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Pri.Sci.Nat # 400045/08

TERRESTRIAL BIODIVERSITY ASSESSMENT OF PROPOSED SUBDIVISION OF ERF 1486 VERMONT, WESTERN CAPE.

Compiled for: Lornay Environmental Consulting, Hermanus

Client: Elephant Ventures Africa cc

31 May 2023

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:

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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:

- Botanical assessment of Zeekoevlei weir upgrades (Infinity Environmental 2022)
- 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)
- Botanical constraints in a northern corridor across Ptns 2 and 3 of Farm Frankendale 152, Vissershok (Urban Dynamics 2014).

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 terrestrial biodiversity (ecology) assessment was requested to inform the environmental planning and authorisation process being followed for the potential subdivision and development of Erf 1486, Vermont, in the Western Cape (Figure 1). A single development layout was presented for assessment (Figure 2).

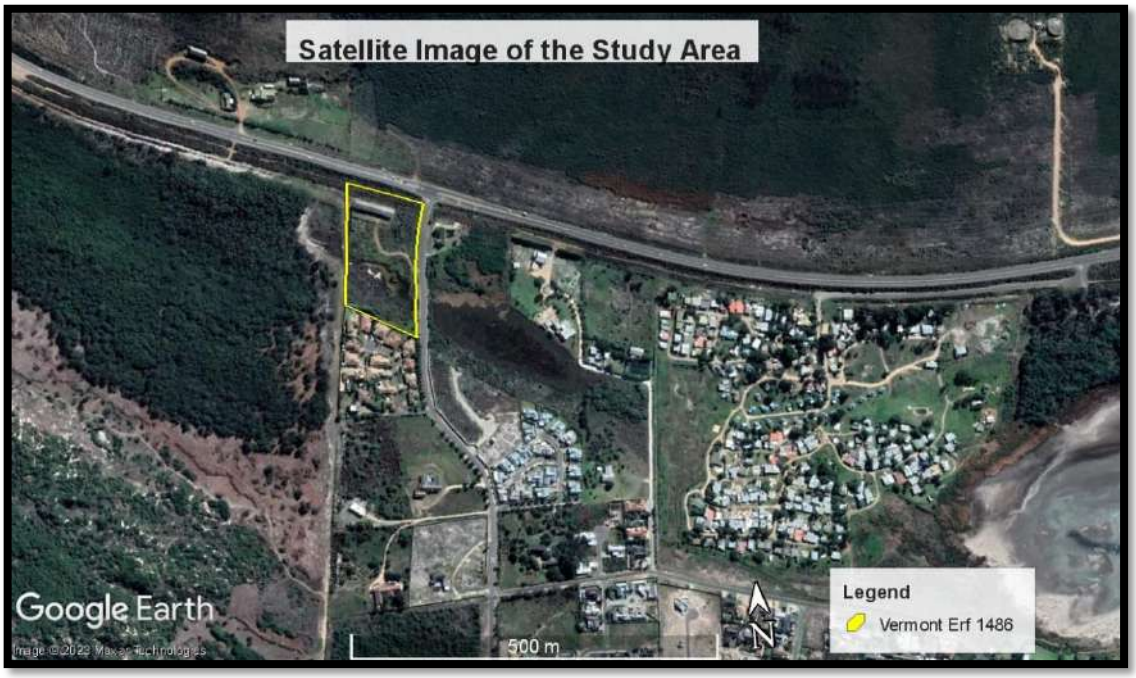
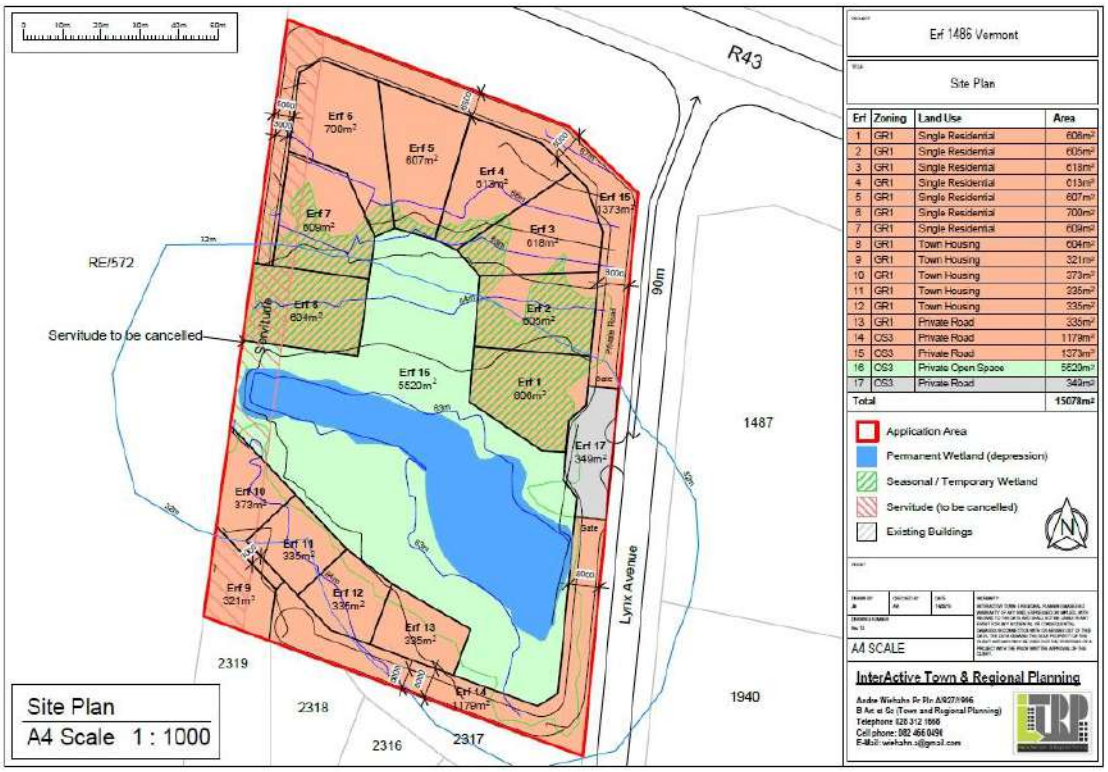


Figure 1: Satellite image showing the location of the study area. Satellite image dated April 2021.



Erf	Zoning	Land Use	Area
1	GR1	Single Residential	608m²
2	GR1	Single Residential	605m²
3	GR1	Single Residential	618m²
4	GR1	Single Residential	613m²
5	GR1	Single Residential	607m²
6	GR1	Single Residential	700m²
7	GR1	Single Residential	609m²
8	GR1	Town Housing	604m²
9	GR1	Town Housing	321m²
10	GR1	Town Housing	373m²
11	GR1	Town Housing	335m²
12	GR1	Town Housing	335m²
13	GR1	Private Road	335m²
14	OS3	Private Road	1179m²
15	OS3	Private Road	1373m²
16	OS3	Private Open Space	5520m²
17	OS3	Private Road	349m²
Total			15078m²

Figure 2: The proposed development layout, as assessed.

2. TERMS OF REFERENCE

The terms of reference for this study were as follows:

- Undertake a site visit to assess the vegetation and fauna in the study area
- Identify and describe the vegetation and fauna 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 and faunal Species of Conservation Concern in the study area, based on observation, literature and iNaturalist website review
- Provide an overview and map of the botanical and faunal conservation significance (sensitivity) of the site
- Identify and assess (according to standard IA methodology) the potential impacts of the project, using the current development layout provided
- Indicate the acceptability of the project proposal from an ecological perspective
- Identify and describe the potential cumulative impacts of the proposed development in relation to proposed and existing developments in the surrounding area

- Recommend mitigation measures to avoid and/or minimise impacts and/or optimise benefits associated with the proposed project, including layout change.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

The site was visited on 23 May 2023. This was early in the optimal winter – spring flowering season in this mainly winter rainfall area, and most (but not all) of the few likely geophytes were thus not yet flowering (and few were evident and identifiable), whilst all perennial plants were identifiable. There were thus some minor seasonal constraints on the accuracy of the botanical findings, but given the heavy dominance of perennials in this area – which in a Fynbos system can usually be used as indicators of habitat sensitivity - the confidence in the accuracy of the botanical findings is high. The author has undertaken extensive work within the region, which facilitates the making of local and regional comparisons and inferences of habitat quality and conservation value.

The study area was walked, and all plants on site were noted. Photographs of some of the key species were made using a Fuji mirrorless slr camera, and have been uploaded to the biodiversity website iNaturalist.org. Satellite imagery dated April 2021 (and earlier) was used to inform this assessment, and for mapping. It is assumed that any development would result in the permanent loss of all natural or partly natural vegetation in that area. Faunal observations were incidental during the site visit, and no formal trapping or surveying of any sort was undertaken, and thus most of the faunal species present are likely to have been missed. Faunal observations on iNaturalist.org were used to inform the faunal survey. Frogs were calling during the site visit, and could be easily identified by call.

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 assumed to mean no new development, minor but effective ongoing alien invasive vegetation management in the study area (confirmed by tenant), and other potential future development.

No kmz files of the proposed development were provided, so it could not be superimposed on the ecological sensitivity mapping. It is assumed that all natural vegetation and faunal habitat within approved development areas will be lost over time, if not directly during the construction phase.

4. REGIONAL CONTEXT OF THE VEGETATION

The study area is part of the Southwest Fynbos bioregion (Mucina & Rutherford 2006), and is part of the Fynbos biome, located within what is now known as the Core Region of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The GCFR is one of only six Floristic Regions in the world, and is the only one largely confined to a single country (the Succulent Karoo component extends into southern Namibia). It is also by far the smallest floristic region, occupying only 0.2% of the world's land surface, and supporting about 11500 plant species, over half of all the plant species in South Africa (on 12% of the land area). At least 70% of all the species in the Cape region do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics). Many 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 nationwide plant Red Listing project indicate that 67% of the threatened plant species in the country occur only in the southwestern Cape, 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.

The Southwest Fynbos bioregion is characterised by relatively high winter rainfall, strong rainfall gradients, poor, sandy soils, high topographic diversity, and large urban areas and high levels of alien invasive vegetation. Due to this combination of factors the loss of natural vegetation in this bioregion has been severe (>60% of original extent lost within the region), and the bioregion has a very high number of threatened plant species (Raimondo *et al* 2009).

The CapeNature Spatial Biodiversity Network (see Figure 3) shows that CBA1d (poor condition) vegetation is mapped for most of the target area, but also with a higher priority CBA1b (fair condition) patch within the target area. The area including and immediately adjacent to the N7 is mapped as No Natural Vegetation. This map has fair congruence with the groundtruthed sensitivity map shown in Figure 4.

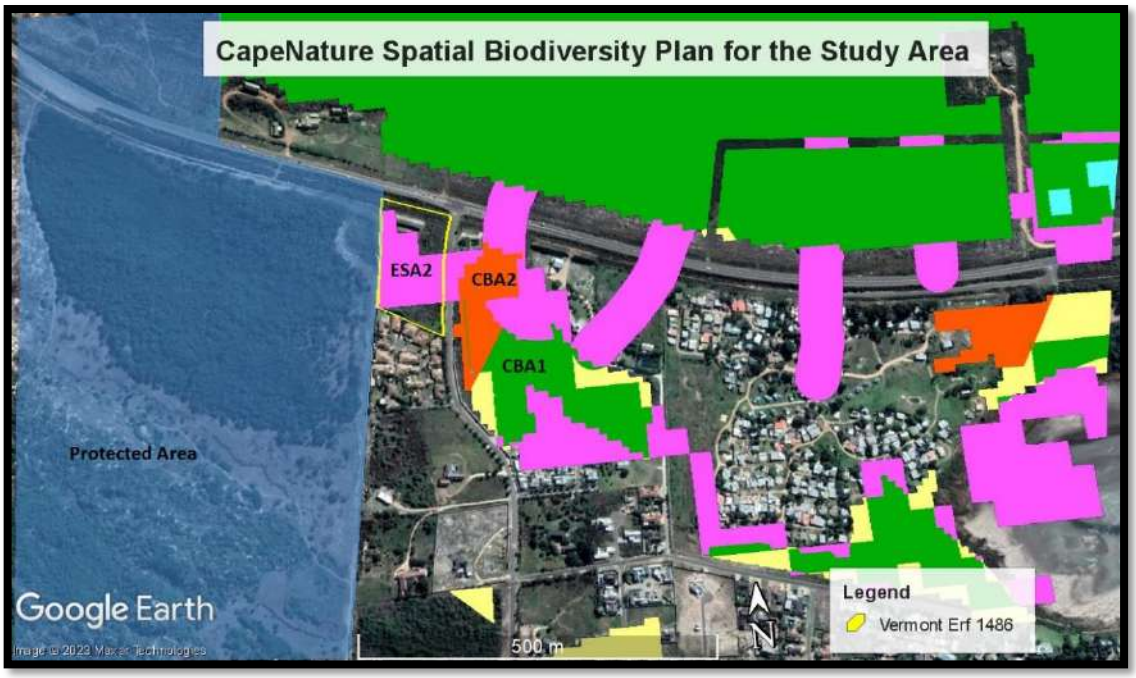


Figure 3: Extract of the CapeNature Spatial Biodiversity Plan (Pence 2017) (2018) for the area, showing that the central wetland part of the site is mapped as an ESA2 (Ecological Support Area), linking the Hoek van de Berg protected area to the west with the Vermont Salt Pan to the east, and is part of the primary water source for that pan.

5. THE VEGETATION AND ITS SENSITIVITY

According to the SA Vegetation Map the original natural vegetation in the study area is all Hangklip Sand Fynbos (Mucina & Rutherford 2018). Based on my ground-truthing I agree with this (albeit an atypical wetland subtype), and no copy of the vegetation map is provided as it adds little value.

Hangklip Sand Fynbos is now gazetted as **Critically Endangered** on a national basis (Government of South Africa 2022), with less than 68% of its total original extent remaining intact, less than 18% conserved, and a national conservation target of 30% (Rouget *et al* 2004). The unit supports a very high number of threatened and endemic plant species, and occurs on deep, nutrient poor, sandstone derived, acid soils in the area between Hangklip and Hermanus, and the vegetation type needs fire for optimal ecological functioning (Helme *et al* 2016).

The vegetation on site does not appear to have been burnt for at least twenty years. This means that the vegetation on site is now senescent (some species

dying of old age; diversity dropping), as this type of Fynbos should burn once every 10-14 years for optimal ecological functioning (Helme *et al* 2016).

Plate 1: View south from near the northeastern corner, with non-wetland vegetation in the foreground, grading into wetland vegetation after about 6m.

Plate 2: View south along the western boundary. Indigenous buffalo grass (*Stenotaphrum secundatum*) is dominant in the foreground.

Plate 3: View of the central wetland channel, looking east, with indigenous *Juncus kraussii* (steekbiesie) dominant. The tall, showy grass at left is the declared alien invasive pampas grass (*Cortaderia selloana*), and should be removed.

Plate 4: View of the southwest corner of the erf, looking west, showing how someone (presumably neighbours) have taken it upon themselves to garden this area. Most of the planted species are aliens or horticultural varieties not present in Fynbos systems.

Plate 5: View of the southeast corner of the erf, looking east, showing extensive invasion of alien kikuyu grass (*Cenchrus clandestinus*) in the previously disturbed area. The dark trees at left are milkwoods (*Sideroxylon inerme*), possibly planted here.

All of the site south of the wetland was evidently brushcut in about 2004, judging from Google Earth time series imagery, and the first houses were built on the southern boundary in the period 2007 – 2009, and this was fully built by 2012. It would appear that the southern boundary portion on Erf 1486 was disturbed in about 2011, probably as a result of the adjacent housing development.

The previously disturbed areas are in three main patches: the current, occupied building area; the northeastern edge of the main wetland; and the southern boundary. Many of the disturbed areas are dominated by alien invasive kikuyu grass (*Cenchrus clandestinus*; Plate 5), which tends to smother any indigenous seedlings. The southwestern edge of the erf has been gardened (Plate 4) with all manner of non-locally indigenous species planted, including *Pelargonium* hybrids, *Ficus* species, *Searsia pendulina* and *Arctotis stoechadifolia*. Five fairly large trees of *Sideroxylon inerme* (milkwood) are present in the southeastern corner (Plate 5), and may also have been planted, although the species was common in this area before the rampant development that has taken place in the last few decades.

Large alien invasives are present on site, but occur at a low density (<2% cover), and include *Leptospermum laevigatum* (Australian myrtle), *Cortaderia selloana* (pampas grass), *Hakea drupacea* (sweet needlebush), *Acacia saligna* (Port

Jackson) and *Acacia cyclops* (rooikrans), evidently thanks mostly to some active alien vegetation removal that takes place regularly (local tenant – pers. comm).

The permanent wetland area has clearly become significantly more vegetated in the last five years (compared to photos in the EnviroSwift wetland report of 2018), and is now in good condition. Indigenous plant species include *Senecio halimifolius, Juncus kraussii, Orphium frutescens, Typha capensis, Plecostachys serpyllifolia, Schoenoplectus scirpoides, Juncus lomatophyllus, Isolepis striata, Nidorella ivifolia, Nidorella pinnatifida, Fuirena coerulescens, Laurembergia repens and Elegia nuda*.

About 50% of the site is made up by what could be considered permanent wetland, but that is not seasonally inundated or flooded (mostly indicated as seasonal wetland in the Freshwater Screening (EnviroSwift 2018). Indigenous species in this area include *Senecio halimifolius, Juncus kraussii, Orphium frutescens, Plecostachys serpyllifolia, Nidorella ivifolia, Nidorella pinnatifida, Fuirena coerulescens, Laurembergia repens, Zantedeschia aethiopica, Stenotaphrum secundatum, Cynodon dactylon, Senecio rigidus, Cyperus sphaerospermus, Pycreus* sp., *Juncus cephalotes* and *Elegia nuda*.

The non-wetland portions of the site that have not been totally disturbed support the following indigenous plant species: *Passerina corymbosa, Thamnochortus insignis, Stenotaphrum secundatum, Seriphium plumosum, Pelargonium capitatum, Searsia lucida, Colpoon compressum, Mesembryanthemum canaliculatum, Struthiola ciliata, Metalasia muricata, Osteospermum moniliferum, Cliffortia stricta, Oxalis dentata, O. pes-caprae, Carpobrotus edulis* and *Athanasia trifurcata*.

5.1 Plant Species of Conservation Concern (SoCC)

No plant Species of Conservation Concern (SoCC) were recorded during the survey, but at least one may occur on site, based on known occurrence from nearby, similar habitats.

Disa hallackii is Redlisted as Endangered, and has been recorded from a nearby erf (undated Hermanus Botanical Society Letter of Objection; CREW database), and there are various records of this species from the Onrus and Vermont area. The species may be most evident in the first few years after a fire, and given that

the site has not burnt for more than twenty years this mitigates against finding it on site.

None of the other many Redlisted plant species highlighted in the Screening Tool for this region are likely on site, given the habitat present. There is an 1982 record of *Haemanthus canaliculatus* (Endangered) from near Onrus Caravan Park, some 2kn from this site.

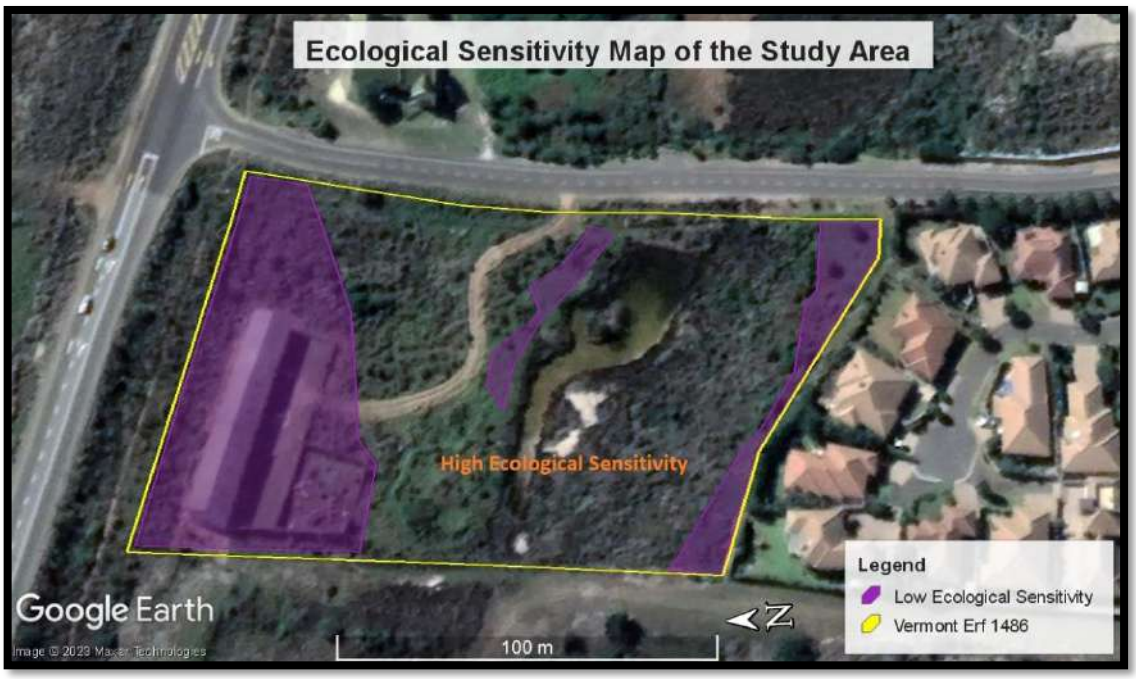


Figure 4: Botanical sensitivity map of the study area. All unshaded areas within the study area are of High ecological sensitivity.

6. FAUNA

Two species of frogs were heard calling on site, and populations on site are probably viable and significant. *Hyperolius marmoratus* (painted reed frogs) were calling from the standing water, whilst *Strongylopus grayii* (clicking stream frogs) were calling across most of the site. *Cacosternum australis* may also occur here, but was not heard.

Bradypodion pumilum (Cape Dwarf Chameleon) has been regularly recorded from similar nearby habitat (iNaturalist.org) and is likely to be present on site. This species is Redlisted as Vulnerable (Bates *et al* 2014). No other Redlisted reptiles are likely to be present. The Southern Adder (*Bitis armata*; Vulnerable) has been flagged by the Screening Tool for the region, but is unlikely in this habitat.

In terms of birds two threatened harrier species may occasionally visit this site. African Marsh Harrier *(Circus ranivorus*; Endangered) and the Black Harrier (*Circus maurus*; Endangered) are both known from the general area, and travel widely.

Blue Cranes (*Anthropoides paradiseus*; Near Threatened) have been recorded overnighting on the Vermont Pan, and both Lesser and Greater Flamingos (both Near Threatened) have been recorded feeding on the pan, but neither of these three are likely to visit the study area, as the water body is too small.

Mammals present or using the site (tracks and scat found) include porcupine (*Hystrix africaeaustralis*), vlei rat (*Otomys unisulcatus*), Cape Grey Mongoose (*Herpestes pulverulentus*) and Water Mongooose (*Atilax paludinosus*), and other likely species include Large Grey Mongoose (*Herpestes ichneumon*), Striped Fieldmouse (*Rhabdomys pumilio*) and Cape Genet (*Genetta tigrina*). Some of these may occasionally be resident, but most probably just visit the site as the move between Hoek van de Berg and the Salt Pan.

No threatened butterflies are likely to utilise the site, although this cannot be ruled out without a survey (Mecenero *et al* 2013). Indigenous dune snails (*Trigonephrus*) were also observed on site (possibly *T. ambiguosus*).

7. IMPACT ASSESSMENT

7.1 Construction Phase (Direct) Ecological Impacts

It can safely be assumed that the primary construction phase ecological impact of the proposed subdivision and development would be permanent loss of all of the existing natural and partly natural vegetation and faunal habitat in the development footprints (gazetted as a Critically Endangered vegetation type). No plant Species of Conservation Concern were recorded within the actual proposed footprints, and there is a moderate chance of at least one being present (*Disa hallackii*; Endangered). At least two Endangered birds may occasionally use the study area to forage *(Circus ranivorus* and *Circus maurus*), and the development would thus have a minor negative impact on these two species, but they do range widely and would never spend much time in such a small area anyway, and especially one so close to other human impacts. The Cape Dwarf Chameleon (*Bradypodion pumilum*) is listed as Vulnerable, and may occur on site.

At least four of the proposed erven (Erven 1, 2, 7 & 8) have more than 50% of their area within what has been mapped as Seasonal Wetland in the Freshwater Screening, and all these erven fall entirely within what has been mapped as High ecological sensitivity in Figure 4. In the southern half of the erf erven 10, 11, 12 and 13 also fall entirely within areas mapped as High ecological sensitivity.

Direct loss of animals will also occur, notably in erven 1, 2, 3, 7, 8, 10, 11, 12 and 13. Animals most impacted will be those that are slow or reluctant to move, including at least two species of frogs, dune snails (*Trigonephrus*) and the fossorial animals (including invertebrates).

The overall ecological significance of this direct vegetation and faunal habitat loss for the proposed layout is **High negative before mitigation.** Mitigation in this case needs to invoke the mitigation hierarchy - *viz.* avoidance first, then minimising of impact, and then mitigation. Avoidance is the first step, and means removing all erven from within High sensitivity areas. If this is done the direct impacts could be reduced to an acceptable **Medium negative impact.**

The No Go alternative would clearly have a much lower direct (construction phase) ecological impact than the proposed development - presumably best rated as Neutral, and would thus be strongly preferred.

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

Development Alternative	Extent of impact	Duration of impact	Intensity	Probability of impact	Irreplaceable loss of biodiversity	Significance before mitigation	Significance after mitigation
Proposed Layout	Mainly local	Permanent	High	Definite	High	High -ve	Medium -ve
No Go	Local	Unknown and variable	Neutral to low negative	Not likely	Low	Neutral	Neutral

Table A: Summary table for construction phase ecological impacts associated with the proposed development layout. The primary construction phase impacts would be permanent loss of natural and partly natural vegetation (gazetted as a Critically Endangered vegetation type) and loss of faunal species and habitat in the development footprint

7.2 Operational Phase Botanical Impacts

Operational phase impacts will take effect as soon as any of the natural vegetation and faunal habitat on the site is lost or disturbed, and will persist in perpetuity, or as long as those areas are not rehabilitated. Operational phase impacts include loss of current levels ecological connectivity across the site (essentially only W-E connectivity), and associated habitat fragmentation. This will affect fauna and flora. The new development may result in (further?) alien Argentine ant introduction, with associated negative ecological impacts on seed dispersal, and is also likely to result in further edge effects (such as alien vegetation expansion, esp. grasses and herbs) intruding into adjacent parts of the remaining natural habitat.

Reduction of the available natural or partly natural faunal habitat on site by about 50% will also presumably result in lower long term carrying capacity of the habitat for fauna, leading to long term reduction in faunal numbers, and possible reduction on viability of the populations of various species.

The site is a key (essentially the only) ecological linkage between the Hoek van de Berg NR to the west, and the Vermont Salt Pan to the east, as documented in the CapeNature Biodiversity Plan (see Figure 3). Development of 50% of the area, and significantly reducing the width of this wetland corridor, will clearly have a negative impact on the functioning of this corridor.

Overall the operational phase ecological impacts of the proposed development here are likely to be **High negative** before mitigation. This could be reduced to **Medium negative** by a significant layout reduction, as proposed in Section 8.

The No Go alternative would clearly have a much lower indirect (operational phase) ecological impact than the proposed development, and would thus be strongly preferred.

Minor positive ecological impacts could be realised at this stage if the applicant/HOA undertakes proper ongoing invasive alien vegetation management in the remaining areas of natural and partly natural vegetation.

Development Alternative	Extent of impact	Duration of impact	Intensity	Probability of impact	Irreplaceable loss of biodiversity	Significance before mitigation	Significance after mitigation
Proposed layout	Mainly local	Permanent	Med to High	Definite	Med	High -ve	Medium -ve
No Go	Local	Unknown and variable	Neutral to low negative	Likely	Low	Neutral to Low negative	Neutral to Low negative

Table B: Summary table for operational phase ecological impacts associated with the proposed layout. The operational phase impacts would be loss of current ecological connectivity across the site and associated habitat fragmentation, as well as edge effects like alien plant invasion and disruption of ant-based seed dispersal in the surrounding natural areas.

7.3 The No Go Alternative

The No Go alternative (continuation of the *status quo)* on this site would have clearly lower construction and operational phase ecological impact (Neutral to Low negative) than the possible development, and would thus be the strongly preferred alternative from an ecological perspective.

7.4 Cumulative Impacts

The cumulative ecological impacts are in many ways equivalent to the regional ecological impacts, in that the vegetation type to be impacted by the proposed development has 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 faunal habitat 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 development of this site at the local scale is High, but at the regional scale is likely to be Medium negative. Most of this is driven by the critical position of the site as the last viable wetland and ecological link between the Hoek van de Berg NR and the Vermont Salt Pan.

7.5 Positive Impacts

No significant positive ecological impacts of the proposed development are likely during either the construction or the operational phase, although if the applicant or HOA does undertake proper (see Martens *et al* 2021) ongoing invasive alien

plant removal on the remaining natural areas they manage this will have a small positive ecological impact.

8. REQUIRED MITIGATION

The following mitigation for the only proposed development layout (as per Figure 2) is deemed feasible, reasonable and mandatory:

- No erven should intrude significantly into the seasonal wetland portions of the site that support mostly habitat of High ecological sensitivity (as per Figure 4). This means that the following erven should be removed from any authorised layout: 1, 2, 7, 8, 10, 11, 12 and 13. The proposed access road (erf 14) should also be largely removed so that it does not cross the wetland and ecological corridor, and can instead access erf 9 along the southern boundary.
- No pipelines, cabling or infrastructure should be installed across the High sensitivity areas or wetlands.
- Any boundary fencing used must be permeable to small animals at ground level.
- The authorised erf and road boundaries should be surveyed and pegged out and fenced on site prior to any site development.
- No areas of natural or partly natural vegetation should be disturbed outside the pegged/fenced out and authorised erven. No vehicular activity or dumping of material may take place outside the authorised erven or roads.
- All alien invasive vegetation should be removed from within the natural portions of the project area, prior to any authorised development. Removal of the alien vegetation must be undertaken by a trained and licensed alien vegetation removal team, and must be undertaken using methodology outlined in the Best Practise Guidelines (see Martens *et al* 2021).

9. CONCLUSIONS AND RECOMMENDATIONS

- About 70% of the study area supports vegetation that is classified as Hangklip Sand Fynbos, which is gazetted as a Critically Endangered vegetation type. About 70% of the site is also considered to be either seasonal or permanent wetland, as is clearly evidenced by both the fauna and flora on site.
- At least two bird Species of Conservation Concern (SoCC) may use the site for foraging, and at least one plant SoCC (*Disa hallackii*) may be present in low numbers, but no plant or animal SoCC were recorded on site during the survey. The Cape Dwarf Chameleon (*Bradypodion pumilum*) is listed as Vulnerable, and may occur on site.
- About 70% of the site is considered to be of High ecological sensitivity, and should not be lost to development, as this would be associated with a High negative ecological impact.
- The current layout includes at least 8 erven that are largely within High sensitivity areas, as well as a private internal road across the wetland and ecological corridor, and these must be removed for this project to be acceptable.
- All mitigation outlined in Section 8 must be implemented for any development of this site to be acceptable from an ecological perspective.

10. REFERENCES

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