NICK HELME BOTANICAL SURVEYS
PO Box 22652 Scarborough 7975
Ph: 021 780 1420 cell: 082 82 38350 email: botaneek@iafrica.com
Pri.Sci.Nat # 400045/08

BOTANICAL ASSESSMENT FOR SECTION 24G PROCESS - PORTION 22 OF KLIPFONTEIN 82, VYEBOOM WESTERN CAPE.

Compiled for: PHS Consulting, Hermanus

Applicant: Cropmax Bpk, Villiersdorp

11 Feb 2025

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence and include an abbreviated Curriculum Vitae.

I, N.A. Helme, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own.

NA Helme

ABRIDGED CV:

Contact details as per letterhead.
Surname : HELME
First names : NICHOLAS ALEXANDER
Date of birth : 29 January 1969
University of Cape Town, South Africa. BSc (Honours) – Botany (Ecology & Systematics), 1990.

Since 1997 I have been based in Cape Town, and have been working as a specialist botanical consultant, specialising in the diverse flora of the south-western Cape. Since the end of 2001 I have been the Sole Proprietor of Nick Helme Botanical Surveys, and have undertaken over 1700 site assessments in this period.

A selection of relevant previous botanical work is as follows:

- Scoping and Constraints studies for Cape Winelands Airport (PHS Consulting 2022-2024)
- Macassar WWTW IA (Zutari 2023)
- Strandfontein Coastal Node IA (Infinity Environmental 2024)
- Hazendal Ptns 31 & 33 (Monique Sham 2024)
- N7 weighbridge IA (SES 2023)
- Botanical assessment of proposed development on Ptn 29 of Farm 410 Caledon (PHS Consulting 2022)
- Botanical assessment of proposed development on Ptn 10 of Broken Hill 88, Heidelberg (Isikhova 2021)

- Botanical assessment of Ptns 3 & 6 of Farm 563 Kleinmond (Lornay Environmental 2021)
- Botanical assessment of Ptn 9 of Farm 429 Gabrielskloof, Caledon (Infinity Environmental 2021)
- Baseline ecological assessment of Karwyderskraal 584, Caledon (Terramanzi 2021)
- Botanical impact assessment of proposed development of Ptn 29 of Farm 410, Caledon (PHS Consulting 2021)
- Botanical assessment of proposed new cultivation on Welbedacht farm, Tra Tra Mountains (Footprint Environmental 2020)
- Biodiversity Compliance Statement - Philippi erf 1/1460 (Infinity Environmental 2020)
- Botanical assessment of Kleinmond WWTW expansion (Aurecon 2020)
- Botanical assessment of Mooreesburg WWTW expansion (Aurecon 2020)
- Botanical assessment of Struisbaai cemetery sites (Infinity Environmental 2020)
- Botanical assessment of MoPama development site, Swellendam (Landscape Dynamics 2020)
- Botanical assessment of Ptn of Rem of Erf 1 Caledon (Theewaterskloof Municipality 2019)
- Botanical assessment of proposed new cultivation on Portion of Wittewater 148, Piketberg (Cornerstone Environmental 2019)
- Botanical assessment of Droogerivier farm Leipoldtville (Footprint Environmental 2018)
- Botanical assessment of Sebulon farm, Redelinghuys (Natura Libra Environmental Services 2018)
- Botanical assessment of proposed new cultivation on Ptn 2 of farm Groenevalley 155, Piketberg (Cederberg Environmental Assessment Practise 2017)
- Botanical assessment of proposed new cultivation on farm Rosendal, Koue Bokkeveld (Cederberg Environmental Assessment Practise 2016)
- Botanical assessment of proposed cultivation on farm Kransvlei, Clanwilliam (Cederberg Environmental Assessment Practise 2016)
- Botanical assessment of proposed cultivation on farm Erfdeel, Bo-Swaarmoed, Ceres (Cederberg Environmental Assessment Practise 2016)

CONDITIONS RELATING TO THIS REPORT:

The methodology, findings, results, conclusions and recommendations in this report are based on the author's best scientific and professional knowledge, and on referenced material and available knowledge. Nick Helme Botanical Surveys and its staff reserve the right to modify aspects of the report, including the recommendations and conclusions, if and when additional relevant information becomes available.

This report may not be altered or added to without the prior written consent of the author, and this also applies to electronic copies of this report, which are supplied for purposes of inclusion in other reports, including in the report of EAPs. Any recommendations, statements or conclusions drawn from or based on this report must cite this report, and should not be taken out of context, and may not change, alter or distort the intended meaning of the original in any way. If these extracts or summaries form part of a main report relating to this study or investigation this report must be included in its entirety as an appendix or separate section to the main report.

TABLE OF CONTENTS

1. INTRODUCTION

This botanical assessment was requested to inform the Section 24g environmental rectification and authorisation process being followed for the alleged unauthorised clearing of 1ha of natural vegetation on Portion 22 of Farm Klipfontein 82 in the Caledon district of the Western Cape (Figure 1). The relevant area is about 1.0ha in extent, with all the rest being essentially natural vegetation. The cleared area, and the whole of Portion 22 was assessed by Helme in August 2022, who recommended that no more than 1.0ha (as shown in Figure 1) should be developed on this site. The 1.0ha was subsequently cleared (presumably in 2023) prior to any environmental authorisation, which then resulted in the current 24g Rectification process.

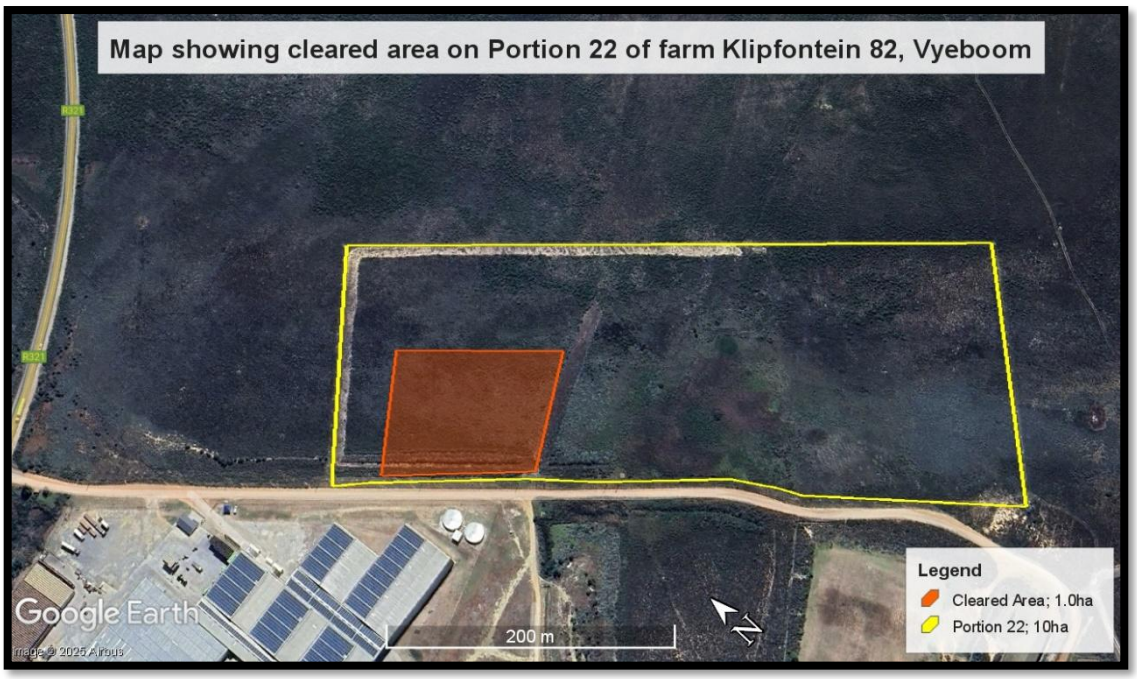

Figure 1: Satellite image showing the area of natural vegetation that was cleared in 2023. Satellite image dated January 2023, which was prior to clearing of the vegetation (and boundary of cleared area may thus not be fully accurate).

2. TERMS OF REFERENCE

The terms of reference for this study were as follows:

- Undertake a site visit to assess the vegetation in the study area, with a focus on and around the area cleared without authorisation (1ha)
- Identify and describe the vegetation in the study area and place it in a regional context, including its status in terms of the CapeNature Spatial Biodiversity Plan (CBA/ESA/ONA, etc)

- Identify and locate any (likely) plant Species of Conservation Concern in and around the study area, based on observation, literature and iNaturalist website review
- Provide an overview and map of the likely botanical conservation significance (sensitivity) of the site, and compare this to Screening Tool findings
- Identify and assess (according to standard IA methodology) the botanical impacts and significance of the unauthorised clearing, including impacts associated with the development and operational phases
- Provide required mitigation measures to minimise impacts and to help mitigate impacts associated with the unauthorised development
- Discuss the need for a biodiversity offset and assess whether this may be necessary, and provide comments on the possible quantum required.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

The site was visited on 5 November 2024. This was after the optimal winter – spring flowering season in this winter rainfall area, but given the totally disturbed nature of the 1ha study area this was not considered a constraint, especially as I had surveyed the entire Portion 22 (including the area cleared) in 2017 and again in August 2022. The author has undertaken extensive work within the region, including on this actual site on at least two previous occasions, which facilitates the making of local and regional comparisons and inferences of habitat quality and conservation value.

The cleared area and surrounding parts of Portion 22 were walked. Photographs of some of the key plant species were made using a Fuji mirrorless slr camera, and have been uploaded to the biodiversity website iNaturalist.org. Satellite imagery dated 27 January 2023 was used to inform this assessment, and for mapping. No Google Earth imagery of the site is available subsequent to the clearing, which took place after February 2023. Polygon areas were calculated using Google Earth.

The botanical sensitivity of a site is a product of plant species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, restorability of habitat, vulnerability to impacts, and reversibility of threats.

The meaning of the No Go alternative in this case is difficult to define, and is not particularly relevant, as the focus area has been cleared.

4. REGIONAL CONTEXT OF THE VEGETATION

The study area is located near the western edge of the Overberg Ruens region, and is within the Core Cape Subregion (CCR) of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The study area is part of the Fynbos biome. The GCFR is one of only six Floristic Regions in the world, and it is also by far the smallest floristic region. The Core Cape Subregion occupies only 0.1% of the world's land surface, and supports about 9400 plant species, almost half of all the plant species in southern Africa, and some 20% of the plant species in sub-Saharan Africa. About 68% of all the species in the CCR do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics). Most of the lowland habitats are under pressure from agriculture, urbanisation and alien plants, and thus many of the range restricted species are also under severe threat of extinction, as habitat is reduced to extremely small fragments. Data from the Red Data Book listing process undertaken for South Africa is that 67% of the threatened plant species in the country occur only in the Fynbos biome, and these total over 1800 species (Raimondo *et al* 2009)! It should thus be clear that the southwestern Cape is a major national and global conservation priority, and is quite unlike anywhere else in the country in terms of the number of threatened plant species. Developments in this area thus need to take this into account.

The study area could be considered to have elements of both the Southwest Fynbos and East Coast Renosterveld bioregions (Mucina & Rutherford 2006). The latter is renowned as one of the most heavily agricultural regions in both the Western Cape and the country, and consequently very little natural vegetation remains, and virtually all remnants support large numbers of threatened plant species (Raimondo *et al* 2009).

The Overberg Renosterveld Fine Scale Conservation Plan (von Hase *et al* 2003) identified all remaining Renosterveld (the name used prior to the concept of Shale Fynbos) within the Vyeboom valley as key Renosterveld remnants.

The CapeNature Spatial Biodiversity Plan (2017) for the area (Figure 2) shows that most of the cleared area is mapped as high priority CBA1 (Critical

Biodiversity Areas, wetland). CBAs are Critical Biodiversity Areas, and should not be developed, lost or impacted, as they support critical habitat and species, and appropriate land uses should be low impact and biodiversity sensitive. There are some errors in the mapping – the adjacent CBA2 is in good condition and should be higher level CBA1 rather than CBA2, but apart from that it is generally fairly accurate and shows adequate congruence with my sensitivity mapping.

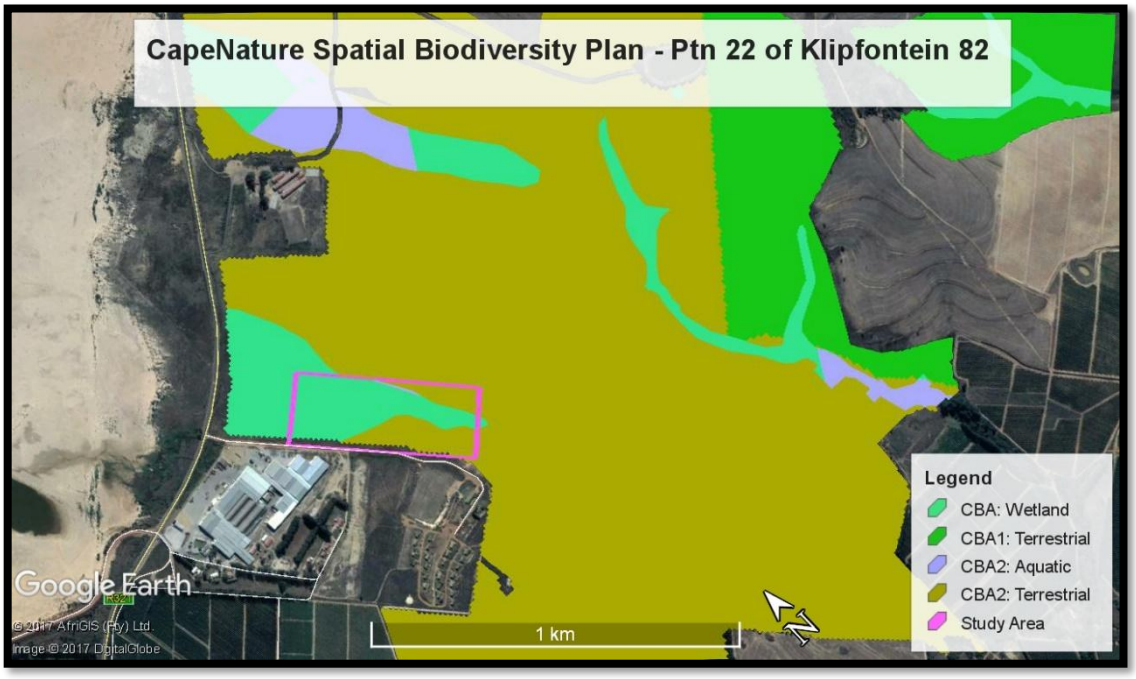

Fig 2: Extract of the CapeNature Spatial Biodiversity Plan (Pence 2017), showing that the entire Portion 22 is either CBA1 (wetland) or CBA2 (terrestrial).

5. THE VEGETATION

5.1 Description of the Study Area

The study area and surrounds are relatively flat, with a slight rise to the northeast, and the southeast corner being the highest part of the property. The property thus slopes gradually from south to north (towards the Theewaterskloof dam). The soils on site are deep, loamy sands, with underlying shales, and no sign of bedrock. There is thus something of a perched water table in the area (as sands are permeable but clays are not), and significant, flowing groundwater was previously evident in parts of the excavated trenches (Helme 2022). The soils range from white sands to almost peaty, black loams, and the latter are strongly indicative of wetland conditions. The sandier parts of the study area are better drained than the peaty, loamy soils, and slowly grade into each other. The vegetation in the area was burned in late 2015, and most of it has not been previously cultivated (with the possible exception of the 1ha current study area),

with some disturbance caused by unauthorised trenching (2017-2022) and the creation of an infilled dirt track in the central area (partly obscured by a track into the site made by the machinery that excavated the trenches).

The trenching disturbance (in 2017) included the digging (using heavy machinery) of approximately 1150m of subsoil drains (aka trenches) on three sides, and the infilling of about 400m of associated roadway with fill from two of these drains. These drains were 1-2m deep and 1-2m wide, with dumped fill covering an area about 5-6m wide, adjacent to each trench. All of this took place in 2017 without an Authorisation from the DEA&DP, and such authorisation is required in terms of Section 49 of NEMA.

5.2 The vegetation

The vegetation map of South Africa (Mucina & Rutherford 2006 and online update dated 2018) indicates that the original vegetation type present on the majority of the site is Elgin Shale Fynbos (Figure 3). This vegetation type is restricted to nutrient rich, shale derived soils in the relatively high rainfall Elgin and Vyeboom areas. Due to the high winter rainfall, the rich soils, and the relatively gentle topography the area has a long history of intensive agriculture (mostly for fruit trees). This vegetation type is in fact one of the twenty most heavily transformed in the entire country, having lost about 94% of its original extent. With only 6% of its original extent remaining, and an unreachable national conservation target of 30% of original total extent (Rouget *et al* 2004), all remaining viable patches of this habitat are regional and national conservation priorities, and no further loss of habitat should be allowed. Elgin Shale Fynbos is gazetted as **Critically Endangered** on a national scale (Government of South Africa 2022), and any significant loss of intact habitat must thus have a High negative impact (DEA 2011).

Although some Kogelberg Sandstone Fynbos is shown on site, in reality there is no semblance of this vegetation type on site. It should however be noted that Kogelberg Sandstone Fynbos is also regarded as Critically Endangered on a national basis, due to the very high number of rare and localised plant species that it supports, not because the habitat is inherently threatened (DEA 2011).

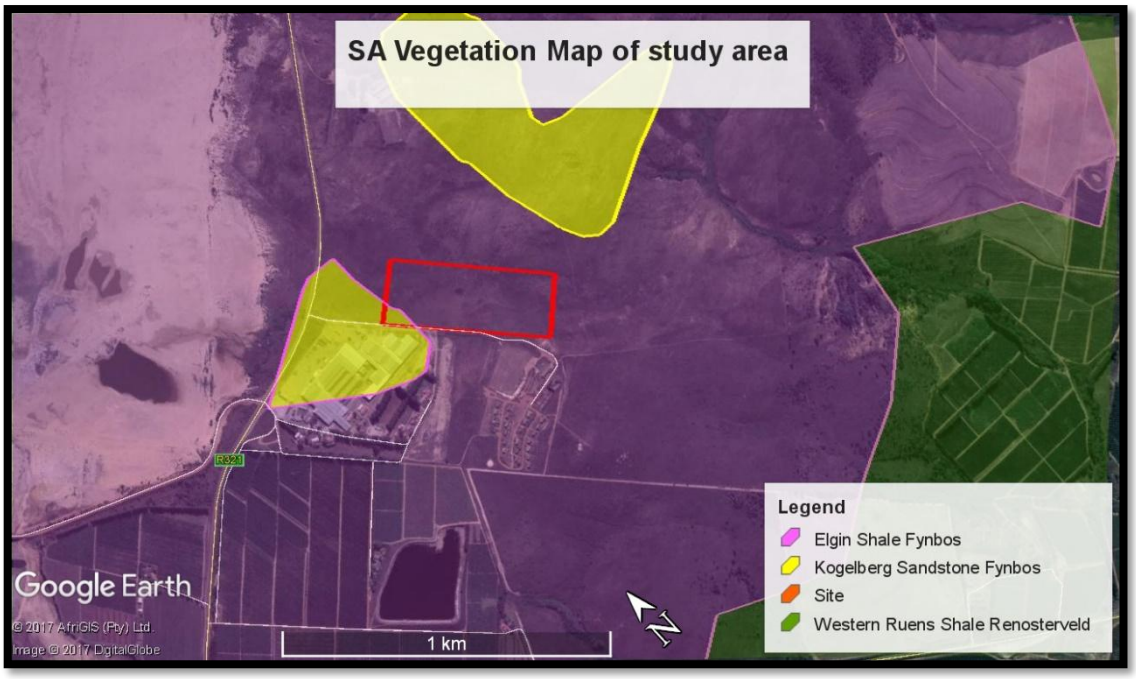

Figure 3: Extract of the SA Vegetation Map (Mucina & Rutherford) showing that the primary vegetation type on Portion 22 is mapped is Elgin Shale Fynbos. Although some Kogelberg Sandstone Fynbos is shown here, in reality there is no semblance of this vegetation type on site.

Plate 1: View of the upstream side of the cleared area, looking northeast. Note the erosion caused within the cleared area by heavy winter runoff from the upstream wetland.

Plate 2: View of the western side of the cleared area, looking northwest.

Plate 3: Looking upstream (south), showing erosion of cleared platform.

Plate 4: Berm of cleared vegetation on northwestern side of cleared area, looking northeast.

Plate 5: Significant dead vegetation on sensitive part of Portion 22, caused by flooding and sediment flow from the cleared area washed by heavy winter rains into the area north of the cleared area.

Plate 6: View of the cleared area in Feb 2022 (prior to clearing), looking north. The dominant plants are *Passerina corymbosa* (gonna) and *Seriphium plumosum* (slangbos).

The cleared area was dominated – prior to clearing - by just a few weedy species typical of disturbed soils, including *Pennisetum macrourum, Seriphium plumosum, Passerina corymbosa, Tenaxia stricta, Anthospermum aethiopicum* and *Imperata cylindrica*. No plant Species of Conservation Concern (SoCC) were recorded in the subject area, although various SoCC are present in the adjacent areas. Botanical sensitivity in this area was relatively low (Medium on a site scale).

6. IMPACT ASSESSMENT

6.1 Construction Phase (Direct) Botanical Impacts

The primary construction phase botanical impact of the clearing was loss and degradation of the existing natural and partly natural vegetation in the 1ha development area. The relevant vegetation type is gazetted as Critically Endangered on a national basis. As the applicant wishes to develop the cleared area the loss can be assumed to be of a permanent nature.

No plant Species of Conservation Concern are likely to have occurred in the cleared area, and the sensitivity of the vegetation in that area was relatively low.

The botanical significance of this vegetation degradation and loss is Low to Medium negative before mitigation (Low negative possible after mitigation, but that is at operational phase only).

The No Go alternative would clearly have had a lower direct (construction phase) botanical impact than the clearing - presumably best rated as Neutral.

The extent of the impacts are deemed to be local and regional, but also national, in that the vegetation types are assessed at a national level.

Impact	Extent of impact	Duration of impact	Intensity	Probability of impact	Irreplaceable loss of biodiversity	Significance before mitigation	Significance after mitigation *
Loss of 1ha of degraded vegetation (Critically Endangered)	Local & regional	Permanent	Medium to High	Definite	Low	Low to Medium -ve	Low to Medium -ve
No Go	Local	Unknown and variable	Neutral to low negative	Not likely	Low	Neutral	Neutral

Table A: Summary table for construction phase botanical impacts associated with the unauthorised loss of natural vegetation in the study area in 2023. The primary construction phase impacts are long term and permanent loss of natural vegetation in the study area, including possible loss of an estimated 1-4 plant SoCC. *Mitigation in this case has not yet been implemented, and includes all steps required in Section 7 of this report.

6.2 Operational Phase Botanical Impacts

Operational phase impacts will take effect as soon as the natural vegetation in the focus area is lost or disturbed – which has already occurred - and will persist in perpetuity, or as long as the area is not fully rehabilitated (unlikely, as applicant wishes to development this area). Operational phase impacts include loss of previous levels of ecological connectivity across the area, and associated habitat fragmentation, plus plant mortality due to siltation and flooding of the downstream areas – as seen in Plate 5.

Overall the operational phase botanical impact of the clearing in the 1ha area is likely to be **Low to Medium negative** (prior to mitigation), and **Low negative** after mitigation.

The No Go alternative would clearly have a lower indirect (operational phase) botanical impact than the ripping of the study area.

Positive ecological impacts could be realised in the future only if the applicant implements all required mitigation, but given the landowner complexity in this case even the confidence level associated with this is only moderate.

Development Area	Extent of impact	Duration of impact	Intensity	Probability of impact	Irreplaceable loss of biodiversity function	Significance before mitigation	Significance after mitigation *
Loss of 1ha of degraded vegetation (Critically Endangered)	Local & regional	Permanent	Low to Medium	Medium	Low	Low to Medium -ve	Low -ve
No Go	Local	Unknown and variable	Neutral	Likely	Low	Neutral	Neutral

Table B: Summary table for operational phase botanical impacts associated with the clearing of 1ha in 2023. The main operational phase impacts would be loss of previous ecological connectivity across the area and associated habitat fragmentation, plus siltation and flood damage on adjacent downstream areas. *Mitigation in this case has not yet been implemented, and includes all steps required in Section 7 of this report.

6.3 The No Go Alternative

The No Go alternative is usually considered to mean a continuation of the status quo, which in this case is taken to mean no further habitat loss to development, minor unmanaged alien plant invasion, and possible unpredictable future impacts (such as the unauthorised excavation of trenches that occurred in 2017). Confidence in the likelihood of impacts is thus low, but the No Go alternative would on balance have been the environmentally preferred alternative, with a Very Low negative impact, but as impact has occurred this is totally theoretical.

It should be noted that until the Very High sensitivity parts of this and adjacent priority areas (see Helme 202) are declared formal nature reserves there is no guarantee that the site will not be developed at some stage, as the location, on flat ground adjacent to large developments, renders the site susceptible to similar impacts.

6.4 Cumulative Impacts

The cumulative ecological impacts are in many ways equivalent to the regional ecological impacts, in that the vegetation type/s impacted by the new cultivation have been, and will continue to be, impacted by numerous developments and other factors (the cumulative impacts) within the region. The primary cumulative impacts in the region are loss of natural vegetation and threatened plant species to ongoing agriculture, urban development and alien plant invasion (Mucina & Rutherford 2012; Helme *et al* 2016).

The overall cumulative ecological impact of the 1ha of new clearing in the study area at the regional scale is likely to have been Low negative.

6.5 Positive Impacts

No significant positive ecological impacts of the site clearing have been recorded, and these would only manifest if the applicant does indeed undertake all the required mitigation (see Section 7).

7. REQUIRED MITIGATION

The following mitigation for the unauthorised 1ha of new clearing of vegetation in the study area in 2023 is deemed feasible, reasonable and mandatory:

- No further areas of natural or partly natural vegetation should be disturbed or cultivated outside the currently cleared area on the property

(as per the 2024 satellite imagery (not yet available on Google Earth), unless authorised via a formal environmental application process.

- The approved development area must be surveyed and fenced off prior to any site construction or development.
- All woody invasive alien vegetation on the greater 10ha Portion 22 property must be felled, using appropriate methodology (as per Martens *et al* 2021). No heavy machinery may be used, and stems should be cut at close to ground level and immediately painted (not sprayed) with a suitable herbicide such as Garlon. This must be undertaken within six months of any 24g authorisation, and repeated annually after any Section 24g authorisation, and must be outlined in in a EMP prepared for the CapeNature Stewardship Program application.
- No disturbance of the Very High sensitivity areas (as per Figure 4 in Helme 2022) may take place at any stage in the future.
- The Very High sensitivity areas on Portion 22 (as per Figure 4 in Helme 2022; approx. 9ha) must be submitted to CapeNature's Stewardship Program within one year of any Section 24g authorisation as a candidate for the highest level of formal protection, *i.e.* a Contract Nature Reserve, in perpetuity. All costs associated with this application, and of the ongoing ecological management of this area (should be very minor), must be borne by the applicant.
- The implementation of all mitigation must be independently audited within 18 months of any authorisation. If not completed by then, to the satisfaction of the auditor, they must specify a schedule of tasks still to be completed, and by when. Auditing should either be undertaken by CapeNature or by an ecologist approved by CapeNature and by the current author, and the auditors must sign off on the work when adequately completed, and must report to the DEA&DP. The applicant must coordinate and liaise with the auditors.

8. CONCLUSIONS

- The vegetation on the remainder of Portion 22 not yet cleared is mostly of Very High conservation value, and is confirmed as Elgin Shale Fynbos, a Critically Endangered vegetation type (Government of South Africa 2022).
- At least 15 plant Species of Conservation Concern are likely to occur on Portion 22, with at least 9 already confirmed. None of these occurred within the cleared area.
- The 1ha cleared was of Medium botanical conservation value as per Helme (2022), and was significantly more degraded than the rest of Portion 22.
- All mitigation noted in Section 7 must be timeously and properly implemented, in which case the post mitigation impact of the unauthorised clearing could be reduced to Low negative, from Low to Medium negative prior to mitigation.
- The author would support the proposed development of the 1ha area, provided that all required mitigation is fully and properly implemented.
- No additional biodiversity offset is deemed necessary if the required 9ha Very High sensitivity area (remainder of Portion 22) is signed up in perpetuity with the CapeNature Stewardship Program, within one year of any Section 24g authorisation.
- No further disturbance or development of the 9ha remainder of Portion 22 should be authorised.
- All mitigation outlined in Section 7 is considered feasible, reasonable and essential, and must be implemented timeously and correctly.

9. REFERENCES

Dept. of Forestry, Fisheries & Environment. 2022. National Biodiversity Offset Guideline. Government Gazette 25 March 2022. No. 46088.

Government of South Africa. 2022. South African Red List of Terrestrial Ecosystems: assessment details and ecosystem descriptions. Government Notice 2747, Gazette 4526. Technical Report #7664, SANBI Pretoria, South Africa.

Helme, N. 2017. Botanical assessment of Portion 22 of Farm Klipfontein 82, Vyeboom. Unpublished report for DEA&DP and Mr Billy Miller. Nick Helme Botanical Surveys, Scarborough.

Helme, N. 2022. Botanical Impact Assessment of proposed development of a Portion of Portion 22 of farm Klipfontein 82, Vyeboom. Unpublished report for Cornerstone Environmental, Stellenbosch and Cropmax, Villiersdorp. Nick Helme Botanical Surveys, Scarborough.

Helme, N., P. Holmes & A. Rebelo. 2016. Renosterveld Ecosystems. In: Cadman, A (ed.). *Ecosystem Guidelines for Environmental Assessment in the Western Cape, Ed*.2. Fynbos Forum, Fish Hoek, South Africa.

Manning, J. and P. Goldblatt. 2012. Plants of the Greater Cape Floristic Region 1: The Core Cape flora. *Strelitzia 29*. South African National Biodiversity Institute, Pretoria.

Martens, C., Deacon, G., Ferreira, D., Auret, W., Dorse, C., Stuart, H., Impson, F., Barnes, G. and C. Molteno. 2021. *A practical guide to managing invasive alien plants: A concise handbook for land users in the Cape Floral Region.* WWF South Africa, Cape Town, South Africa.

Mucina, L. and M. Rutherford. *Eds.* 2018 online update, on bgis.sanbi.org. Vegetation map of South Africa, Lesotho, and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

Pence, G. 2017. Western Cape Biodiversity Spatial Plan. CapeNature, Cape Town, South Africa.

Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A., and Manyama, P.A. (eds.) 2009 and online updates on redlist.sanbi.org. Red List of South African Plants 2009. *Strelitzia 25*. South African National Biodiversity Institute, Pretoria.

Rouget, M., Reyers, B., Jonas, Z., Desmet, P., Driver, A., Maze, K., Egoh, B. & Cowling, R.M. 2004. *South African National Spatial Biodiversity Assessment 2004: Technical Report. Volume 1: Terrestrial Component.* Pretoria: South African National Biodiversity Institute.