	8	352	653
	Polokwane Plateau Bushveld	232	19	0	84503.8	0.0	6187.6	145251.2	86946.1	32946.9	62513.7	110911.4	444757.0	7	172	103	39	179	493
	Poung Dolomite Mountain Bushveld	233	24	0	21372.8	0.0	9292.9	72248.7	4399.1	3092.1	20.6	0.1	89053.5	43	338	21	14	382	755
	Rand Highveld Grassland	234	24	0	19323.3	0.0	5382.4	27636.3	27358.0	20113.7	21.3	1.8	80513.6	28	143	142	104	171	560
	Roodeberg Bushveld	235	19	0	123402.6	0.0	28754.4	236319.0	43174.6	18552.0	54582.1	268105.4	649487.5	23	192	35	15	215	456
	Sand Forest	236	31	0	457.7	0.0	1474.4	0.0	1.9				1476.3	322	0	0	0	322	323
	Sekhukhune Montane Grassland	237	24	0	13256.3	0.0		37324.7	7768.2	10141.5			55234.4	0	282	59	77	282	698
	Sekhukhune Mountain Bushveld	238	24	0	54443.9	0.0	1020.3	153839.2	39008.0	27940.9	8.4	5032.9	226849.8	2	283	72	51	284	690
	Sekhukhune Plains Bushveld	239	19	0	47990.7	0.0	2963.1	92951.0	77971.3	78676.3	0.5	20.7	252582.9	6	194	162	164	200	720
	Soutpansberg Mountain Bushveld	240	24	0	99021.4	0.0	14691.1	283146.5	42869.8	71800.7	15.1	66.1	412589.3	15	286	43	73	301	703
	Soutpansberg Summit Sourveld	241	24	0	2070.3	0.0	928.8	7401.1	259.0	37.3			8626.1	45	357	13	2	402	774
	Springbokvlakte Thornveld	242	19	0	117313.9	0.0	3184.1	123621.2	71006.9	88929.3	205596.0	125104.0	617441.4	3	105	61	76	108	350
	Strydpoort Summit Sourveld	243	24	0	6438.7	0.0	4117.4	19635.9	3074.7				26828.0	64	305	48	0	369	722
	Subtropical Alluvial Vegetation	244	31	0	17709.4	0.0	25988.4	20864.6	984.0	7093.8	1670.5	525.8	57127.1	147	118	6	40	265	428
	Subtropical Freshwater Wetlands	245	24	0	2706.9	0.0	880.4	10081.3	87.0	212.0	18.1	0.0	11278.7	33	372	3	8	405	788
	Subtropical Salt Pans	246	24	0	109.1	0.0	215.3	179.5		59.8			454.6	197	164	0	55	362	581
	Tsende Mopaneveld	247	19	0	101340.2	0.0	361962.3	60023.7	33131.4	13697.2	24015.6	40539.1	533369.4	357	59	33	14	416	522
	Tshokwane-Hlane Basalt Lowveld	248	19	0	665.0	0.0	3499.8	0.0					3499.8	526	0	0	0	526	526
	Tzaneen Sour Bushveld	249	19	0	64892.5	0.0	9103.4	115735.7	29336.9	80518.4	50846.7	55998.4	341539.3	14	178	45	124	192	540
	VhaVenda Miombo	250	30	0	10.0	0.0		33.5					33.5	0	333	0	0	333	667
	Waterberg-Magaliesberg Summit Sourveld	251	24	0	12018.8	0.0	12499.5	32058.6	5281.1	83.3		155.8	50078.3	104	267	44	1	371	682
	Waterberg Mountain Bushveld	252	24	0	211669.8	0.0	51166.8	590780.7	102053.8	15957.6	7459.9	114538.6	881957.4	24	279	48	8	303	638
	Western Sandy Bushveld	253	19	0	103518.6	0.0	28596.1	251378.2	54914.9	5109.9	6993.4	197842.1	544834.5	28	243	53	5	270	571
	Wolkberg Dolomite Grassland	254	27	0	7052.5	0.0	11636.7	13344.5		1139.2			26120.4	165	189	0	16	354	560
	Woodbush Granite Grassland	255	27	0	11021.6	0.0	733.0	14766.8	210.8	25110.0			40820.7	7	134	2	228	141	504

Feature Details			Target Details				Area (ha) per category							Percentage target per category					
Category	Feature name	ID	CBA target %	ESA target %	CBA target (ha)	ESA target (ha)	Protected Area	CBA	ESA 1	ESA 2	In excluded areas and not ESA2	In other natural areas	Total Extent	Protected Area	CBA	ESA 1	ESA 2	All PA and CBA	All PA CBA and ESA
Threatened Species (1)	LCP_Pyxicephalus_adspersus_manzones CBA	69	80	0	7883.2	0.0	521.3	7213.1	145.5	386.0	1025.6	562.6	9854.0	7	91	2	5	98	196
	LCP_Crocodylus_niloticus_manzones CBA	70	80	0	37980.6	0.0	3911.7	39485.4	1882.3	1766.4	45.7	384.4	47475.8	10	104	5	5	114	228
	LCP_Euphorbia_groenewaldii_manzones CBA	71	80	0	1405.0	0.0		1448.5		4.5	254.5	48.8	1756.3	0	103	0	0	103	207
	LCP_Platysaurus_i_inopinus_manzones CBA	72	80	0	4928.9	0.0	2190.4	3587.5	3.9			379.3	6161.1	44	73	0	0	117	190
	LCP_Platysaurus_i_inopinus_manzones ESA	73	30	0	13118.8	0.0	3073.2	21817.0	4101.0	101.6	770.5	13866.1	43729.3	23	166	31	1	190	388
	LCP_Platysaurus_monotropis_manzones ESA	74	30	0	6513.3	0.0	4384.9	15311.1	1909.3	105.6			21710.9	67	235	29	2	302	568
	LCP_Platysaurus_monotropis_manzones CBA	75	80	0	1005.7	0.0		1150.0	15.7			91.3	1257.1	0	114	2	0	114	230
	LCP_Platysaurus_monotropis_manzones ESA	76	30	0	9210.9	0.0		18086.1	4695.2	226.8	1553.9	6141.1	30703.2	0	196	51	2	196	446
	LCP_Platysaurus_o_fitzsimonsi_manzones CBA	77	80	0	742.4	0.0	36.7	883.8		6.2	1.2		928.0	5	119	0	1	124	244
	LCP_Platysaurus_o_fitzsimonsi_manzones ESA	78	30	0	10079.4	0.0	1482.7	17920.9	5355.1	287.6	502.4	8049.4	33598.2	15	178	53	3	193	426
	Butterflies Threatened	79	100	0	222.8	0.0	35.3	148.2		39.2			222.8	16	67	0	18	82	167
	CR and EN plants	80	100	0	611.8	0.0	117.9	439.2		53.7	1.0		611.8	19	72	0	9	91	172
	VU plants Aloe monotropa I.Verd.	81	50	0	3.1	0.0		6.3					6.3	0	200	0	0	200	400
	VU plants Asparagus fourei (Oberm.) Fellingham & N.L.Mey.	82	50	0	9.4	0.0		18.8					18.8	0	200	0	0	200	400
	VU plants Asparagus hirsutus S.M.Burrows	83	50	0	9.4	0.0		12.6	1.7	4.6			18.9	0	133	18	49	133	333
	VU plants Barleria dolomiticola M.Balkwill & K.Balkwill	84	50	0	6.3	0.0	9.4	3.1					12.5	150	50	0	0	200	250
	VU plants Bowiea volubilis Harv. ex Hook.f. subsp. volubilis	85	50	0	9.4	0.0	3.1	12.5			3.1		18.8	33	133	0	0	167	300
	VU plants Brachystelma minor E.A.Bruce	86	50	0	4.7	0.0	6.3	3.1					9.4	133	67	0	0	200	267
	VU plants Brachystelma parvulum R.A.Dyer	87	50	0	3.1	0.0		6.3					6.3	0	200	0	0	200	400
	VU plants Brachystelma setosum Peckover	88	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Ceropegia cimiciodora Oberm.	89	50	0	11.0	0.0	3.1	18.8					22.0	29	171	0	0	200	371
	VU plants Ceropegia stentiae E.A.Bruce	90	50	0	3.1	0.0		6.3					6.3	0	200	0	0	200	400
	VU plants Cheilanthes deltoidea Kunze subsp. silicicola	91	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Commelina rogersii Burtt Davy	92	50	0	6.3	0.0	3.1	6.3				3.1	12.5	50	100	0	0	150	250
	VU plants Corchorus psammophilus Codd	93	50	0	6.3	0.0		9.4	3.1				12.5	0	150	50	0	150	350
	VU plants Cucumis humifructus Stent	94	50	0	7.8	0.0		9.4	2.5	0.6		3.1	15.7	0	120	32	8	120	280
	VU plants Cullen holubii (Burtt Davy) C.H.Stirt.	95	50	0	7.8	0.0	3.1	11.1	0.5	1.0			15.7	40	141	6	13	181	341
	VU plants Cyphostemma hardyi Retief	96	50	0	4.7	0.0	3.1	3.1	3.1				9.4	67	67	67	0	133	267
	VU plants Cyrtanthus junodii P.Beauv.	97	50	0	1.6	0.0	3.1	0.0					3.1	200	0	0	0	200	200
	VU plants Dicliptera fionae K.Balkwill	98	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Dioscorea sylvatica Eckl.	99	50	0	19.1	0.0	3.1	31.8	3.1				38.1	16	167	16	0	184	367
	VU plants Diplolophium buchananii	100	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Disa aristata H.P.Linder	101	50	0	3.0	0.0	6.0	0.0					6.0	200	0	0	0	200	200
	VU plants Elytrophorus globularis Hack.	102	50	0	3.1	0.0		6.3					6.3	0	200	0	0	200	400
	VU plants Eulophia coddii A.V.Hall	103	50	0	4.7	0.0	5.2	4.2					9.4	110	90	0	0	200	290
	VU plants Gladiolus sekukuniensis P.J.D.Winter	104	50	0	3.1	0.0		6.3					6.3	0	200	0	0	200	400
	VU plants Huernia nouhuysii I.Verd.	105	50	0	6.3	0.0		12.5					12.5	0	200	0	0	200	400
	VU plants Hypodematium crenatum (Forssk.) Kuhn	106	50	0	1.6	0.0	3.1	0.0					3.1	200	0	0	0	200	200
	VU plants Jamesbrittenia bergae P.Lemmer	107	50	0	11.2	0.0		22.5					22.5	0	200	0	0	200	400
	VU plants Ledebouria dolomiticola S.Venter	108	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Lithops coleorum S.A.Hammer & Uijs	109	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Marsilea farinosa Launert subsp. arrecta J.E.Burrows	110	50	0	1.6	0.0		3.1					3.1	0	200	0	0	200	400
	VU plants Ocotea kenyensis (Chiov.) Robyns & R.Wilczek	111	50	0	6.3	0.0	3.1	6.3		3.1			12.5	50	100	0	50	150	300
	VU plants Oryza longistaminata A.Chev. & Roehr.	112	50	0	6.3	0.0	3.1	6.3			3.1		12.5	50	100	0	0	150	250
	VU plants Plectranthus porcatus Van Jaarsv. & P.J.D.Winter	113	50	0	4.7	0.0		9.4					9.4	0	200	0	0	200	400
	VU plants Polygala sekhukhuniensis	114	50	0	20.4	0.0	3.1	18.9	5.3	13.5			40.8	15	92	26	66	108	292
	VU plants Prunus africana (Hook.f.) Kalkman	115	50	0	17.3	0.0	3.1	15.0		13.2	3.1		34.5	18	87	0	77	105	269
	VU plants Rhynchosia vendae C.H.Stirt.	116	50	0	9.4	0.0	8.4	4.5	3.1	2.7			18.8	89	48	33	29	138	248
	VU plants Sartidia jucunda (Schweick.) De Winter	117	50	0	7.8	0.0	3.1	12.5					15.7	40	160	0	0	200	360
	VU plants Searsia batophylla (Codd) Moffett	118	50	0	42.4	0.0		52.6	10.9	21.3			84.7	0	124	26	50	124	324
	VU plants Streptocarpus longiflorus	119	50	0	3.4	0.0		6.9					6.9	0	200	0	0	200	400
	VU plants Thesium davidsonae Brenan	120	50	0	5.0	0.0	3.1	6.8					10.0	63	137	0	0	200	337
	VU plants Thesium gracilentum N.E.Br.	121	50	0	4.7	0.0	6.3	3.1					9.4	133	67	0	0	200	267
	VU plants Zantedeschia jucunda Letty	122	50	0	11.0	0.0		15.7	4.3	2.0			22.0	0	143	39	18	143	343

Feature Details			Target Details				Area (ha) per category							Percentage target per category					
Category	Feature name	ID	CBA target %	ESA target %	CBA target (ha)	ESA target (ha)	Protected Area	CBA	ESA 1	ESA 2	In excluded areas and not ESA2	In other natural areas	Total Extent	Protected Area	CBA	ESA 1	ESA 2	All PA and CBA	All PA CBA and ESA
Threatened Species (Continued)	African Finfoot	143	30	0	44911.9	0.0	12346.6	70913.7	12353.9	28882.2	8838.7	16371.2	149706.3	27	158	28	64	185	435
	African Grass-Owl	144	30	0	5107.6	0.0	3228.5	8182.1	1294.0	2920.6	900.4	499.8	17025.3	63	160	25	57	223	466
	African Marsh-Harrier	145	30	0	15957.6	0.0	3228.5	26274.8	12540.0	7046.9	3128.3	973.6	53192.0	20	165	79	44	185	472
	Bateleur	146	30	0	403815.6	0.0	761727.1	356822.2	97435.1	17546.8	16690.3	95830.3	1346051.9	189	88	24	4	277	394
	Blue Crane	147	30	0	18890.7	0.0	2942.1	38034.2	7165.2	7068.6	4427.9	3331.0	62969.0	16	201	38	37	217	494
	Cape Parrot	148	30	0	16496.5	0.0	6917.8	23314.9	342.1	24413.6			54988.5	42	141	2	148	183	475
	Cape Vulture	149	30	0	418502.6	0.0	281302.1	549681.6	179941.4	56149.6	82302.2	245632.0	1395008.8	67	131	43	13	199	386
	Corn Crake	150	30	0	7061.9	0.0	11146.9	4503.6	1477.4	543.8	256.6	5611.4	23539.6	158	64	21	8	222	314
	Denham's Bustard	151	30	0	20920.5	0.0	3319.6	44197.1	3054.0	3883.4	5610.8	9670.2	69735.1	16	211	15	19	227	472
	Eurasian Bittern	152	30	0	2336.5	0.0	3228.5	3734.0	139.4	543.8	142.4		7788.2	138	160	6	23	298	487
	Grey Crowned Crane	153	30	0	9143.3	0.0	7817.0	15783.5	1779.5	4222.4	716.0	159.1	30477.5	85	173	19	46	258	496
	Hooded Vulture	154	30	0	182254.9	0.0	370456.5	141519.2	37380.3	7964.8	13672.2	36523.2	607516.3	203	78	21	4	281	383
	Kori Bustard	155	30	0	163757.1	0.0	300484.6	134812.7	34432.2	8635.0	5955.1	61537.4	545857.0	183	82	21	5	266	374
	Lappet-faced Vulture	156	30	0	220932.4	0.0	418421.8	162200.1	55334.7	13767.7	16476.2	70240.7	736441.2	189	73	25	6	263	367
	Lesser Kestrel	157	30	0	136084.7	0.0	33037.9	125981.7	57971.5	52910.2	106823.8	76890.4	453615.5	24	93	43	39	117	291
	Martial Eagle	158	30	0	349794.8	0.0	516957.1	333223.1	108393.8	27134.6	40614.5	139659.5	1165982.6	148	95	31	8	243	377
	Pel's Fishing-Owl	159	30	0	23992.0	0.0	41798.0	34951.6	1600.1	1237.3	386.4		79973.5	174	146	7	5	320	477
	Pink-backed Pelican	160	30	0	7732.6	0.0	17301.0	5661.7	494.3	780.5	1516.1	21.7	25775.2	224	73	6	10	297	387
	Saddle-billed Stork	161	30	0	166100.7	0.0	403031.1	97830.8	22468.1	6478.0	11293.1	12567.8	553669.0	243	59	14	4	302	378
	Secretarybird	162	30	0	146767.1	0.0	143345.5	149044.0	63562.9	31565.0	36389.6	65316.6	489223.6	98	102	43	22	199	366
	Southern Bald Ibis	163	30	0	14191.4	0.0	10371.9	25213.4	2648.3	1702.7	2264.7	5103.7	47304.7	73	178	19	12	251	459
	Southern Ground-Hornbill	164	30	0	193467.6	0.0	490478.5	77581.9	43260.6	10008.9	3071.0	20491.0	644892.0	254	40	22	5	294	361
	Tawny Eagle	165	30	0	288774.0	0.0	522356.5	270580.2	63993.3	17116.6	18085.7	70447.8	962580.1	181	94	22	6	275	396
	White-backed Night-Heron	166	30	0	21330.2	0.0	31152.9	27711.7	1724.8	2715.9	3554.3	4241.2	71100.8	146	130	8	13	276	427
	White-backed Vulture	167	30	0	560998.3	0.0	743450.9	556761.9	215654.8	56338.8	71605.3	226182.6	1869994.3	133	99	38	10	232	379
	White-bellied Khoraan	168	30	0	28860.8	0.0	1720.3	30663.5	19018.3	5859.0	15560.0	23381.6	96202.7	6	106	66	20	112	305
	White-headed Vulture	169	30	0	148759.1	0.0	406897.7	48105.5	18944.5	3200.1	9068.5	9647.4	495863.7	274	32	13	2	306	353
	Yellow-billed Oxpecker	170	30	0	156257.7	0.0	462529.5	37833.5	13026.6	3609.2	2009.6	1850.7	520859.1	296	24	8	2	320	355
	Yellow-breasted Pipit	171	30	0	104.7	0.0		333.3		15.8			349.1	0	318	0	15	318	652
	Blou Swael	172	30	0	8665.1	0.0	1153.4	9169.3	24.3	18536.7			28883.7	13	106	0	214	119	439
	Wattled Crane	173	30	0	83181.4	0.0		132544.2	130107.5	11017.1	91.9	3510.7	277271.4	0	159	156	13	159	488
	Wild Dog	183	30	0	21535.0	0.0	5874.9	38206.6	9569.9	2706.8	1797.0	13628.2	71783.5	27	177	44	13	205	439
	Cheetah	184	30	0	32044.8	0.0	6161.1	42459.3	27888.4	1805.3	2450.7	26051.2	106815.9	19	132	87	6	152	377
	Acacia ormocarpoides P.J.H.Hurter	269	100	0	3.1	0.0		3.1					3.1	0	100	0	0	100	200
	Aneilema longirrhizum Faden	270	100	0	3.1	0.0		3.1					3.1	0	100	0	0	100	200
	Asparagus candelus S.M.Burrows	271	100	0	3.1	0.0		3.1					3.1	0	100	0	0	100	200
	Asparagus hirsutus S.M.Burrows	272	100	0	15.6	0.0		12.5		3.1			15.6	0	80	0	20	80	180
	Asparagus sekukuniensis (Oberm.) Fellingham & N.L.Mey.	273	100	0	9.4	0.0	1.1	8.3					9.4	12	88	0	0	100	188
	Combretum sp. (new species)	274	100	0	3.1	0.0		3.1					3.1	0	100	0	0	100	200
	Lydenburgia cassinoides N.Robson	275	100	0	3.1	0.0		3.1					3.1	0	100	0	0	100	200
	E. brevifoliolatus	276	100	0	732.4	0.0		732.4					732.4	0	100	0	0	100	200
	E. dolomiticus	277	100	0	5201.9	0.0	1873.6	3328.3					5201.9	36	64	0	0	100	164
	E. dyerianus	278	100	0	617.8	0.0	36.0	581.8					617.8	6	94	0	0	100	194
	E. eugene-maraisi	279	100	0	7313.0	0.0	4443.4	2843.2		26.4			7313.0	61	39	0	0	100	139
	E. hirsutus	280	100	0	2337.1	0.0		2102.3	234.8				2337.1	0	90	10	0	90	190
	E. laevifolius	281	100	0	1390.0	0.0	0.7	1385.6		3.7			1390.0	0	100	0	0	100	200
	E. paucidentatus	282	100	0	380.7	0.0		380.7					380.7	0	100	0	0	100	200
	E. transvenosus	283	100	0	14409.7	0.0	2542.4	11119.6		671.3	76.4		14409.7	18	77	0	5	95	177
	E. inopinus	284	100	0	8724.6	0.0		8338.6		386.0			8724.6	0	96	0	4	96	196
	Vulture Colony 1km Buffer	285	100	0	1256.1	0.0	320.8	692.1		13.9	229.2		1256.1	26	55	0	1	81	137

Appendix 2: Protected Areas in Limpopo

RESERVE NAME	MANAGEMENT	TYPE	SOURCE	HECTARES
Entabeni	DAFF	Provincial Nature Reserve	NBA2011	12052.5
Skelmwater	DAFF	Declared Forest Reserve	DAFF	4.1
Roodewal	DAFF	Declared Forest Reserve	DAFF	594.5
Ratombo	DAFF	Declared Forest Reserve	DAFF	190.4
Grootbosch	DAFF	Declared Forest Reserve	DAFF	4797.2
Entabeni	DAFF	Declared Forest Reserve	DAFF	1228.9
Matiwa	DAFF	Declared Forest Reserve	DAFF	42.6
Moutse	Ex MTPA to be transferred to LEDET	Provincial Nature Reserve	LEDET2013	1550.8
Kwaggavoetpad	Ex MTPA to be transferred to LEDET	Provincial Nature Reserve	LEDET2013	7245.9
Hetbad	Ex MTPA to be transferred to LEDET	Provincial Nature Reserve	LEDET2013	699.7
Letaba Ranch	LEDET	Provincial Nature Reserve	LEDET2013	29565.5
Lekgalameetse	LEDET	Provincial Nature Reserve	LEDET2013	18728.4
Wolkberg	LEDET	Provincial Nature Reserve	LEDET2013	20453.0
Thabina	LEDET	Provincial Nature Reserve	LEDET2013	1636.9
Mogol Dam	LEDET	Provincial Nature Reserve	LEDET2013	5124.8
Bewaarkloof	LEDET	Provincial Nature Reserve	LEDET2013	22713.9
Bulwer	LEDET	Provincial Nature Reserve	LEDET2013	3437.2
Wonderkop	LEDET	Provincial Nature Reserve	LEDET2013	14471.6
Witvinger	LEDET	Provincial Nature Reserve	LEDET2013	4503.1
Potlake	LEDET	Provincial Nature Reserve	LEDET2013	2787.9
Nzhelele	LEDET	Provincial Nature Reserve	LEDET2013	2125.0
Nwanedi	LEDET	Provincial Nature Reserve	LEDET2013	8209.2
Mojadji	LEDET	Provincial Nature Reserve	LEDET2013	305.4
Messina	LEDET	Provincial Nature Reserve	LEDET2013	4983.1
Manombe	LEDET	Provincial Nature Reserve	LEDET2013	1388.4
Makuya	LEDET	Provincial Nature Reserve	LEDET2013	13246.3
Manthrombi	LEDET	Provincial Nature Reserve	LEDET2013	611.1
Leswena	LEDET	Provincial Nature Reserve	LEDET2013	1611.9
Ebenezer Dam	LEDET	Provincial Nature Reserve	LEDET2013	79.6
Botanical Gardens	LEDET	Provincial Nature Reserve	LEDET2013	64.8
Nylsvlei + Vogelfontein	LEDET	Provincial Nature Reserve	LEDET2013	3981.0
Turfloop	LEDET	Provincial Nature Reserve	LEDET2013	554.8

RESERVE NAME	MANAGEMENT	TYPE	SOURCE	HECTARES
Rust De Winter	LEDET	Provincial Nature Reserve	LEDET2013	1664.8
Moletjie	LEDET	Provincial Nature Reserve	LEDET2013	244.1
Hans Merensky	LEDET	Provincial Nature Reserve	LEDET2013	5105.9
Malebocho	LEDET	Provincial Nature Reserve	LEDET2013	4759.6
Machaka	LEDET	Provincial Nature Reserve	LEDET2013	856.4
Langjan	LEDET	Provincial Nature Reserve	LEDET2013	4759.2
Happy Rest	LEDET	Provincial Nature Reserve	LEDET2013	2238.8
Doorndraai Dam	LEDET	Provincial Nature Reserve	LEDET2013	6847.2
Brackenridge	LEDET	Provincial Nature Reserve	LEDET2013	51.9
Blouberg	LEDET	Provincial Nature Reserve	LEDET2013	9349.4
Atherstone	LEDET	Provincial Nature Reserve	LEDET2013	23286.1
Schuinsdraai	LEDET	Provincial Nature Reserve	LEDET2013	9590.2
Mphaphuli	LEDET	Provincial Nature Reserve	LEDET2013	1029.5
Lillie	LEDET	Provincial Nature Reserve	LEDET2013	36.0
Bothasvlei	LEDET	Provincial Nature Reserve	LEDET2013	1514.7
Percy Fyfe	LEDET	Provincial Nature Reserve	LEDET2013	2948.2
Dnyala	LEDET	Provincial Nature Reserve	LEDET2013	7977.0
Masebe	LEDET	Provincial Nature Reserve	LEDET2013	4400.2
Wolkbergcaves	LEDET	Provincial Nature Reserve	LEDET2013	1467.6
Tzanneen Dam	LEDET	Provincial Nature Reserve	LEDET2013	1835.2
Makapan Valley WHS	LEDET	WHS	ALS	2215.2
Loskop Dam	Mpumalanga Tourism and Parks Agency	Provincial Nature Reserve	NBA2011	1775.0
Ss Skosana	Mpumalanga Tourism and Parks Agency	Provincial Nature Reserve	NBA2011	119.2
Motlatse Canyon	Mpumalanga Tourism and Parks Agency	Provincial Nature Reserve	NBA2011	1702.4
Madikwe	North West Parks Board	Provincial Nature Reserve	NBA2011	4878.5
Pietersberg	Polokwane Local Municipality	Local Authority Reserve	LEDET2013	1753.0
Marakele NP	South African National Parks	National Park	NBA2011	64632.2
Kruger NP	South African National Parks	National Park	NBA2011	986592.5
Mapungubwe NP	South African National Parks	National Park	NBA2011	20006.5
Mapungubwe WHS	South African National Parks	WHS	ALS	8648.8
Total				1367 044

Appendix 3: Data Dictionary

Output Layers				
Feature	**Dataset**	**Data Type**	**Source**	**Comment**
CBA layer simplified for viewing and maps	LIM_CBA&ESA_v2	Polygon Shapefile	LEDET LCPv2 / ECOSOL (2013)	CBA layer dissolved and with legend file for use in GIS and cartography
CBA layer with all attributes intact for look up purposes	LIM_CBA__v2_look up	Polygon Shapefile	LEDET LCPv2 / ECOSOL (2013)	CBA layer with all attributes intact for look up purposes in GIS
Planning Unit Layer used in Marxan	Planning Units v2	Polygon Shapefile	LEDET LCPv2 / ECOSOL (2013)	Planning Unit Layer used in Marxan, useful summary layer for features used in planning

Input Layers				
Feature	**Dataset**	**Data Type**	**Source**	**Comment**
Protected Area Layer for Province	PA_LIMP_v2	Shapefile Polygon	LEDET modified by Ecosol (2013)	Updated PA layer from Province provided by LEDET, edited by ECOSOL. National Protected Areas and WHS were added to the provincial dataset.
Detailed Land Cover	LC2_LIMP	GRID	Global Terra Image (2012)	Used to generate simplified land cover table of statistics
Simplified Land Cover	LC1_LIMP	GRID	Ecosol based on GTI (2012)	Reclassified GTI land cover (Non Natural, Natural, Degraded). Non natural units were included as planning units, but were considered to be unavailable in the Marxan analysis. Non natural units could nevertheless still be identified as Ecological Support Areas.
Limpopo local catchments	LIMP_Catch	Shapefile Polygon	Ecosol based on GDEM 30m (2013)	Local fine-scale catchments (i.e. sub-units of FEPA catchments.
Cadastres	Farm cadastres	Shapefile Polygon	Surveyor General (2006)	Note that only farm cadastres (farm portions) and not urban erven were used.
Ecological process layers linked to climate change resilience and adaptation	Planning_units2.shp in the field EBA	GRID	Holness	Developed based on NBA 2011 analysis.
Low proximity to impacts (including urban areas)	Planning_units2.shp in the field AWAY	GRID	Ecosol based on GTI (2012)	Developed based on Limpopo land cover, low cost for high distance areas.
Distance to roads	Planning_units2.shp in the field ROADS10	GRID	Ecosol (2013)	Developed based on Limpopo roads layer, low cost for high distance areas.
Mining rights or known	Planning_units2.sh	Shapefile	LCPv1 -MetroGIS	Mining areas form LCPv1, converted to grid for inclusion as high cost in

Input Layers				
Feature	**Dataset**	**Data Type**	**Source**	**Comment**
mineral deposits	p in the field MINE	Polygon	(2009)	cost surface
Degraded areas (gullies and erosion)	Planning_units2.shp in the field SED.	GRID	ARC erosion (2006) and DAFF gullies map (2012)	Eroded areas, converted to grid for inclusion as high cost in cost surface
Corridors	Corridors & Connectivity.shp	Shapefile Polygon	Ecosol (2013)	Developed based on Limpopo corridor layer, included as low cost areas.
Vegetation types	Vegetation_types_v2.shp	Shapefile Polygon	SANBI (2006), LEDET (2013)	SANBI vegetation map with updated habitat units
FEPA Rivers (1:500 000) – Phase One FEPAs	NFEPA_Rivers_1:500k	Shapefile Polyline	CSIR - BGIS (2011)	Priority River Reaches with 100m buffer
FEPA Rivers (1:500 000) – Other FEPA types	NFEPA_Rivers_1:500k	Shapefile Polyline	CSIR - BGIS (2011)	Other FEPA river types (Phase 2 FEPAs, Fish FSAs and Fish Corridors) excluding upstream areas.], with 100m buffer
FEPA Sub quaternary catchments	River FEPAs	Shapefile Polygon	CSIR - BGIS (2011)	Priority Sub quaternary catchments
FEPA Rivers (1:500 000)	NFEPA_Rivers_1:500k	Shapefile Polyline	CSIR - BGIS (2011)	Priority reaches (both FEPA and Phase 2 FEPA) with 5km buffer, clipped to the applicable FEPA catchment
FEPA Wetlands	FEPA Wetlands	Shapefile Polygon	CSIR - BGIS (2011)	Priority wetlands
FEPA Wetland Clusters	FEPA Wetland Clusters	Shapefile Polygon	CSIR - BGIS (2011)	Priority wetlands
Other natural non-FEPA Wetlands	National Wetlands Inventory	Shapefile Polygon	CSIR - BGIS (2011)	Other natural wetlands
Strategic water source areas for RSA	ProEcoServ	GRID	CSIR (2013)	Strategic water source areas for RSA - Revised version of High Water Yield Areas
Expert herpetological data		Shapefile Polygon	LEDET (2013)	Expert identified priority areas for *specific reptiles and amphibians, provided by Vincent Egan.*
Butterflies	Butterflies_buffered	Shapefile Polygon	SANBI (2013)	Point data buffered by 100m. All PU with confirmed records of CR and EN species were included.
Plants SANBI	Plants SANBI	Shapefile Polygon	SANBI (2013)	Point data buffered by 100m. All PU with confirmed records of CR and EN species were included.
Plants MTPA, LEDET, Herbarium, JB and ML	Additional Plants	Shapefile Polygon	M.Lotter, J. Burrows, LEDET, MTPA (2013)	Point data buffered by 100m, key locations for focal threatened plant including cycads.
Birds	Birds SABAP2 +	Shapefile	SABAP2 (2013)	CR, End and Vu plus species of special concern. Pentad linked spreadsheet

Input Layers				
Feature	**Dataset**	**Data Type**	**Source**	**Comment**
	Birds LCPv1	Polygon	and LCPv1	- converted to shapefile
Vulture data	Vulture Colonies	Polygon Shapefile	Birdlife (2013)	Vulture colony data points buffered by 1km
EWT Cheetah and Wild Dog observations	EWT Cheetah & Wild Dog	Polygon Shapefile	EWT	Identified sightings of free-range cheetah and wild dog, point data buffered by 1km
Forest species assemblage and process	Indigenous forest	Polygon Shapefile	DWAF (2013)	Forest used as a proxy for Cape Parrot and other forest associated species and processes
Climate Change refugia & biome stability	Biome stability & climate change refugia	Polygon Shapefile	SANBI / Holness (2012)	Identified SANBI climate refuge areas + The analysis of biome climate envelopes was used to identify areas of non-savanna habitat types which remain stable in the short (50year) and long term (100 year)
Areas supporting climate change resilience	Climate change resilience	Polygon Shapefile	SANBI / Holness (2012)	These area areas of high diversity, topographic diversity, strong biophysical gradients (e.g. altitude, rainfall or temperature), climate refugia (kloofs & south facing slopes), and river corridors.
Conservation farms and private nature reserves	CA_LIMP	Shapefile Polygon	LEDET (2013)	Informal conservation areas, with some known missing sites (e.g. Welgevonden/ Sterkfontein) added.
Important bird areas (IBA)	LIMP_IBAs	Shapefile Polygon	Birdlife with modifications Ecosol (2013)	IBAs on intact habitat, modified as per workshop between BL and ECOSOL
Geological features linked to biodiversity and key hydrological processes – dolomite	Dolomite	Shapefile Polygon	MetroGIS LCPv1 (2009)	Mostly covered by other features, this layer is included for continuity between LCPv1 and LCPv2
Plant centres of endemism	Plant Endemism	Shapefile Polygon	MetroGIS LCPv1 (2009)	Plant centres of endemism features individually included
Ramsar Sites	Ramsar	Shapefile Polygon	Various	Features separately included
Biospheres	Various	Shapefile Polygon	Various	Biospheres individually included
Buffers around Protected Areas	PA_buffers	Shapefile Polygon	Ecosol (2013)	5km buffer around nature reserves, and 10km around National parks except where more specific buffers have been identified.
NPAES area expansion priorities	SANBI focus areas layer	Shapefile Polygon	SANBI (2011)	Note that the focus areas were clipped by available units.
Provincial Conservation plan	Gauteng	Shapefile	BGIS - GDARD -	Alignment of priorities across provincial boundaries

Input Layers				
Feature	**Dataset**	**Data Type**	**Source**	**Comment**
		Polygon	ECOSOL	
Provincial Conservation plan	Northwest	Shapefile Polygon	BGIS -ECOSOL	Alignment of priorities across provincial boundaries
Features from previous conservation plan in areas which were in Mpumalanga MBCP	MBCPv1	Shapefile Polygon	MTPAv1(2007)	Features identified at a fairly fine scale and using good data.
Limpopo Ecological Corridors layer	Corridors and connectivity.shp	Vector developed from grid	Ecosol (2013)	New least cost pathway corridor network developed.
River corridors based on FEPA Rivers	NFEPA_Rivers_1:500k	Shapefile Polyline	CSIR - BGIS (2011)	All river reaches on rivers of order 3 and above, buffered by 100m. Non-available river corridor areas assigned to ESA.
Ridges and Escarpment	Ridges	Polygon Shapefile	MetroGIS LCPv1 (2009)	Mostly covered by other features, this layer is included for continuity between LCPv1 and LCPv2