

Appendix G – Specialist Studies

Appendix G1 – Botanical/Biodiversity Assessment Scan



20 September 2021

BOTANICAL COMPLIANCE STATEMENT: VISSERSPAN SOLAR PV GRID CONNECTION, FREE STATE PROVINCE.

As the appointed botanical specialist for assessment of the impact on the flora and vegetation of the grid interconnection required for the Visserspan Solar PV Facility, near Dealesville, Free State Province, I hereby verify that:

Section 1.

- (a) I conducted a site visit on 11 & 12 August 2021
- (b) The potential impact on the vegetation and flora of a 6 km corridor for the overhead power line (OHPL) from Visserspan to the Kinderdam MTS is considered.

Section 2.

a. **Specialist:** Dr David J. McDonald, Bergwind Botanical Surveys & Tours CC, 14A Thomson Road, Claremont. Telephone: 021-671-4056; mobile – 082-876-4051.
SACNASP Reg. No. 400094/06 Ecological Science (Curriculum Vitae appended)

b. Declaration of independence:

I David Jury McDonald, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I, in terms of the general requirement to be independent, other than fair remuneration for work performed in terms of this application:

- (i) have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity;
- (ii) in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- (iii) have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- (iv) am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).



1. Location

The authorised Visserspan Solar PV facility near Dealesville, Free State Province, requires a connection to the national grid. Two alternative OHPL routes were investigated as shown in Figures 1 & 2 with respect to the potential impact on the vegetation. The intention is to link the solar facility with the Perseus Substation that lies a short distance north of Dealesville.

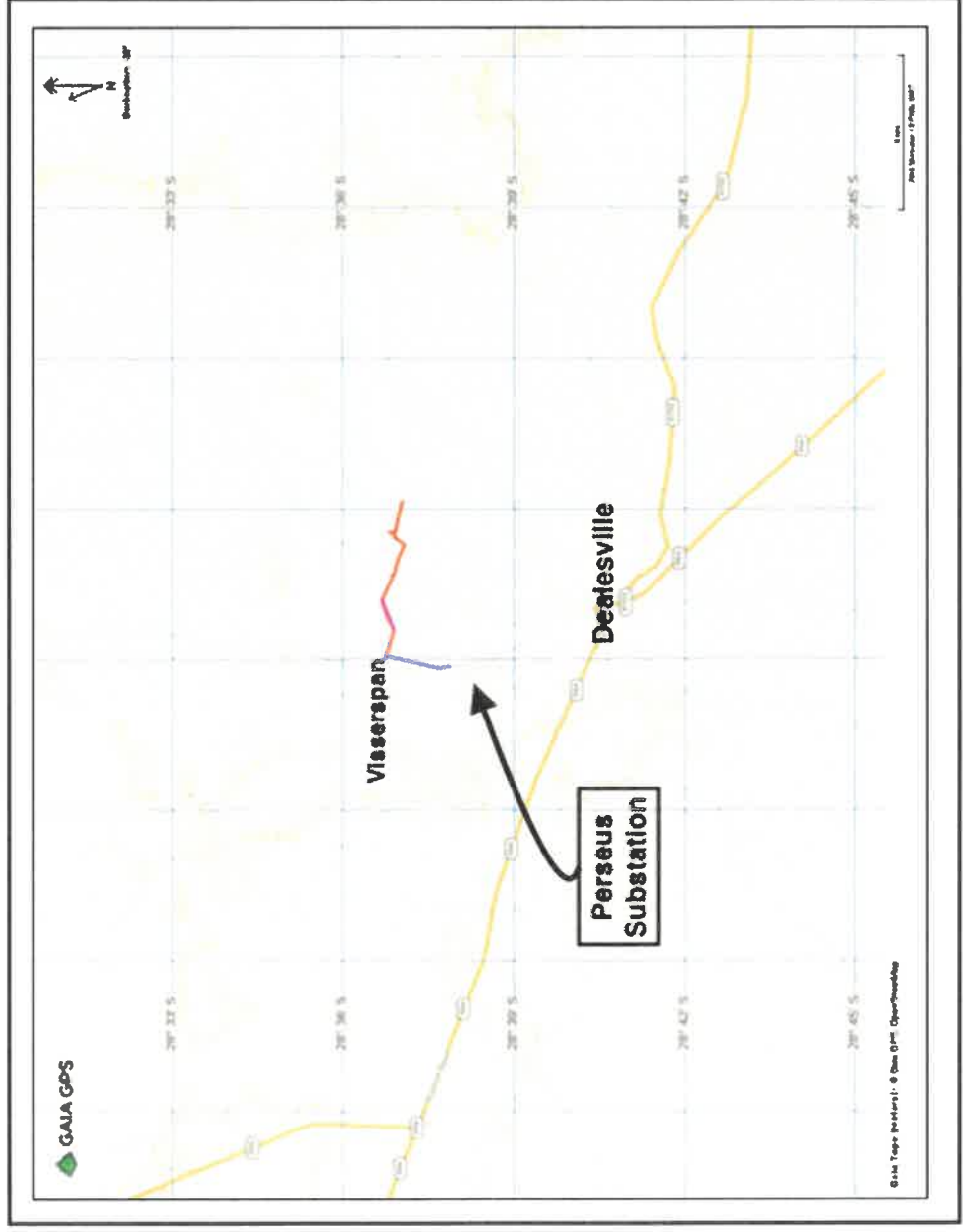


Figure 1. The location of Visserspan north of Dealesville, Free State Province. The Perseus Substation is indicated with the Alternative 1 OHPL indicated as a red line and the Alternative 2 OHPL indicated as a purple line.

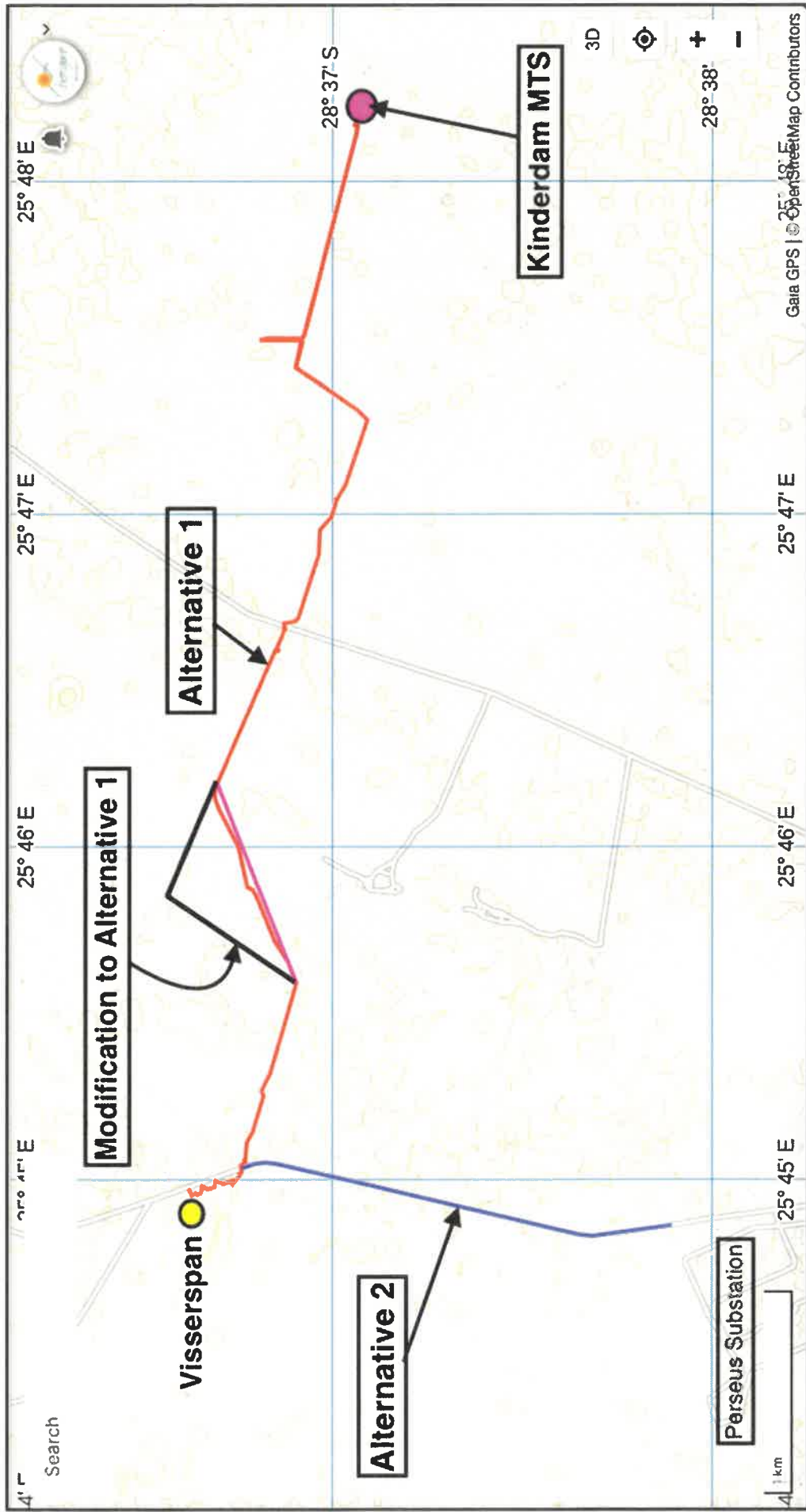


Figure 2. Magnified layout of the proposed grid connections from Visserspan to the Perseus substation. Note that the route of the Alternative 1 (preferred) route was modified slightly to run along a cadastral boundary as opposed to going across agricultural land.



Figure 3. Google Earth™ aerial image showing the location of the Visserspan Switching Station, the Alternative 1 OHPL Corridor (black with white line), the location of the Kinderdam MTS, the Alternative 2 OHPL route (light blue line) and the Perseus substation. The yellow line between Kinderdam MTS and Perseus represents existing transmission lines.

2. Methods

Google Earth™ satellite imagery and GAIA GPS maps were used as base-maps for the desktop analysis. The National Web-based Screening Tool and the Conservation Status Map for the Free State Province were used to determine the vegetation and biodiversity sensitivity of the area where the proposed grid connection OHPL would be routed.

The Visserspan Switching Station would be located on the Visserspan property and was investigated on the site, Figure 6. The construction of the switching station will result in some loss of old *Eucalyptus* spp. (gum trees) as well as a relatively small area of grassland that is grazed by cattle.

The Alternative 1 & 2 OHPL routes were walked to assess the vegetation and habitat. The season of the site visit was a limitation since it was in winter and the grassland was dry. However, since the development would be a linear activity, this limitation would be of very low significance. There would be disturbance during construction and to a limited extent during ongoing maintenance. The OHPL would be routed along cadastral boundaries and it was found that these zones have either been ploughed as firebreaks, or farm roads run along the farm boundaries where the OHPL would be aligned.

3. Vegetation Type

According to the Vegetation Map of South Africa, Swaziland and Lesotho (SANBI, 2018) also known as VEGMAP, the area through which the 400 kV Visserspan Grid Connection OHPL would be aligned (both alternatives) is Vaal-Vet Sandy Grassland (Figure 4). This vegetation is recognized as an ENDANGERED terrestrial ecosystem (Government Gazette, 2011) due to loss from agriculture. However, the OHPL will not result in any loss of this vegetation and will have negligible negative effect on the habitat.

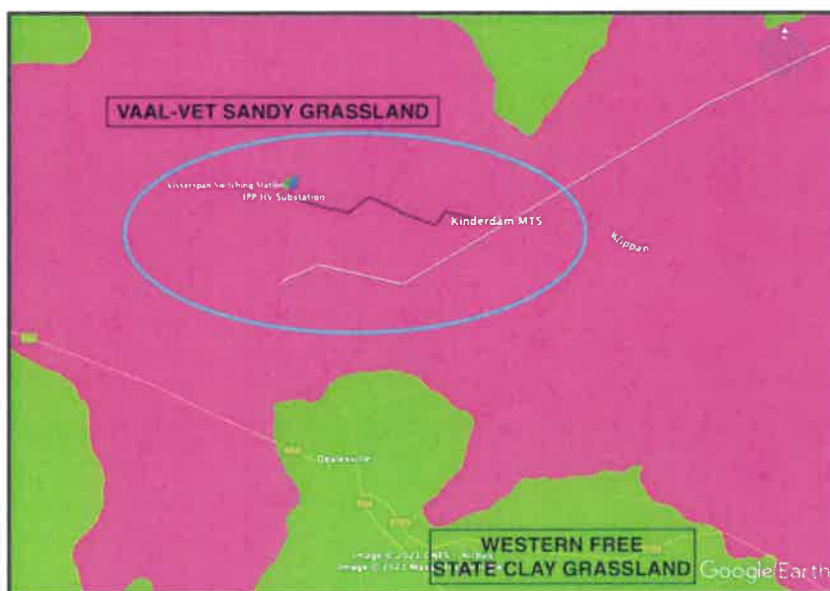


Figure 4. Portion of the Vegetation Map of South Africa, Swaziland and Lesotho showing the area of the proposed construction works, all within the light blue oval and all falling within Vaal-Vet Sandy Grassland.

4. Disturbance regime

Disturbance in the target areas has been caused mainly by agriculture (grazing and crops) and invasive alien plants such as *Eucalyptus* sp. (gum trees). The disturbance along the proposed alternative OHPL routes is such that the veld has not been completely lost.

5. Critical Biodiversity Areas and the National Web-based Environmental Screening Tool

The conservation status map or Critical Biodiversity Areas (CBAs) map for the Free State Province was overlaid on Google Earth™ for the area north of Dealesville where the Visserspan Solar PV Facility and supporting grid connection would be located. The Visserspan Switching Station will be built in the area shown in Figure 6. The map (Figure 5) shows that the Alternative 1 OHPL route mostly traverses an Ecological Support Area 2 (ESA2), a degraded area and a section of Critical Biodiversity Area 1 (CBA1). The Alternative 2 route traverses ESA2 and CBA1. The grassland of the ESA2 of Alternative 1 is shown in Figure 7 with the degraded area illustrated in Figure 8. The CBA1 towards the eastern end of the Alternative 1 route (i.e. the preferred route) is illustrated in Figure 9. The grassland representative of the Alternative 2 route is illustrated in Figure 10.

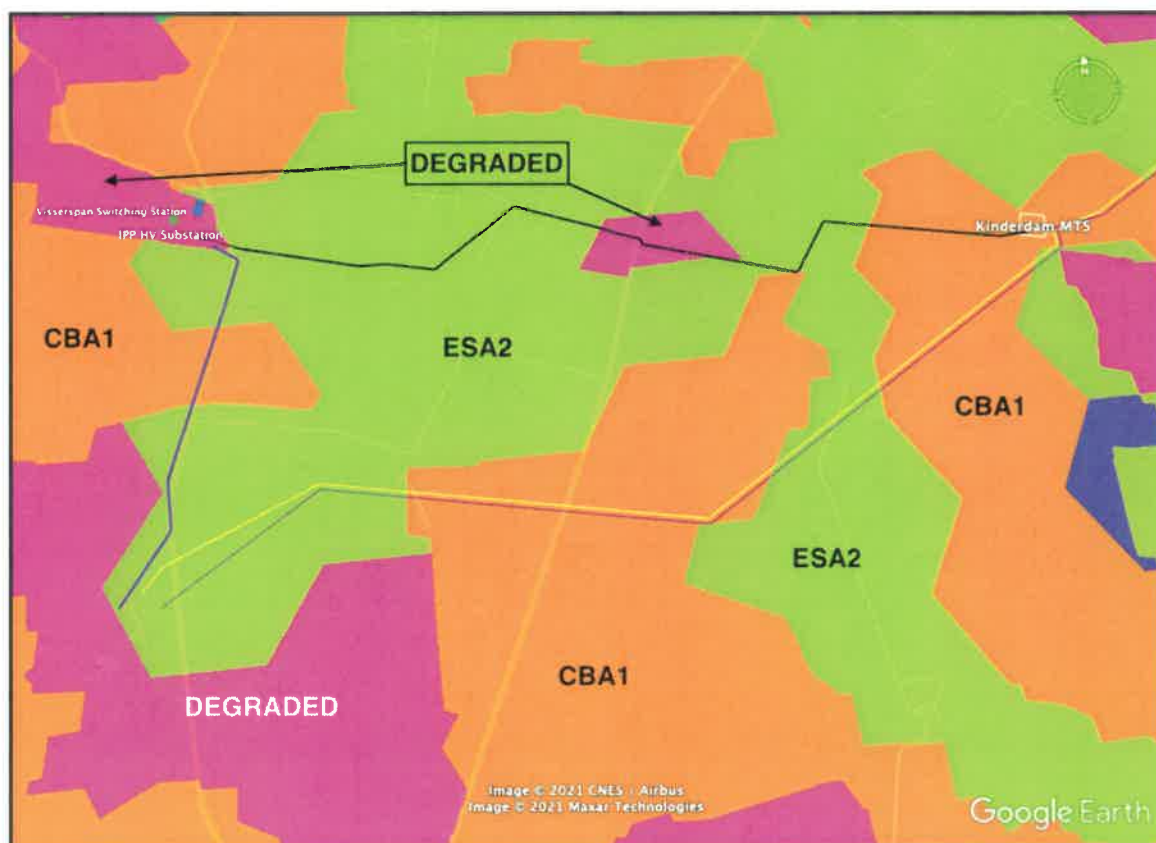


Figure 5. The map of Critical Biodiversity Areas shows that the grid connection OHPLs (black [Alternative 1] and purple [Alternative 2] lines) mostly traverse Ecological Support Areas (2) and degraded areas with limited affect on Critical Biodiversity Areas (CBA1).



Figure 6. The site if the switching station at Visserspan.



Figure 7. The Alternative 1 Corridor the ESA2.



Figure 8. The Alternative 1 corridor through a degraded section of the route.



Figure 9. The eastern end of the Alternative 1 OHPL route near Kinderdam. This area is classified as CBA1.



Figure 10. The Alternative 2 OHPL corridor looking south, with the Perseus Substation in the background.

The National Web-based Environmental Screening Tool was applied to determine the environmental sensitivity of the proposed grid connection power line route. For the Plant Theme Sensitivity (Figure 11), the sensitivity is **LOW** throughout the study area, with the lowest sensitivity being in the south where crop agriculture is most intensive. For the Terrestrial Biodiversity Theme Sensitivity (Figure 12), the sensitivity is **VERY HIGH** throughout the study area, based on the conservation status of the site and the Endangered vegetation type.

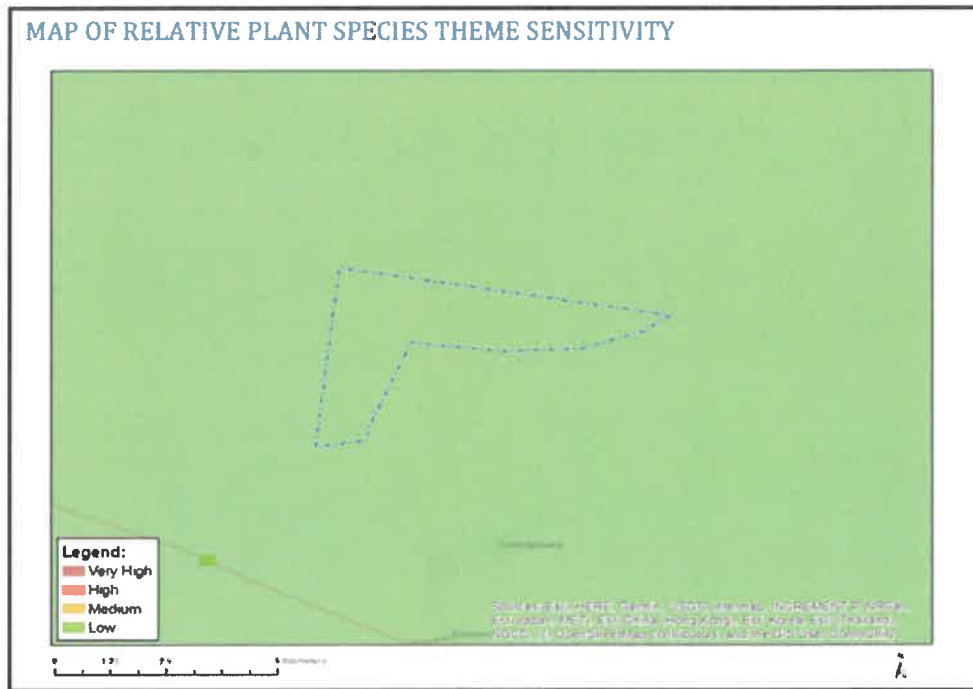


Figure 11. The map for the Plant Species Theme Sensitivity generated by the National Web-based Environmental Screening Tool. The dotted blue line bounds the study area with sensitivity indicated as LOW.

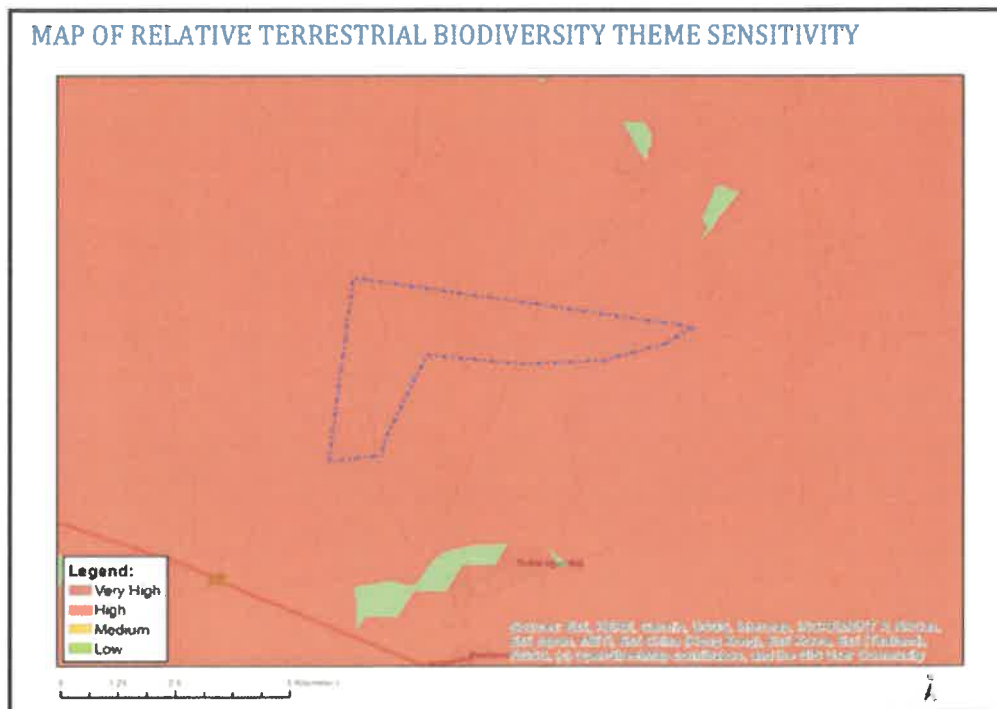


Figure 12. The map for the Terrestrial Biodiversity Species Theme Sensitivity generated by the National Web-based Environmental Screening Tool. The dotted blue line bounds the study area with sensitivity indicated as VERY HIGH.

6. Conclusions

Using the information gathered through interpretation of the various maps and information available for the designation of the sensitivity of areas traversed by the grid connection OHPL, it has been determined that the Alternative 1 route as well as the Alternative 2 route have LOW sensitivity with respect to plants and terrestrial biodiversity, the latter specifically since it is linear infrastructure and would not result in significant loss of Vaal-Vet Sandy Grassland. On balance, with respect to the vegetation and flora either alternative route could be used but for other reasons the preferred route (Alternative 1) is acceptable.

7. References

South African National Biodiversity Institute (SANBI) 2018, Vegetation Map of South Africa, Lesotho and Swaziland [vector geospatial dataset] 2018. Available from the Biodiversity GIS website <http://bgis.sanbi.org>.



Signature of the specialist:

20 September 2021

Appendix: Curriculum Vitae

Dr David Jury McDonald Pr. Sci. Nat.

Name of Company: Bergwind Botanical Surveys & Tours CC. (Independent consultant)

Work and Home Address: 14 A Thomson Road, Claremont, 7708

Tel: (021) 671-4056 **Mobile:** 082-876-4051 **Fax:** 086-517-3806

E-mail: dave@bergwind.co.za

Website: www.bergwind.co.za

Profession: Botanist / Vegetation Ecologist / Consultant / Tour Guide

Date of Birth: 7 August 1956

Employment history:

- 19 years with National Botanical Institute (now SA National Biodiversity Institute) as researcher in vegetation ecology.
- Five years as Deputy Director / Director Botanical & Communication Programmes of the Botanical Society of South Africa
- 15 years as private independent Botanical Specialist consultant (Bergwind Botanical Surveys & Tours CC)

Nationality: South African (ID No. 560807 5018 080)

Languages: English (home language) – speak, read and write
Afrikaans – speak, read and write

Membership in Professional Societies:

- South Africa Association of Botanists
- International Association for Impact Assessment (SA)
- South African Council for Natural Scientific Professions (**Ecological Science, Registration No. 400094/06**)
- Field Guides Association of Southern Africa

Key Qualifications:

- Qualified with a M. Sc. (1983) in Botany and a PhD in Botany (Vegetation Ecology) (1995) at the University of Cape Town.
- Research in Cape fynbos ecosystems and more specifically mountain ecosystems.
- From 1995 to 2000 managed the Vegetation Map of South Africa Project (National Botanical Institute).
- Conducted botanical survey work for AfriDev Consultants for the Mohale and Katse Dam projects in Lesotho from 1995 to 2002. A large component of this work was the analysis of data collected by teams of botanists.
- **Director: Botanical & Communication Programmes** of the Botanical Society of South Africa (2000—2005), responsible for communications and publications; involved with conservation advocacy particularly with respect to impacts of development on centres of plant endemism.
- Further tasks involved the day-to-day management of a large non-profit environmental organisation.
- **Independent botanical consultant** (2005 – to present) over 300 projects have been completed related to environmental impact assessments in the Western, Southern and Northern Cape, Karoo and Lesotho. A list of reports (or selected reports for scrutiny) is available on request.

Higher Education

Degrees obtained

and major subjects passed:

B.Sc. (1977), University of Natal, Pietermaritzburg
Botany III
Entomology II (Third year course)

B.Sc. Hons. (1978) University of Natal, Pietermaritzburg
Botany (Ecology /Physiology)

M.Sc. - (Botany), University of Cape Town, 1983.
Thesis title: 'The vegetation of Swartboschkloof, Jonkershoek,
Cape Province'.

PhD (Botany), University of Cape Town, 1995.
Thesis title: 'Phytogeography endemism and diversity of the
fynbos of the southern Langeberg'.

Certificate of Tourism: Guiding (Culture: Local)
Level: 4 Code: TGC7 (Registered Tour Guide: WC 2969).

Employment Record:

January 2006 – present: Independent specialist botanical consultant and tour guide in own company:

Bergwind Botanical Surveys & Tours CC

August 2000 - 2005 : Deputy Director, later Director Botanical & Communication Programmes,
Botanical Society of South Africa

January 1981 – July 2000 : Research Scientist (Vegetation Ecology) at National
Botanical Institute

January 1979—Dec 1980 : National Military Service

Further information is available on my company website: www.bergwind.co.za