Bergwind Botanical Surveys & Tours CC.
14A Thomson Road
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7708

13 November 2024

TO WHOM IT MAY CONCERN

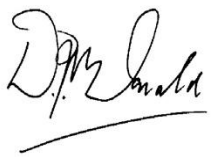
CONFIRMATION OF CONSIDERATION OF THE NEW SITE DEVELOPMENT LAYOUT FOR REMAINDER ERF 19374, GEORGE

The proposed amended site development layout for Remainder Erf 19374, George, was supplied to me and I compared it with the original layout that was assessed in the botanical assessment report I, as the appointed botanical specialist, compiled in July 2022.

I have noted that the 'new' layout is within the original footprint but that fewer residential units are now planned. A gravel track has been 'constructed' where there was a two-spoor track in the past.

The above changes make no change to the significance of the impact as described in the botanical report of July 2022, and I hereby confirm that I am satisfied that no further botanical assessment or mitigation measures are required.

Yours sincerely,



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Botanical Specialist

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Botanical Assessment
for the proposed development of
Erf 19374, George Municipality,
Garden Route District Municipality
Western Cape Province

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Prepared for Sharples Environmental Consultants

July 2022

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1. Preamble

National Legislation and Regulations governing this report

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (as amended).

Appointment of Specialist

David J. McDonald of Bergwind Botanical Surveys & Tours CC was appointed by Sharples Environmental Services to provide specialist botanical consulting services for the proposed development of Erf 19374, George, Western Cape Province. The consulting services comprise an assessment of the flora and vegetation of the erf to inform the application process for environmental authorisation to develop.

Details of Specialist

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Expertise

Dr David J. McDonald:

- Qualifications: BSc. Hons. (Botany), MSc (Botany) and PhD (Botany)
- Botanical ecologist with over 40 years' experience in the field of Vegetation Science.
- Founded Bergwind Botanical Surveys & Tours CC in 2006
- Has conducted over 600 specialist botanical / ecological studies.

- Has published numerous scientific papers and attended numerous conferences both nationally and internationally (details available on request).

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Bergwind Botanical Surveys & Tours CC, its staff and appointed associates, reserve the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must refer to this

Independence

The views expressed in the document are the objective, independent views of Dr McDonald and the survey was carried out under the aegis of, Bergwind Botanical Surveys and Tours CC. Neither Dr McDonald nor Bergwind Botanical Surveys and Tours CC have any business, personal, financial or other interest in the proposed development apart from fair remuneration for the work performed.

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 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).

Dr David J. McDonald Pr. Sci. Nat.
Botanical Specialist
Owner/ Director: Bergwind Botanical Surveys & Tours C

5 July 2022

2. Background

Bergwind Botanical Surveys and Tours CC (Dr D.J. McDonald) ('Bergwind') was appointed by Sharples Environmental Consultants in March 2022 to conduct a botanical assessment of Erf 19374, George, in the George Municipality, Western Cape Province. The reason for the appointment was to determine the type, extent, and sensitivity of any natural vegetation that may be lost due the development of the erf.

3. Locality

Erf 19734, George, is located at the northern outskirts of the town of George, north of Heather Park, near Blanco. The western boundary of the erf is along the Malgas River with the eastern side close to the N12 road (TR1/1) over the Outeniqua Pass (Figure 1).

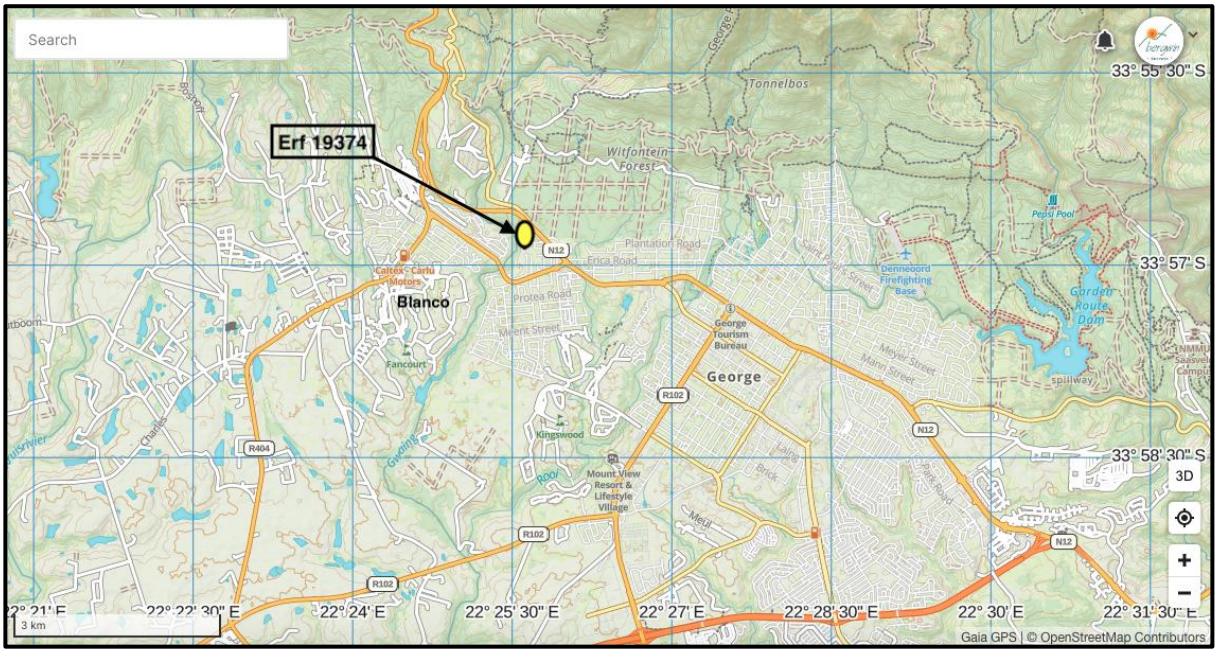

Figure 1. Topographic map showing the location of Erf 19374, George (yellow oval).

4. Terrain

4.1 Topography and Aspect

Erf 19374, George indicated by the red boundary in Figure 2, is on flat terrain with predominantly southerly aspect (Figure 3).

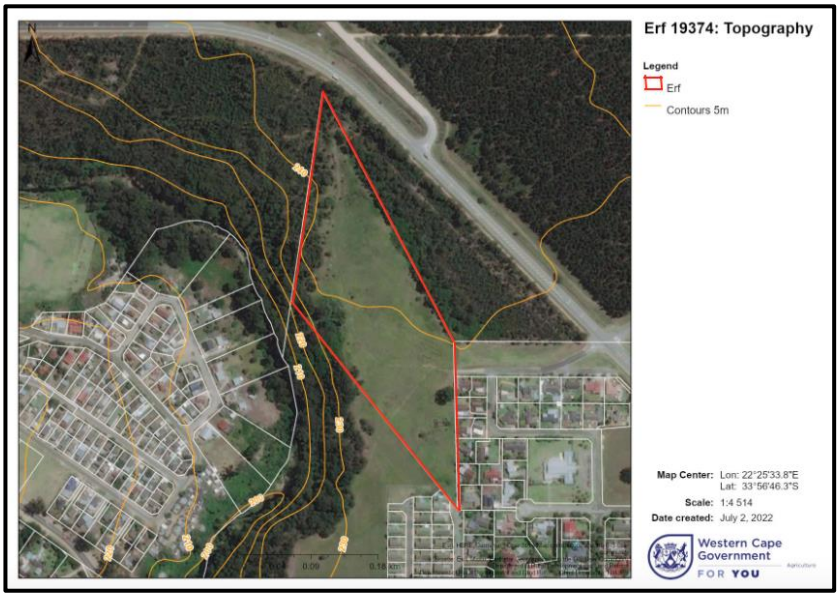

Figure 2. The topography of Erf 19374, George, with the contour interval is 5 m indicating that the site is relatively flat.

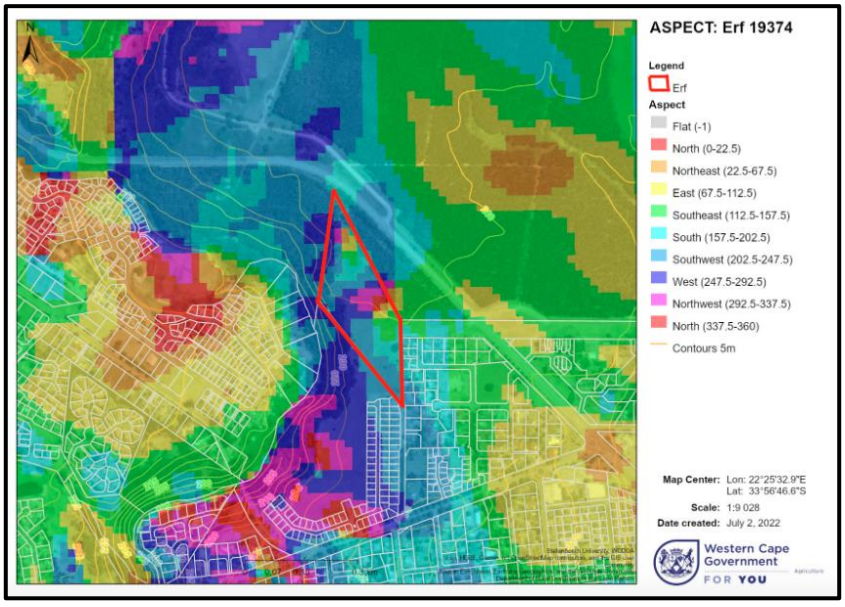

Figure 3. The aspect of Erf 19374, George, is predominantly southerly.

4.2 Geology and Soils

The geology of the study area is relatively simple in that it is located on shale sediments of the Kaaimans Group. At this site the sedimentary rock is not influenced by intrusion of granite of the George Pluton (Cape Granite Suite) (Gresse *et al.* 2006; Rebelo *et al.* 2006; Scheepers & Schoch, 2006).

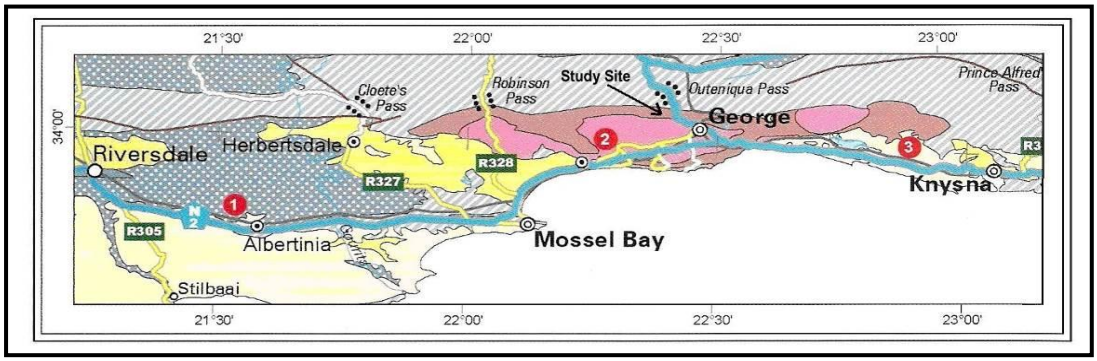

Figure 4. Geology of the Southern Cape Coast showing the area around George – the pink area with "2" is the Maalgaten Pluton (granite). The location of Erf 19374, George, is indicated by a black arrow on Kaaimans Group sediments (after Norman & Whitfield, 2006 – diagram used with permission from the senior author).

The soils of Erf 19374, George, are acidic with and approximately half the erf has soils that have a strong texture contrast where there is an abrupt texture change between the topsoil and subsoil. The other half has soils with limited pedological development (Figure 5).

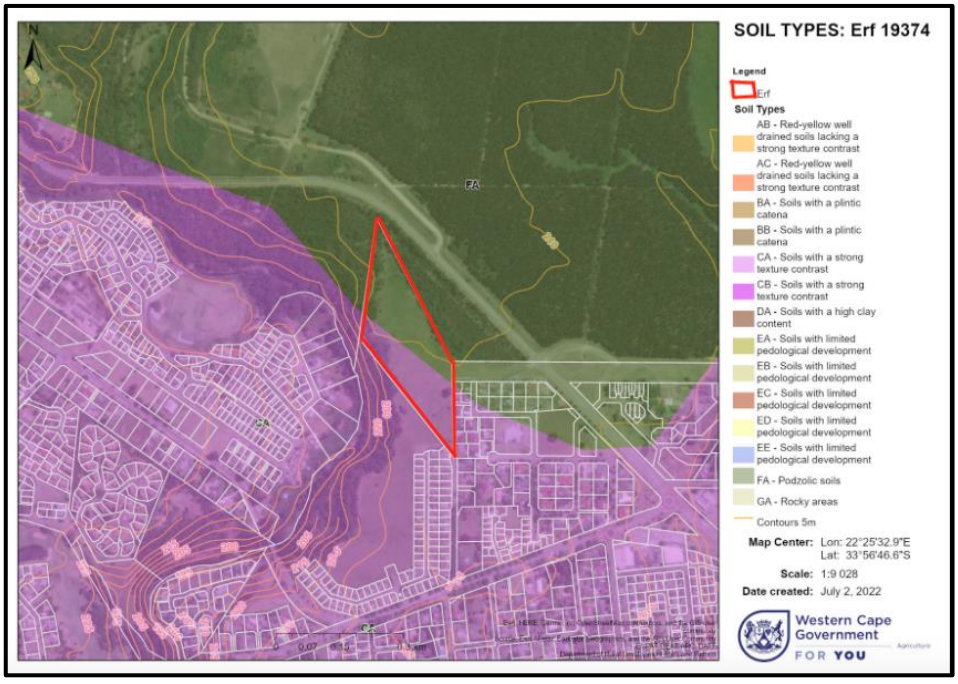

Figure 5. The soils Erf 19374, George (red boundary), are indicated as FA – podzolic soils (structureless) and CA – pedocutanic soils with a strong structure contrast.

4.3 Climate

The climate of the study site is influenced by the proximity of the sea with its cooling and warming effects and the Outeniqua Mountains immediately north of the site. George has a mild climate, receiving rain in every month of the year but mainly in autumn (March) and then in spring (August) and early summer (October and November). Annual average rainfall is 860 mm, due in large part to orographic effects of the Outeniqua Mountains (Figure 6). Average temperatures do not reach extremes. The highest mean summer daytime temperature occurs in January and February (26°C) and the lowest mean minimum temperature occurs in July (7°C) (Figure 7).

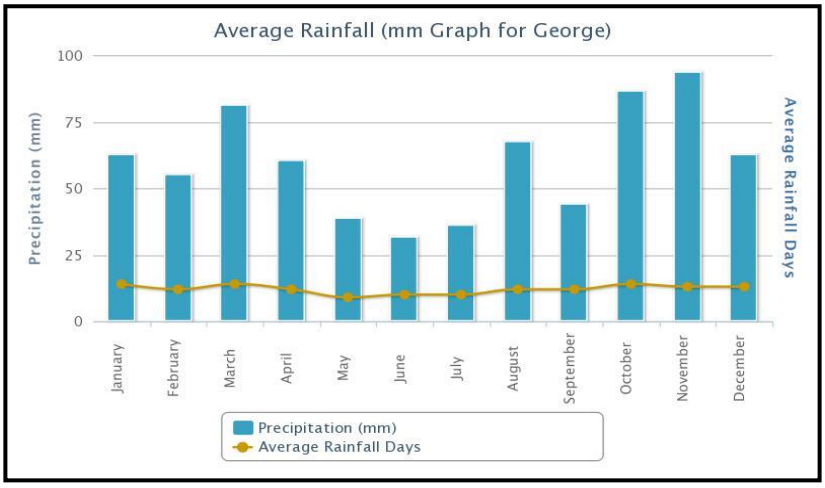

Figure 6. Average monthly rainfall for George.

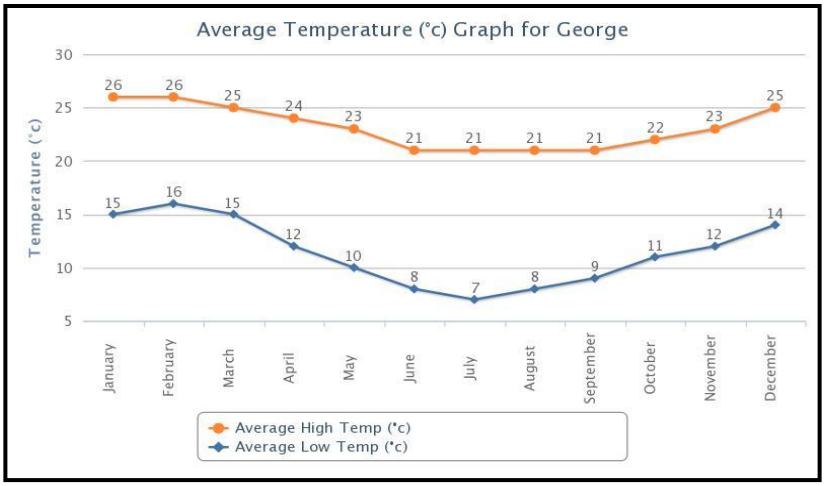

Figure 7. Average monthly temperatures for George.

(Source: http://www.worldweatheronline.com/George-weather/Western-Cape/ZA.aspx)

Wind is an important climatic factor on the coast with differential heating and cooling of the land and the sea resulting in landward and seaward movement of air. This results in local sea / land breezes which blow from the sea to the land in the afternoon and evening. The reverse occurs at night when the cool air over the land drains to the warmer sea. Berg winds can occur along the Southern Cape coast when a strong high pressure exists south

or south-east of the country and when a high pressure is concurrently situated over the country. The hot to very hot, windy conditions can be conducive to runaway wildfires which can burn extensive areas of vegetation. This results in a marked effect on observed patterns of vegetation distribution, particularly at the interface between fynbos and thicket, and fynbos and Southern Afrotemperate forest.

5. Methods

5.1 Site Visit

The fieldwork for the assessment of the condition and vegetation of the area of interest was undertaken on 6 April 2022 in cool, cloudy weather.

A circuit was walked through the erf and photographic waypoints were recorded at randomly distributed locations depending on salient features of the vegetation on the property. The waypoints were recorded using the GAIA GPS app on an iPhone XR. Photographs were also taken using a DSLR camera to support the recorded observations and to aid identification of the plants that were not immediately identified in the field. The survey track is shown in Figure 8.

Figure 8. Aerial photo of Erf 19374, George (red shading) with the survey track represented by the irregular purple line.

5.2 Desk-top analysis and reporting

The photographs obtained in the field as well as available literature, Google Earth Pro ™ and Cape Farm Mapper were used for description of the vegetation and maps presented in this report. The National Vegetation Map (Mucina *et al.* 2005; SANBI, 2012; 2018) (referred to as VEGMAP) was used as the 'base-map' to determine the principal original vegetation type.

In addition, the National Web-based Environmental Screening Tool was applied to determine the Relative Plant Species Theme Sensitivity as is required of botanical specialists.

6. Limitations and Assumptions

No limitations were experienced, or assumptions made.

7. Disturbance regime

All indications are that Erf 19374, George was historically part of a farm; possibly a dairy farm or other livestock farm. The soil has apparently not been tilled but the former fynbos vegetation was removed a long time ago. At the time of the site inspection, it had lain fallow for a long time and there had been no generation of natural fynbos vegetation. On the contrary, the vegetation that has supplanted the original fynbos plant community, is a collection of weedy, invasive plant species that have left no space for the regeneration of fynbos.

A disused track traverses part of the site and it appears that this was made and used by wood-cutters in search of wattle and gum firewood.

Figure 9. The northern area of Erf 19374, George, with dense black wattle and gum trees. The seldom-used track is seen in the lower left side of the image.

8. The Vegetation

8.1 The vegetation in context

The vegetation occurring on the shale sediments that lie between the igneous rock of the Maalgaten Pluton (granite) to the south and the Table Mountain Group sandstones to the north (Outeniqua Mountain Range) is proteoid fynbos shrubland. However, much of this shrubland has now been lost due to agriculture and agro-forestry. The result is that the vegetation type now exists, apart from in statutory conservation areas, as small remnants on terrain that is unsuitable for cultivation (Mucina, Rutherford & Powrie 2005; Rebelo *et al.* 2006; SANBI, 2018) (Figure 10).

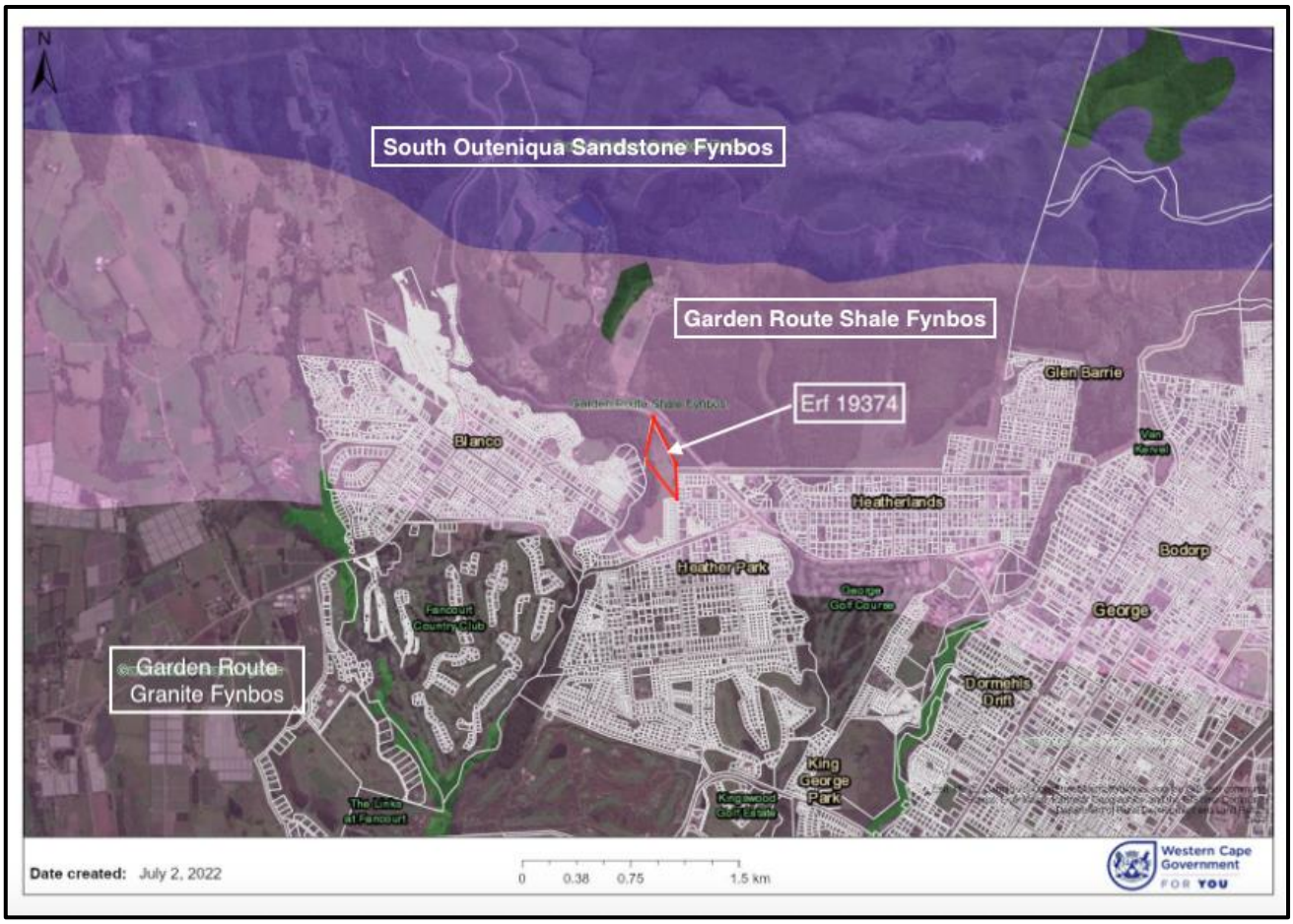

Figure 10. Portion of the VEGMAP (SANBI, 2018) indicating that the study area lies in an area mapped as Garden Route Shale Fynbos.

8.2 The vegetation of Erf 19374, George

Along the north-eastern boundary is a line of Eucalyptus trees (*Eucalyptus cladocalyx* or sugar gum). The trees have spread westwards onto the erf and it is no longer a line but a grove. Blackwood (*Acacia melanoxylon*) is found in amongst the eucalyptus trees. Apart from the gum trees and the invasive black wattle (*Acacia mearnsii*) forming dense stands in the northern sector near the Malgas River (Figure 13) and that extend southwards to the southern extreme of the erf, the vegetation is mainly a mix of exotic and indigenous grasses. These grasses form a dense sward in the central and southeast part of the erf (Figure 12) and are punctuated by other herbaceous and shrub species, mainly exotics. The site is thus relatively open apart from the densely wooded areas, that are mostly along the boundaries. The shade-loving grass, *Setaria megaphylla* (Figure 14), is prominent under the dense alien invasive trees, together with *Pennisetum clandestinum* (Kikuyu grass).

Figure 11. Tall exotic *Eucalyptus cladocalyx* on the north-eastern boundary of Erf 19374, with blackwood (*Acacia melanoxylon*). A plant of *Cortaderia selloana* (pampas grass) amongst a strong stand of *Paspalum dilatatum*.

Figure 12. View southwest over Erf 19374, George, showing the grassy central part of the site with tall alien trees on the western boundary along the Malgas River.

Figure 13. Tall dense *Paspalum dilatatum* in the foreground with dense *Acacia mearnsii* (black wattle) in the background.

Figure 14. *Setaria megaphylla*, a shade-loving grass species prominent under the dense canopoy of alien trees.

The following plant species were recorded, with * indicating exotic species:

Amaryllis belladonna, Anredera cordifolia (Madiera vine)* [Figure 15], *Arundo donax* (Spanish Reed)* [Figure 16], *Cirsium vulgare* (Scotch thistle)*, *Conyza scabrida, Cortaderia selloana* (Pampas grass)*, Cyperus esculentus, Eucomis autumnalis* [Figure 19], *Gomphocarpus fruticosa, Hedychium gardnerianum* (Kahili Ginger Lily)* [Figure 17], *Helichrysum cymosum, Helichrysum foetidum, Helichrysum patulum*, *Kniphofia sp.*, *Leonotis leonurus*, *Monstera deliciosa* (Delicious monster)*, *Nephrolepis* cordifolia (Sword fern) *, *Nidorella bonariensis**, *Paspalum dilatatum*, *Pavonia columella* (Pink Pavonia)*, *Pellaea* sp., *Pennisetum clandestinum* (Kikuyu grass), *Plectranthus comosus, Pteridium aquilinum*, *Rubus sp.* Sambucus nigra* (European Elder)*, *Searsia chirindensis*, *Selago dollosa Senecio amplexicaulis, Senecio* cf. *deltoideus, Sesbania punicea* (Red Sesbania)*, *Setaria megaphylla*, Solanum giganteum (African holly)* [Figure 18] *Solanum mauritianum* (Bugweed)*, *Stenotaphrum secundatum, Xanthium strumarium*, Yucca* sp.*

Figure 15. *Anredera cordifolia*

Figure 16. *Arundo donax*

Figure 17. *Hedychium gardnerianum*

Figure 18. *Solanum giganteum*

Figure 19. *Eucomis autumnalis*

It can be stated with a high level of confidence that there is no longer **ANY** Garden Route Shale Fynbos left on Erf 19374, George. The site has been completely transformed and now supports weedy vegetation with numerous exotic invasive plant species.

9. Conservation status

9.1 Species of Conservation Concern (SCC)

No Red List species (i.e. species of conservation concern [SCC]) (*sensu* Raimondo *et al.* 2009) were found on the site.

9.2 Conservation Status of Vegetation Type

According to the National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011), Garden Route Shale Fynbos was classified with a conservation status of **Endangered.** That has not changed in the most recent appraisal in 2021 (Figure 33) of what is now called Red List Ecosystems (RLE) (SANBI, 2021). The erf has no original fynbos left with a **very low probability** of it ever being restored. Therefore, although it falls within an area classified as 'endangered' ecosystem, whether the site is conserved or developed would make no difference to the national conservation target for Garden Route Shale Fynbos.

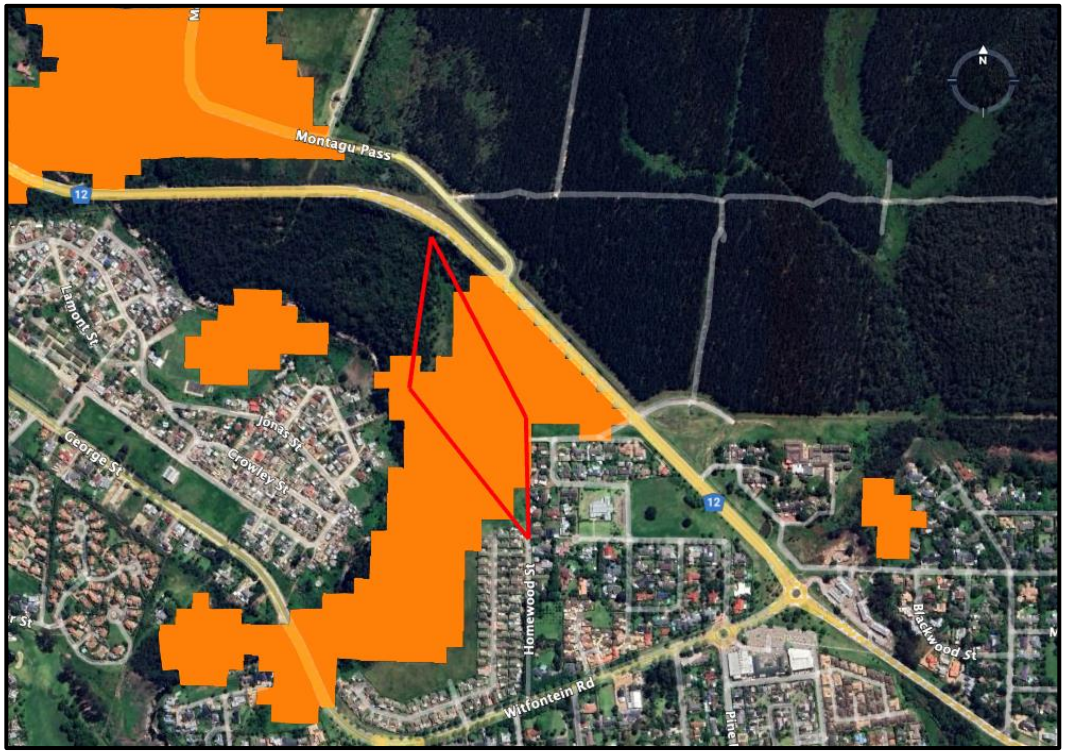

Figure 20. The RLE map superimposed on Google Earth Pro ™ showing that the area of interest (red boundary) is in an ecosystem classified as **ENDANGERED**.

9.3 Western Cape Biodiversity Spatial Plan (Critical Biodiversity Areas)

An overlay on Google Earth ™ imagery of the map of Critical Biodiversity Areas from the Western Cape Biodiversity Plan [WCBSP] (Pence, 2017; Pool-Stanvliet *et. al.* 2017) is presented in Figure 21. The 'disturbance footprint' falls partly in a CBA1 area and partly in a CBA2 area. Observations in the field do not support this classification at all. The site is TRANSFORMED and as stated above, there is a VERY LOW probability of ever being able to reverse the transformation to natural Garden Route Shale Fynbos.

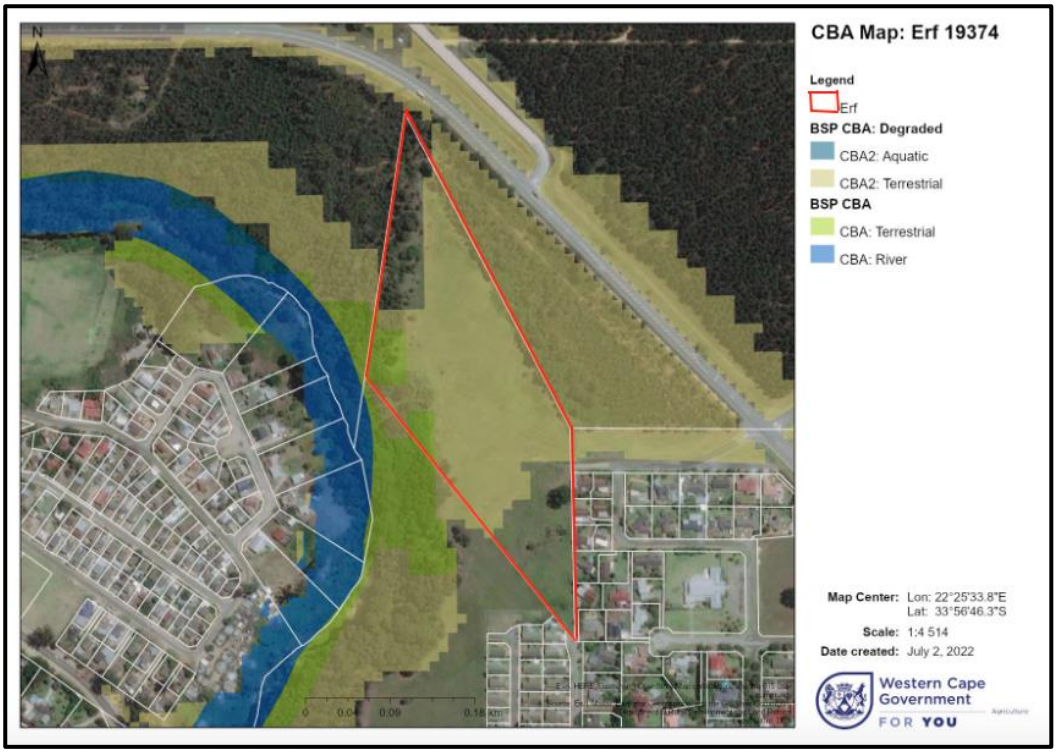

Figure 21. The WCBSP map for Erf 19374, George (red boundary), indicating that it is classified as partly CBA1 and partly CBA2.

10. Site sensitivity

10.1 Site sensitivity as determined using the National Web-based Environmental Screening Tool.

A mandatory requirement of specialists is to apply the National Web-based Environmental Screening Tool to any area that is assessed. The screening tool was thus applied to Erf 19374, George. The outcome of the screening tool for the Relative Plant Species Theme Sensitivity is **Medium** (Figure 22). In addition, none of the 'sensitive species' listed in Figure 22 were recorded during the survey.

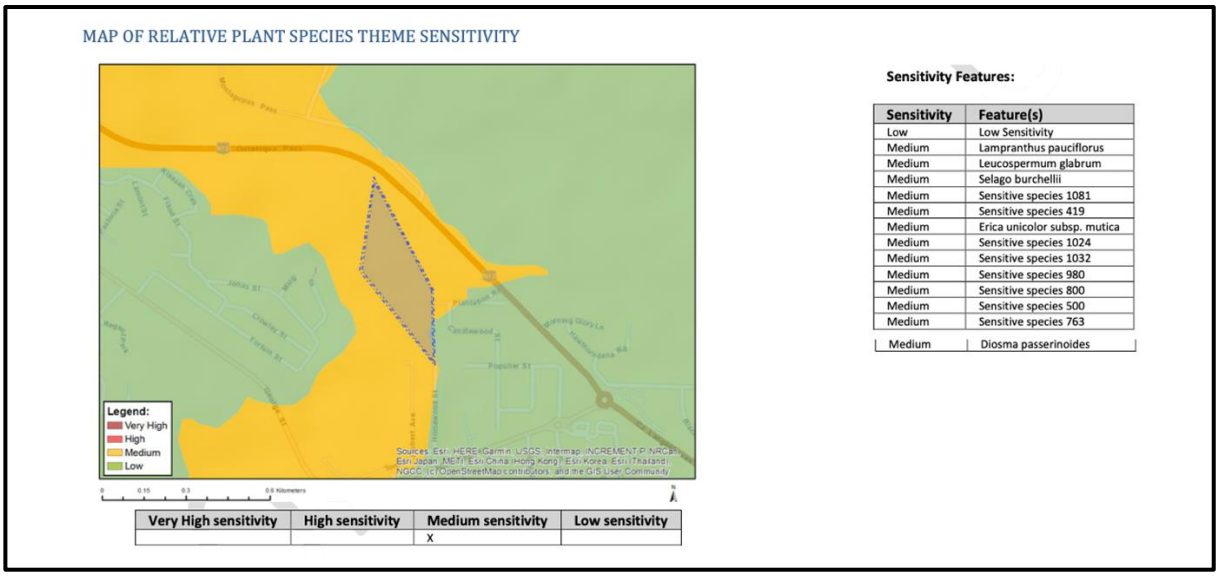

Figure 22. The output map from the National Web-based Screening Tool for Plant Sensitivity, with a list of sensitive plant species.

10.2 Site sensitivity as determined in the field

Owing to the disturbance and transformation of the habitat as described above, the sensitivity of the erf is **Very Low**. There is thus **no agreement** with the outcome of the Screening Tool. This is similarly true for the outcome for the Terrestrial Biodiversity assessment using the Screening Tool (Figure 23) where the terrestrial biodiversity being assigned a **Very High** level (Figure 23) is completely at variance with the observations in the field that indicate no more than **Low** sensitivity.

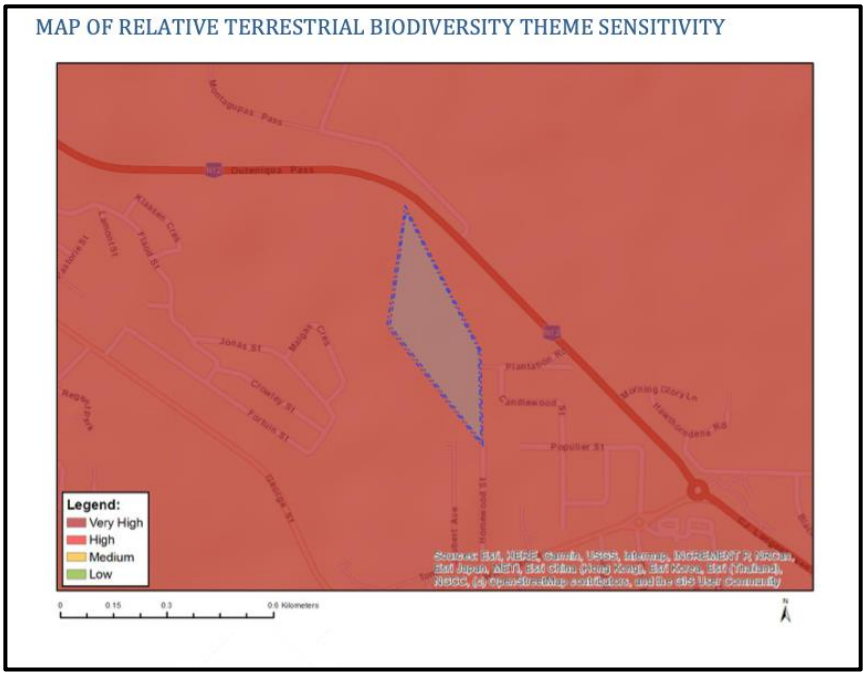

Figure 23. The output map from the National Web-based Screening Tool for Terrestrial Biodiversity Sensitivity.

11. Preliminary Impact Assessment

Since the exercise that has been carried out is a constraints analysis / baseline botanical assessment, it can be confidently stated that, given the highly transformed condition of Erf 19374, the potential impact of a residential development would be **Low Negative** for both botanical and terrestrial biodiversity.

11.1 Direct Impacts

Direct Impacts are those impacts that would result as a direct effect on any natural vegetation (original vegetation type) of any proposed development on a given tract of land, in this case Erf 19374, George. The direct impact will be Very Low Negative. (Table 1) (Also included here is the No Go alternative i.e. should the development not take place).

Table 1. Impact and Significance – Loss of natural vegetation during construction and operation of a residential development on Erf 19374, George.

CRITERIA	'NO GO' ALTERNATIVE		PREFERRED ALTERNATIVE	
Nature of direct impact (local scale)	**Loss of Garden Route Shale Fynbos**			
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local		Local	
Duration	Long-term		Long-term	
Intensity	Very Low negative	N/A	Very Low negative	Very Low Negative
Probability of occurrence	Low	N/A	High	High
Confidence	High	High	High	High
Significance	Very Low Negative	N/A	Very Low negative	Very Low Negative
Nature of Cumulative impact	**Loss of Garden Route Shale Fynbos**			
Cumulative impact prior to mitigation	Not applicable		Very Low Negative	
Degree to which impact can be reversed	Not applicable		Very Low	
Degree to which impact may cause irreplaceable loss of resources	Not applicable		Very Low	
Degree to which impact can be mitigated	Not applicable		Would not be required	
Proposed mitigation	None		None	
Cumulative impact post mitigation	Not applicable		Very Low Negative	
Significance of cumulative impact (broad scale) after mitigation	Not applicable		Very Low Negative	

8.3 Mitigation

The receiving environment at Erf 19374, George, is transformed and does not have any of the original vegetation type present. In view of this, the proposed development of the erf could go ahead without any mitigation required.

8.4 Residual Impacts

The most negative state possible, i.e. transformed, is the status of the habitat on Erf 19374, George, and so there would be no residual impacts or those impacts that remain after implementation of any mitigation measures. The residual impacts for the proposed project would be **Very Low Negative**.

8.5 Cumulative Impacts

There would be no cumulative impacts due to development of Erf 19374, George, since no further Garden Route Shale Fynbos would be lost.

12. General Assessment and Recommendations

- According to the National List of Threatened Ecosystems (Government Gazette, 2011) the originally occurring vegetation on Erf 19374, George, was Garden Route Shale Fynbos.
- The natural vegetation has been completely removed from the erf and has now been replaced by a collection of weedy plant species, mostly exotic, with no biodiversity value in the local context.
- No rare or threatened plant species were found during the site visit. The level of probability of such species occurring is **extremely low**.
- There is an extremely low probability that the erf would ever be returned to a near-original state, due to the high level of transformation.
- The site has no value in terms of ecosystem connectivity, apart from being close to the Malgas River, but even there, the riparian zone is highly disturbed.
- Development of Erf 19374 for residential purposes is, in my opinion, the most appropriate future use of the erf since it will not contribute in any way to conservation of an endangered ecosystem (negative cumulative impacts would be VERY LOW) should it not be developed.

13. Conclusions

It is my opinion that Erf 19374 is precisely this type of site (i.e. already highly transformed) that should be targeted for development, in preference to areas that have experienced only low to moderate disturbance. The assessment above gives a clear rationale in favour of development of the site and shows why this site currently does not no will it in the future contribute to biodiversity conservation.

Should the erf, for some reason, not be developed, it would be legally incumbent on the landowner to implement an alien invasive plant eradication programme, to prevent further spread of the non-indigenous invasive species.

There is no indication that any constraint with respect to flora and vegetation would prohibit development of the subject property and development is thus unconditionally supported.

14. References

Government Gazette No. 34809. 2011. Threatened Terrestrial Ecosystems in South Africa.

Mucina, L., Rutherford, M.C., & Powrie, L.W. (Eds.). 2005. Vegetation map of South Africa, Lesotho, and Swaziland 1:1 000 000 scale sheet maps. South African National Biodiversity Institute, Pretoria. ISBN 1-919976-22-1.

Mucina, L. & Rutherford, M.C. 2006. (eds.) The Vegetation of South Africa. Lesotho & Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

Pence, G.Q.K. 2017. The Western Cape Biodiversity Spatial Plan: Technical Report. Unpublished report. Western Cape Nature Conservation Board (CapeNature), Cape Town.

Pool-Stanvliet, R., Duffell-Canham, A., Pence, G., Smart, R. 2017. Western Cape Biodiversity Spatial Plan Handbook. Stellenbosch: CapeNature.

Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A. (eds) 2009. Red List of South African plants 2009. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.

Rebelo, A.G., Boucher, C., Helme, N., Mucina, L. & Rutherford, M.C. 2006. Fynbos Biome. In: Mucina, L. & Rutherford, M.C. (eds.) *The Vegetation of South Africa, Lesotho & Swaziland*. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

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

South African National Biodiversity Institute (SANBI), 2021 Red List of Ecosystems (RLE) for terrestrial realm for South Africa - remnants [Vector] 2021. Available from the Biodiversity GIS website, downloaded on 2 June 2022.

Report submitted: 5 July 2022

Appendix 1: Curriculum Vitae

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E-mail: dave@bergwind.co.za

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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
- Sixteen 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 of Professional Societies:

- 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 600 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