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TERRESTRIAL BIODIVERSITY ASSESSMENT OF PROPOSED SUBDIVISION OF ERF 1446 VERMONT, WESTERN CAPE.

Compiled for: Lornay Environmental Consulting, Hermanus

Client: The J P Testamentary Trust, Vermont

22 May 2024

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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.

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A selection of relevant previous botanical work is as follows:

- Botanical assessment of Erf 1486 Vermont (Lornay Environmental 2023)
- 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.

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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 1446, Vermont, in the Western Cape (Figure 1). No development layout was presented for assessment initially, but subsequent to the tree mapping exercise a layout was prepared, and is presented in Figure 1b. The study area is about 2.2ha in extent.

Figure 1: Satellite image showing the location of the study area. Satellite image dated Dec 2022.

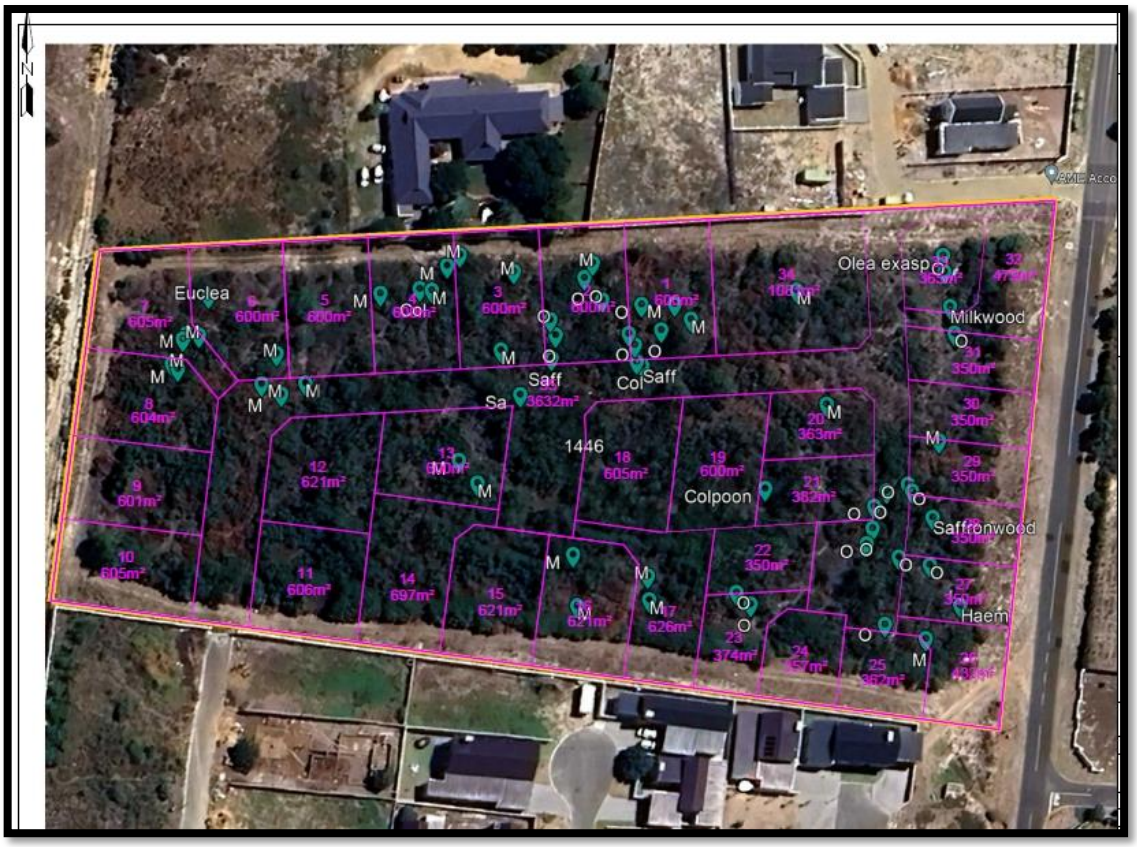

Figure 1b: Proposed subdivision, with surveyed trees indicated. Milkwoods marked M, *Olea exasperata* (dune olive) O, *Colpoon compressum* (Cape sumach) marked Col, etc.

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 20 January 2024, and again on 8 April (for a tree survey). The initial and primary site visit was well outside the optimal winter – spring flowering season in this mainly winter rainfall area, and thus the few potential geophytes and annuals likely to be present were neither evident nor identifiable, whilst all perennial plants were identifiable. Some species (geophytes) were added to the observed list after the April site visit, after some rain had fallen. 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 Dec 2022 (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. Tree positions were mapped using the app Fields Area Measure, directly via smartphone, and then downloaded as kmz files for use in Google Earth. Faunal observations were incidental during the site visit, and no formal trapping or surveying of any sort was undertaken, and thus most of the more cryptic faunal species present are likely to have been missed. Nearby faunal observations on iNaturalist.org were used to inform the faunal survey.

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 current development, no ongoing alien invasive vegetation management in the study area, but with potential future development.

It is assumed that all or most of the 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 Plan (see Figure 2) shows that Other Natural Area (ONA) vegetation is mapped for most of the study area, with a small patch of ESA 1 (Ecological Support Area 1) in the east. ONA is also mapped to the south and east of the site, as well as southeast of the site, along with ESA1 southeast of the site, and all these areas have thus clearly been developed since the Spatial Biodiversity Plan was developed, which indicates how fast this area has been developing. The area bordering the site to the west is the Hoek van der Berg Private Nature Reserve.

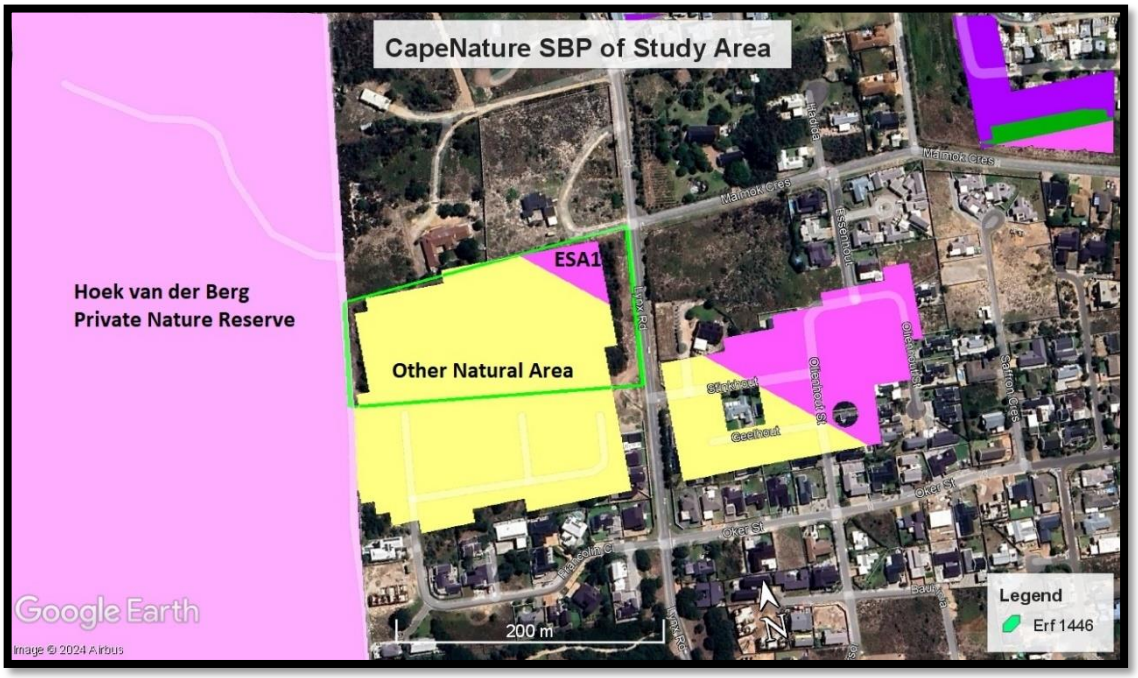

Figure 2: Extract of the CapeNature Spatial Biodiversity Plan (Pence 2017) (2018) for the area, showing that Other Natural Area (ONA) vegetation is mapped for most of the study area, with a small patch of ESA 1 (Ecological Support Area 1) in the east.

5. THE VEGETATION AND ITS SENSITIVITY

According to the SA Vegetation Map the original natural vegetation in the study area is mostly **Overberg Dune Strandveld**, with a transition to **Hangklip Sand Fynbos** in the northeast corner (Mucina & Rutherford 2018; see Figure 3). Based on my ground-truthing I would say that the entire site is currently best mapped as Overberg Dune Strandveld.

Overberg Dune Strandveld is now gazetted as **Endangered** on a national basis (Government of South Africa 2022), with about 95% of its total original extent remaining intact, about 36% conserved, and a national conservation target of

36% (Rouget *et al* 2004). The reason for the listing as Endangered is not habitat loss, but rather the restricted global distribution of this unit, and a fairly high level of threat (mostly from urban development and invasive alien vegetation). The unit supports a relatively low number of threatened and endemic plant species, and occurs on deep, nutrient poor, marine derived, alkaline or neutral soils in the area between here and Agulhas, and the vegetation type does not need fire for optimal ecological functioning (Helme *et al* 2016).

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 reason for the listing as Critically Endangered is also the restricted global distribution of this unit, and a fairly high level of threat (mostly from urban development and invasive alien vegetation). The unit does support a fairly 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).

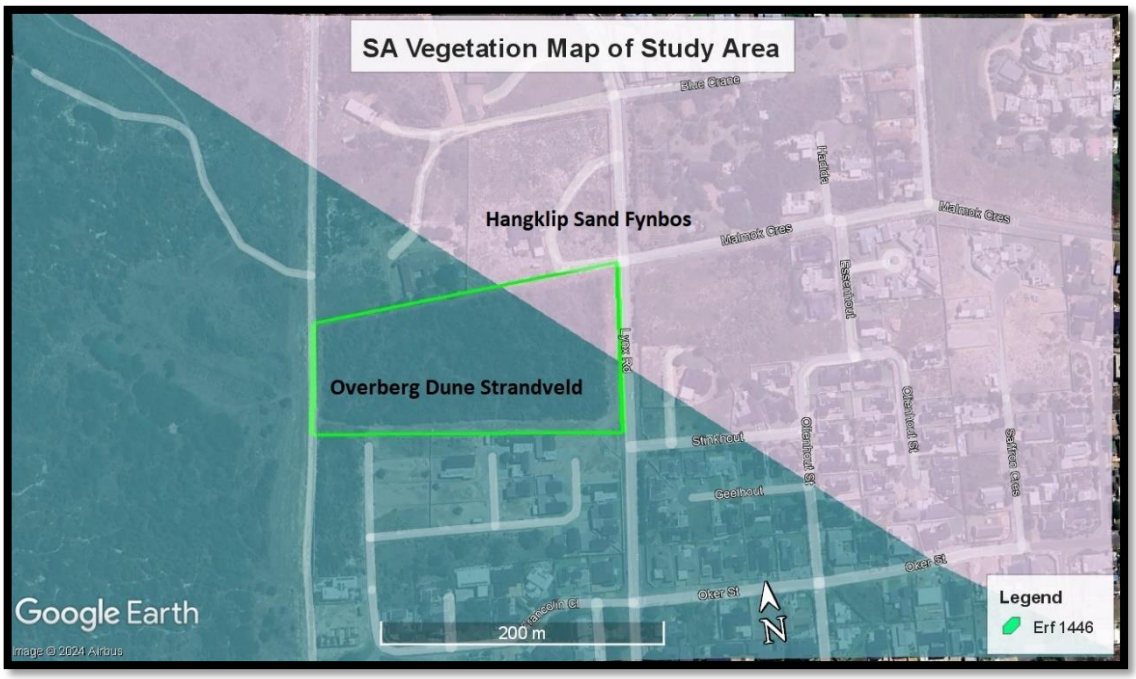

Figure 3: Extract of the SA Vegetation Map for the study area.

The vegetation on site does not appear to have been burnt for at least thirty years. This means that the vegetation on site is now partly senescent (some species dying of old age; diversity dropping), even though this type of Fynbos

does not need to burn regularly for optimal ecological functioning (Helme *et al* 2016). The primary reason for loss of diversity on this site is the dense alien invasive vegetation that has been present on site for many decades, and which has not been systematically managed. Informal wood harvesters have evidently been active on site (see Plates 1 & 2), taking out the largest invasive alien rooikrans trees, and leaving stacks of dry branches.

Plate 1: View northeast over site from near the southern boundary. Woodcutters have harvested invasive rooikrans (*Acacia cyclops*) stems in the foreground, and left the branches. Some of the many indigenous milkwoods are evident at centre and right (dark green trees).

Alien invasive *Acacia saligna* (Port Jackson) and *Acacia cyclops* (rooikrans) currently covers about 35% of the site, and this percentage appears to have been fairly similar in about 2010, judging by satellite imagery.

No wetlands are present on site, and there is no outcropping rock.

Plate 2: View looking south over the site from near the western boundary. This area is dominated by the woody alien invasives Port Jackson (*Acacia saligna*) and rooikrans (*Acacia cyclops*).

Indigenous plant diversity on site is moderate low, being less than 50% of what would be expected in a pristine example of this habitat. The following indigenous plant species were observed: *Passerina corymbosa, Cissampelos capensis, Olea exasperata, Sideroxylon inerme, Harpephyllum caffrum, Oftia africana, Pterocelastrus tricuspidatus, Euclea racemosa, Myrsine africana, Thamnochortus insignis, Hellmuthia membranacea, Muraltia satureoides, Knowltonia vesicatoria, Otholobium bracteolatum, Ehrharta villosa, E. calycina, Diosma subulata, Hermannia rudis, Phylica ericoides, Senecio halimifolius, Zantedeschia aethiopica, Stenotaphrum secundatum, Seriphium plumosum, Pelargonium capitatum, Searsia lucida, Colpoon compressum, Cassine peragua, Mesembryanthemum canaliculatum, M. aitonis, Trachyandra divaricata, Metalasia muricata, Osteospermum moniliferum, Carpobrotus edulis* and *Athanasia trifurcata*.

A single plant Species of Conservation Concern (SoCC) was recorded during the survey, and no others are likely to persist here. About five plants of the buchu *Diosma subulata* (Vulnerable) were found deep within a rooikrans thicket in the centre of the site. These reseeding plants require fire for regeneration, and in the absence of fire on site for at least 20 years are unlikely to survive much longer, even if the site is not developed. The presence of these five plants is significant, as the species is now rare in the Hermanus area, but as noted, they are unlikely

to survive on this site, even were it not to be developed, and they will not survive translocation or replanting either.

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

The entire site is deemed to be of **Medium botanical sensitivity**, and no map is provided as it adds little value.

6. FAUNA

No frogs are likely on site, due to the absence of wetlands, although *Breviceps montanus* could in theory be present, as it does not require water or wetlands.

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. An Angulate Tortoise (*Chersina angulata*) was observed on site.

No bird SoCC are likely on site, and a typical selection of Dune Strandveld species was recorded, including Speckled Mousebird, Karoo Prinia, Southern Doublecollared Sunbird, Cape Bulbul, Cape Whiteye, Fiscal Flycatcher, Cape Spurfowl, Cape Robinchat and Boubou.

Mammals present or using the site (tracks and scat found, or live animals seen) include porcupine (*Hystrix africaeaustralis*), Striped Fieldmouse (*Rhabdomys pumilio*) and Cape Grey Mongoose (*Herpestes pulverulentus*), and other likely species include Large Grey Mongoose (*Herpestes ichneumon*), Caracal (*Caracal caracal*), and Cape Genet (*Genetta tigrina*). Some of these may occasionally be resident, but most probably reside mainly in the much larger adjacent Hoek van de Berg Nature Reserve.

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*).

The entire site is deemed to be of **Medium faunal sensitivity**, and no map is provided as it adds little value.

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 or most of the existing natural and partly natural vegetation and faunal habitat in the development footprints (most of it gazetted as an Endangered vegetation type). One plant Species of Conservation Concern was recorded within the site (*Diosma subulata*, Vulnerable; non-viable population in absence of fire) and no others are likely. No threatened fauna is likely to use the site, with the exception of the Cape Dwarf Chameleon (*Bradypodion pumilum*), which is listed as Vulnerable, and may occur on site.

Most of the site is mapped as ONA (Other Natural Area), which is not a high level of planning category in the CapeNature SBP.

Direct loss of animals will also occur during the clearing and early development stage. Animals most impacted will be those that are slow or reluctant to move, including *Breviceps* frogs (if present), Angulate Tortoise, dune snails (*Trigonephrus*) and the fossorial animals (including invertebrates).

The overall ecological significance of this direct vegetation and faunal habitat loss on site is **Low - Medium negative before mitigation.** No clear mitigation seems possible in this case other than faunal Search and Rescue, Search and Rescue for some of the bulbs on site (*Haemanthus, Chasmanthe*), and avoidance of some of the larger milkwoods (*Sideroxylon inerme*) and as many as possible of the other mapped trees shown in Figure 1b. It is likely that only about 25% of the mapped trees may survive the initial road and service development of the site, plus subsequent private house development. If this is done the direct impacts could be very slightly reduced, but would still best be assessed as **Low - 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
Development of site	Mainly local	Permanent	High	Definite	Low - Medium	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 ecological impacts associated with the proposed development. The primary construction phase impacts would be permanent loss of natural and partly natural vegetation (mostly gazetted as an Endangered vegetation type), a single plant SoCC, and loss of faunal species and habitat in the development footprint

7.2 Operational Phase Ecological 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. The main operational phase impact would be loss of current moderate levels of ecological connectivity across the site (essentially only W-E connectivity now available), and associated habitat fragmentation. This will affect both fauna and flora.

The site is not part of an identified key ecological linkage between the Hoek van de Berg NR to the west and the Vermont Salt Pan to the east.

Overall the operational phase ecological impacts of the proposed development here are likely to be **Low - Medium negative** before and after mitigation.

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.

No positive ecological impacts are likely.

Development Alternative	Extent of impact	Duration of impact	Intensity	Probability of impact	Irreplaceable loss of biodiversity	Significance before mitigation	Significance after mitigation
Site development	Mainly local	Permanent	Medium	Definite	Low to Med	Low to Medium -ve	Low to 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 impact would be mainly loss of moderate current ecological connectivity across the site and associated habitat fragmentation.

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 (Onrus - Vermont) is Low to Medium negative, but at the regional scale is likely to be Low negative, as the site is fairly small and is now fairly ecologically isolated.

7.5 Positive Impacts

No significant positive ecological impacts of the proposed development are likely during either the construction or the operational phase, unless for example the

applicant were to make some sort of financial contribution to conservation efforts (such as alien invasive vegetation management) in the region.

8. REQUIRED MITIGATION

The following mitigation for the proposed development is deemed feasible, reasonable and mandatory:

- All milkwoods (*Sideroxylon inerme*) above 1m and many of the other indigenous trees on site taller than 1m have been surveyed and shown in Figure 1b. It is understood that some (maybe 35%) of these will be lost to road and bulk service development, but the others should remain and survive within designated erven, although another 50% may be lost during house development. The applicant must obtain the relevant permits if any milkwoods (a Protected Species) are to be damaged or lost during the site development process, and subsequently by new erf owners if during the construction phase.
- Search and Rescue must be undertaken for all reptiles and any other fauna, notably tortoises, frogs, skinks and chameleons, during the site preparation, and especially when any earthworks and trenches are being dug or left open. This should be undertaken by an appointed ECO on a daily basis, until the site has been cleared (apart from the milkwoods and other designated trees) and the services are installed. Rescued animals should be released inside the adjacent Hoek van der Berg Nature Reserve (with relevant permission).
- Search and Rescue for all translocatable geophytes should be undertaken prior to site development. Suitable candidates include about 500 *Chasmanthe aethiopica* (cobraflower) bulbs, and about ten *Haemanthus coccineus* (poeierkwas). These should be translocated to similar habitat in the adjacent Hoek van de Berg NR, after permission has been obtained to do so, and should be undertaken by someone with experience in plant translocations.

9. CONCLUSIONS AND RECOMMENDATIONS

- The study area supports partly degraded vegetation that is best classified as Overberg Dune Strandveld, which is gazetted as an Endangered vegetation type. The site has been degraded by a long history of woody alien invasives, which do not appear to have been managed in any significant way.

- Overall botanical and faunal sensitivity is deemed to be Medium, and it is mostly mapped as relatively low-level ONA (Other Natural Area) in the CapeNature SBP.
- One plant SoCC was recorded on site during the survey (*Diosma subulata*; Vulnerable, 5 plants, non-viable population in the long-term absence of fire).
- The Cape Dwarf Chameleon (*Bradypodion pumilum*) is listed as Vulnerable, and may occur on site, as it has been recorded nearby. This is likely the only faunal SoCC on site.
- Translocation of mature trees on site is not likely to be successful, and hence cannot be used as mitigation.
- The development of the site is likely to have an acceptable Low to Medium negative faunal and botanical impact at a regional scale (before and after mitigation).
- All the relatively minor mitigation outlined in Section 8 must be properly implemented.
- Given that relatively little mitigation is possible and that quite substantial biodiversity will still be lost (even if not of High or Medium negative significance) it is recommended that the applicant make a sizeable conservation contribution (donation) to a local conservation group (Vermont – Hermanus area) that is involved with alien invasive vegetation management and control, as this is a major threat to the remaining habitat in the region.

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