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Pri.Sci.Nat # 400045/08

BOTANICAL SCOPING ASSESSMENT OF PROPOSED DEVELOPMENT ON PORTION 2 OF STRANDFONTEIN 712, DE KELDERS, WESTERN CAPE.

Compiled for: Lornay Environmental Consulting, Hermanus

14 September 2024

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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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 2000 site assessments in this period.

A selection of relevant previous botanical work is as follows:

- Botanical assessment of Ptn 40 of Romansbaai 711, Gansbaai (PHS Consulting 2024)
- Botanical assessment of Romansbaai abalone farm (Lornay Environmental 2024)
- Botanical assessment of proposed development on Erf 4570 Betty's Bay (Lornay Environmental 2023)
- Botanical assessment of proposed development on Erf 1486 Vermont (Lornay Environmental 2023)
- 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 Groot Patrysvlei, Clanwilliam (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)

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 botanical Scoping study was requested to inform the environmental planning and authorisation process being followed for the proposed rezoning and subdivision and development of an urban area in an extension to De Kelders, on a Portion of Portion 2 of the Farm Strandfontein 712, in the Western Cape (see Figure 1). The study area is about 110ha in extent, and is located north of the R43 road, and borders on the southeastern boundary of De Kelders and onto the southern edge of the Walker Bay Nature Reserve. The current proposed layout was approved in 2012, but subsequently lapsed. The study area is part of a much larger property that lies mostly south of the R43 (not assessed as part of this application, but was briefly visited and surveyed).

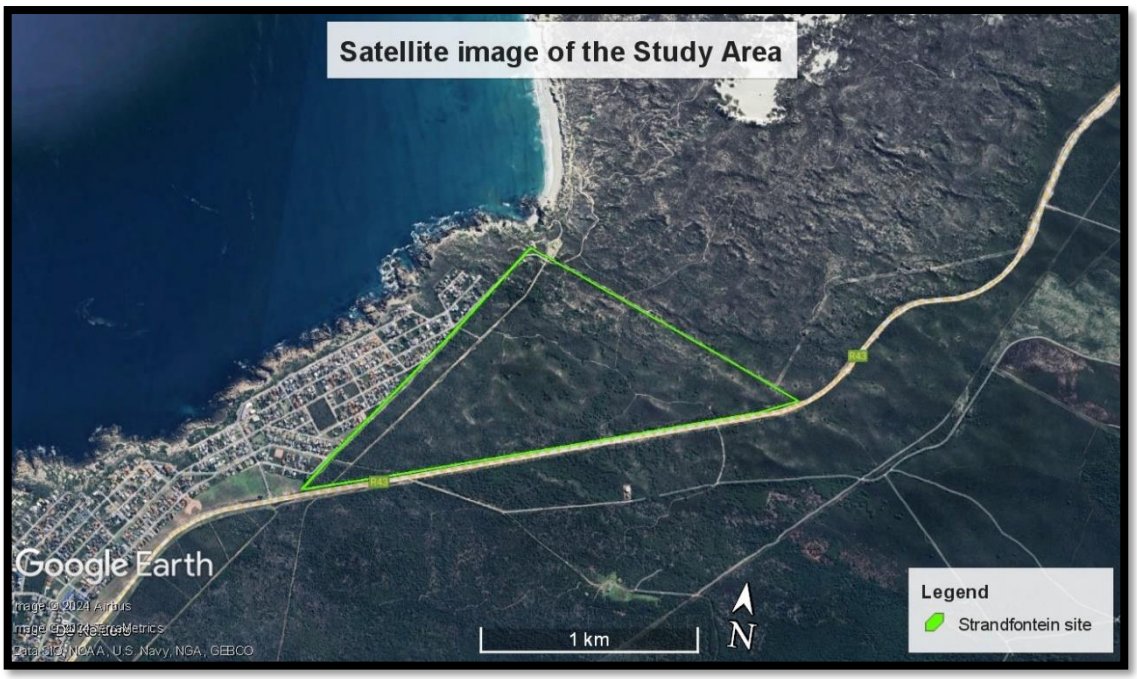

Figure 1: Satellite image showing the location of the study area. Satellite image dated May 2023.

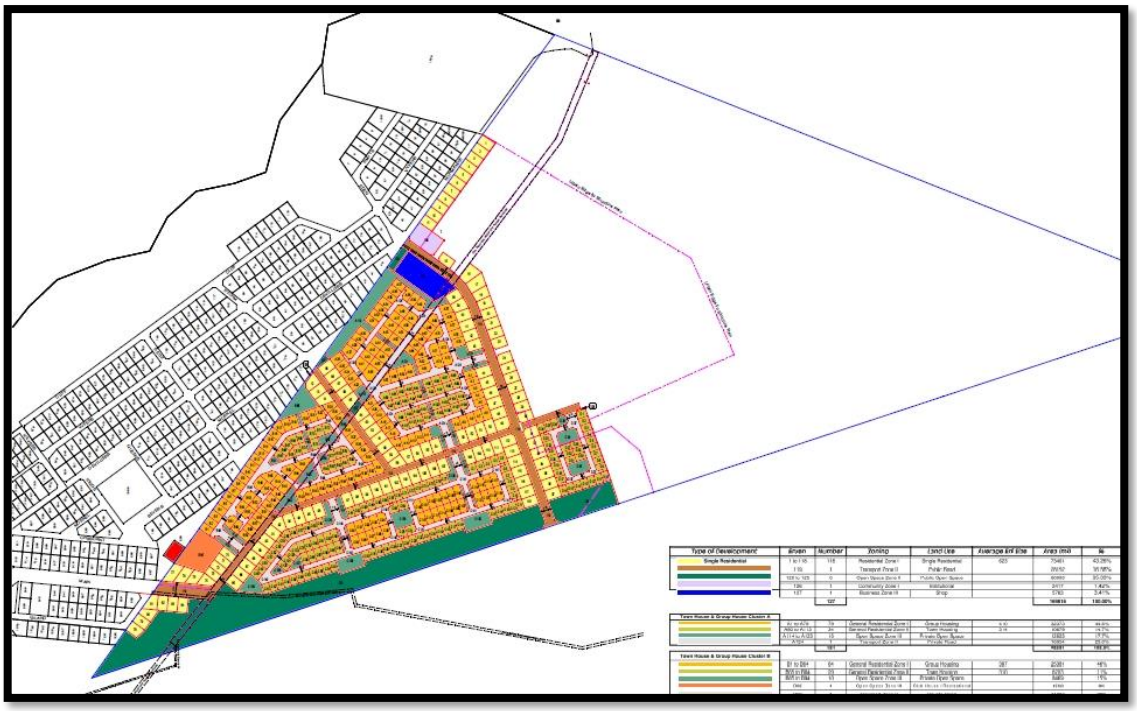

Figure 2: Proposed development layout, with erf boundary in blue.

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
- 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 preliminarily assess (according to standard IA methodology) the likely ecological impacts of the previously authorised development, including impacts associated with the construction and operational phases
- Indicate the acceptability of some sort of development from an ecological perspective
- Recommend mitigation measures to minimise impacts and to help mitigate impacts associated with the proposed development
- Discuss the need for a biodiversity offset and assess whether this may be necessary.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

The site was visited on 8 September 2024. This was at the peak of the optimal winter – spring flowering season in this mainly winter rainfall area, and most of the likely geophytes and some of the annuals were thus evident and identifiable, whilst virtually all perennial plants were identifiable. There were thus minimal seasonal constraints on the accuracy of the botanical findings, and the confidence in the accuracy of the botanical findings is fairly high. As has been repeatedly shown on the nearby Grootbos reserve, many rare and unusual plant species are evident or most common only in the first few years after a fire, and given that all vegetation on site is at least ten years old this may well be a constraint here, and the site may thus support some of these as yet undetected fire stimulated species.

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 available tracks in the study area were driven, various transects and areas were walked, although walking in some of the southern areas is difficult, with very thick, woody vegetation (both indigenous and alien invasive rooikrans). All plants on site were noted and photographs of certain plant species were made (using a Fuji mirrorless slr camera and Xiaomi gps enable camera phone), and uploaded to the inaturalist.org website. Satellite imagery dated May 2023 (and earlier) was used to inform this assessment, and for mapping. It is assumed that urban development would result in total loss of vegetation in the footprints.

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 exact meaning of the No Go alternative in this case is not known, but presumably it would be no urban development, implying persistence of the natural vegetation on site.

4. REGIONAL CONTEXT OF THE VEGETATION

The study area is part of the South Coast 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 South Coast Fynbos bioregion is characterised by relatively high winter rainfall, strong rainfall gradients, poor, sandy soils, moderate 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 extensive (>50% of original extent lost within the region), and the bioregion has a high number of threatened plant species (Raimondo *et al* 2009).

The CapeNature Spatial Biodiversity Plan (Pence 2017; Figure 3) indicates that that most of the site is unmapped, which is rather curious, given the largely undisturbed nature of the vegetation on site, and its context (next to Walker Bay NR). After groundtruthing the site I do not really agree with this mapping. The CapeNature SBP is not regarded as being particularly relevant or accurate in terms of the current study, mostly due to significant under-mapping of areas that should be CBA1 (terrestrial), the latter being due to a lack of groundtruthing in the CBA mapping process (lack of rare plant data).

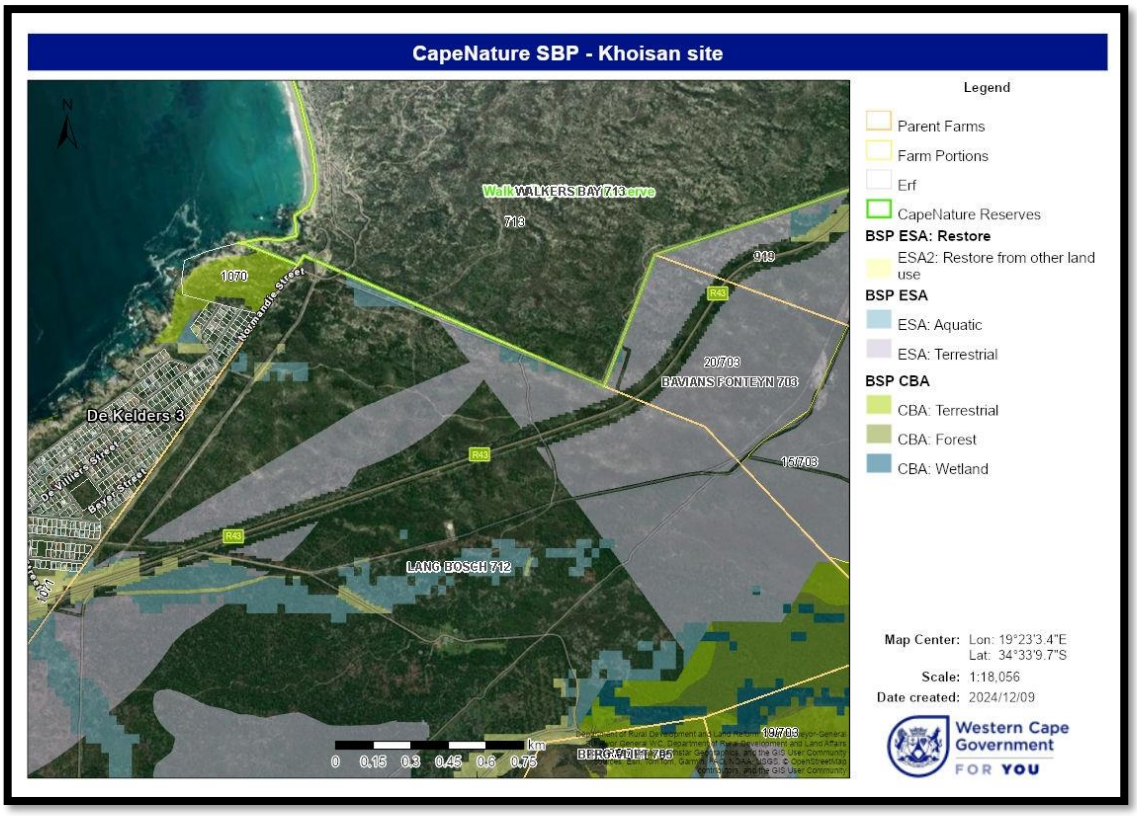

Figure 3: Extract of CapeNature Spatial Biodiversity Plan (Pence 2017) showing that the site is unmapped, with terrestrial ESA running across part of the site. After ground-truthing the site I do not agree with this mapping.

5. THE VEGETATION AND ITS SENSITIVITY

According to the SA Vegetation Map the original natural vegetation in the study area is all **Overberg Dune Strandveld** (Mucina & Rutherford 2018). Based on my groundtruthing I would agree with this. No copy of this mapping is provided as it adds little value.

Overberg Dune Strandveld is now gazetted as **Endangered** on a national basis (Government of South Africa 2022). About 90% of its total original extent remains intact, about 36% is conserved, and the national conservation target is also 36% (Rouget *et al* 2004), and I am thus unclear on how this can be listed as Endangered (cited as "restricted distribution and threatening processes"). The unit is known to support relatively few plant Species of Conservation Concern (Raimondo *et al* 2009), most of which are threatened by habitat loss to urban development and alien invasive vegetation – which are also the main threats here. This unit occurs on nutrient poor, deep, alkaline sands on the coastal lowlands, and the vegetation type does not need fire for optimal ecological functioning (Helme & Rebelo 2016).

The fire history on the site seems to be fairly complex, with the central and eastern areas appearing younger (estimated at about ten years old) than the northern and southern areas, but the time series satellite imagery does not seem to support this idea. Most of the site has a low disturbance rating, with no grazing or trampling by livestock, and few tracks.

Invasive alien species (mainly rooikrans; *Acacia cyclops)* cover about 10% of the site, but this tends to be very patchy (see Plate 2), and could very easily be removed, although there is no current evidence of any attempt at alien plant control (in spite of the legislative requirement to do so). Most of the site is in very good ecological condition. As can be seen in Plates 1-3 structural diversity is high, with a mix of tall shrubs, grasses, restios and herbs.

Plate 1: View (looking east) of the typical Overberg Dune Strandveld vegetation in southern part of the site, with a mixture of restios, herbs, shrubs and small trees.

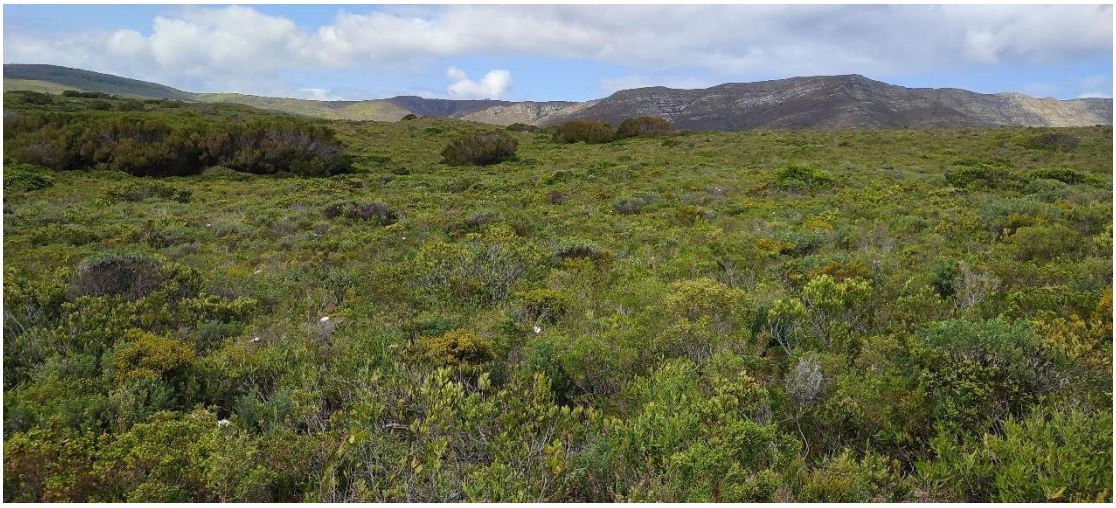

Plate 2: High diversity Strandveld in central part of the site, looking south, with scattered clumps of alien invasive rooikrans.

Plate 3: Strandveld vegetation in the northern part of the site, looking east into the adjacent Walker Bay Nature Reserve and Grootbos Nature Reserve.

The vegetation on site is relatively similar throughout the area, although in the older areas the woody vegetation is noticeably thicker and taller and could almost be described as Thicket rather than Strandveld. Dunes are noticeably taller in the east (5-8m), whilst the western areas are relatively flat.

Indigenous species noted on site include *Searsia glauca, S. laevigata, S. lucida, S. crenata*, *Anthospermum spathulatum, A. prostratum, Euclea racemosa, Pterocelastrus tricuspidatus, Thamnochortus insignis, Colpoon compressum, Hermannia ternifolia, Hyobanche sanguinea, Adenocline pauciflora, Otholobium bracteolatum, Manulea tomentosa, Ruschia sarmentosa, R. macowanii, Restio eleocharis, R. calcicola, Bonatea speciosa, Sebaea albens, Drosanthemum*

intermedium, Helichrysum niveum, H. patulum, H. dasyanthum, Gladiolus cunonius, Morella cordifolia, Roepera fuscata, Hemimeris sabulosa, Lachenalia rubida, Zantedeschia aethiopica, Lyperia lychnidea, Tetragonia fruticosa, Ficinia ramosissima, F. indica, F. secunda, Tetraria brachyphylla, Heliophila linearis, Tephrosia capensis, Chaenostoma subspicatum, Ornithoglossum viride, Wahlenbergia tenella, Romulea dichotoma, Babiana nana ssp. *maculata, Phylica ericoides, P. dodii, Moraea setifolia, Metalasia muricata, Salvia aurea, Brunsvigia orientalis, Passerina paleacea, Thesium pseudovirgatum, Robsonodendron maritimum, Satyrium carneum, Chasmanthe aethiopica, Osteospermum moniliferum, Eriocephalus racemosus, Tetragonia fruticosa, Carpobrotus acinaciformis, Roepera flexuosa, Geranium incanum, Muraltia satureoides, Chironia baccifera, Olea exasperata, Ehrharta villosa, Cineraria geifolia, Asparagus asparagoides, Rumex sagittatus, Oncosiphon suffruticosum, Arctotheca calendula, Cissampelos capensis, Wachendorfia paniculata, Cotula pruinosa, Tephrosia capensis, Lessertia miniata, Sideroxylon inerme, Hellmuthia membranacea, Diosma subulata, Agathosma serpyllacea, Dasispermum grandicarpum, Aspalathus forbesii, Senecio arniciflorus, Massonia longipes, Dimorphotheca pluvialis, Lampranthus bicolor, Pelargonium capitatum, P. betulinum, Jamesbrittenia albomarginata, Selago diffusa, Athanasia quinquedentata* ssp. *rigens, Solanum guineense, Limonium scabrum, Ifloga repens, Myrsine africana, Zaluzianskya villosa, Oxalis depressa* and *Trachyandra ciliata.*

Species	**Redlist Status**	**Inside proposed development area**	**Outside proposed development area**
Roepera fuscata	Vulnerable	yes	yes
Selago diffusa	Vulnerable	yes	no
Agathosma geniculata	Near Threatened	yes	yes
Dasispermum grandicarpum	Data Deficient	yes	yes
Diosma subulata	Vulnerable	yes	yes
Athanasia quinquedentata ssp. *rigens*	Vulnerable	yes	yes
Babiana nana ssp. maculata	Near Threatened	yes	yes

Table 1: List of plant Species of Conservation Concern (SOCC) recorded in the study area.

At least 7 plant **Species of Conservation Concern** (SoCC) were recorded on site, as per Table 1. All but one of them (*Selago diffusa,* found only in the west) seem fairly common and quite well spread out over the study area (and hence no map of their distribution is shown), and *Diosma subulata* is particularly common in the area, with thousands of plants present.

Numerous other SoCC are known from the nearby and adjacent properties, including *Erica irregularis, Capnophyllum lutzeyeri*, *Lachenalia lutzeyeri, Erica magnisylvae, Cliffortia anthospermoides, Pterygodium vermiferum*, etc. The first two were recorded immediately east of the R43 by the author on the same day as the current site survey, but do not seem to be present on the survey site. Suitable habitat does not exist on site for quite a few of the Grootbos specials, such as *Erica magnisylvae*.

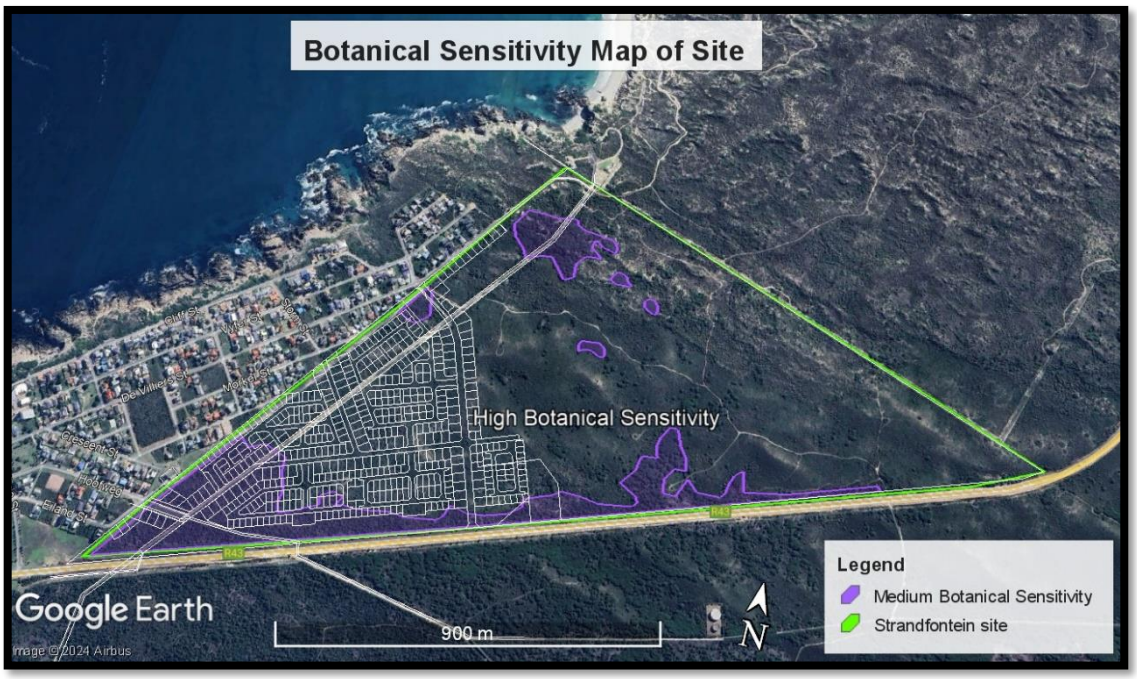

Figure 4: Botanical sensitivity map for the site, with proposed development layout overlaid in white. All unshaded areas within the study area are of High botanical sensitivity.

The botanical sensitivity of the site ranges from Medium to High on a local and regional scale. 90% of the site is deemed to be of High sensitivity, whilst the portions that have, or have recently had (until informal wood harvesting), more than 70% woody alien invasive plant cover are deemed to be of Medium sensitivity at a site scale (see Figure 4). The High sensitivity rating is informed by the fact that the vegetation is in good condition, is species rich and structurally

intact, is listed as Endangered on a national basis, and supports at least 7 plant SoCC.

6. CONCLUSIONS AND RECOMMENDATIONS

- The entire study area is of Medium and High botanical sensitivity, as the underlying vegetation type (Overberg Dune Strandveld) is gazetted as Endangered on a national basis, and at least seven plant Species of Conservation Concern were recorded scattered throughout much of the site. The vegetation on site is considered to be mostly pristine, and is degraded only by dense, mostly small patches of woody alien invasive vegetation (rooikrans).
- No CBAs are mapped on the site, but there are ESAs, but these do not correspond with any higher quality vegetation on site.
- The proposed development footprint covers about 36ha, or 33% of the site. About 12ha (36%) of this footprint is deemed to be of Medium botanical sensitivity, with the rest being High sensitivity.
- It is estimated that about 35% of the site population of six of the seven plant SoCC will be lost due to the proposed development, and probably close to 100% of the *Selago diffusa* (Vulnerable) population.
- The proposed development is likely to have a Medium to High negative botanical impact at a regional scale, and this level of impact would ideally be reduced to Medium negative, preferably by reduction of the development footprint by 20% in the High sensitivity areas.
- Even if overall impact is reduced to a Medium negative level then a biodiversity offset would still be triggered and considered appropriate (DEA 2022), in order to help minimise the unavoidable residual negative environmental impact. Given that the underlying vegetation type is classified as Endangered on a national basis, the appropriate ratio is 20:1, and this is supported by the likely loss of at least 7 plant SoCC on site, and the fact that most of the vegetation on site is essentially pristine. This implies that if the development footprint is 36ha (two thirds being of High sensitivity) then an offset of at least 580ha would be required. Securing such a sizeable area of quality habitat for conservation is something that could take some time. There are however extensive patches of habitat nearby that require ecological management (including in designated conservation areas) - notably in the form of alien invasive plant

management, and funding and commitment to facilitate this would possibly be the preferred type of offset. A biodiversity offset specialist should be contracted to advise on the methodology and quantum of the required offset.

- Search and Rescue for all *Brunsvigia* (maartlelie, tolbos) and the many other bulbs within the authorised development area must be undertaken prior to any site disturbance. These thousands of bulbs must be translocated and planted into a suitable receiving site, possibly parts of the Walker Bay Nature Reserve if any areas there are in need of rehabilitation.
- All invasive alien vegetation (notably rooikrans, *Acacia cyclops*) must be removed from the study area in areas outside the proposed development footprint, within one year of any project approval. This should be done by hand, using approved methodology (see Martens *et al* 2021).
- The No Go alternative would be the strongly preferred alternative from a botanical perspective, with a Neutral impact.

7. REFERENCES

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