



NICK HELME BOTANICAL SURVEYS

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Pri.Sci.Nat # 400045/08

**BOTANICAL & TERRESTRIAL BIODIVERSITY
COMPLIANCE STATEMENT: MORKEL'S
COTTAGE MAINTENANCE MANAGEMENT PLAN,
STRAND, CITY OF CAPE TOWN.**

Prepared for: Zutari (Pty) Ltd.

Client: City of Cape Town

6 May 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 (Sole Proprietor: Nick Helme Botanical Surveys)

The author believes that the information presented in this report complies with the PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL PLANT SPECIES (Government Gazette No. 43855 of 30 October 2020).

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Since the end of 2001 I have been the Sole Proprietor of Nick Helme Botanical Surveys, and have undertaken over 1800 site assessments, specialising in the diverse flora of the south-western Cape.

A selection of relevant previous botanical work is as follows:

- Botanical impact assessment of Strandfontein Coastal Node (Infinity Enviro 2024)
- Compliance statement for Newlands Reservoir upgrade (Zutari 2024)
- Botanical assessment of proposed municipal solar project, Swellendam (Swellendam Municipality 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 Struisbaai cemetery sites (Infinity Environmental 2020)
- Botanical assessment of MoPama development site, Swellendam (Landscape Dynamics 2020)
- Botanical assessment of proposed and unauthorised cultivation on Portions 4 & 13 of Farm Kruisrivier 206, Riversdale (Greenfire Environmental 2020)
- Botanical assessment of proposed new cultivation on Welbedacht farm, Tra Tra Mountains (Footprint Environmental 2020)
- 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)

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1. INTRODUCTION

This botanical and terrestrial biodiversity compliance statement was commissioned to inform decisions regarding the Maintenance & Management Plan for the bulk water pipeline in the Morkel's Cottage area, Strand, Western Cape (see Figure 1). The bulk water line traverses residential areas such as Onverwacht, Rusthof, Forbes and Broadlands Village. The City of Cape Town (CCT) is planning to conduct repairs and periodic maintenance work which would entail excavations and opening along the pipeline length in stages, to caulk the joints on the 810mm diameter pipeline. A Maintenance & Management Plan would be required for necessary repairs along the pipeline, and to make provision for a long-term maintenance of the bulk water pipeline works near the Morkel's Cottage informal settlement.



Figure 1: Satellite image showing the study area (blue line).

The Bulk water mains supply potable water within the CCT and connect to the water treatment works, dams and other water sources. It also connects to the CCT's potable water reticulation system. An existing bulk water line servitude works area includes the bulk waterline within a 12-meter-wide servitude area. Pipeline repairs and maintenance work will be restricted to the 12-meter-wide servitude area. All work requirements including the movements of persons, essential vehicles and use of machinery will be limited to this demarcated working area.

2. TERMS OF REFERENCE

The Terms of Reference (ToR) were as follows:

- Assess the vegetation and terrestrial biodiversity in the study area;
- Identify and describe the vegetation and terrestrial biodiversity 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);
- Indicate the likelihood of any plant or faunal Species of Conservation Concern (especially any of those flagged by the Screening Tool) in the study area, based on personal experience, literature and iNaturalist website review;
- Provide an overview and map of the botanical and terrestrial biodiversity conservation significance (sensitivity) of the route;
- Identify and briefly assess the potential impacts of the project;
- Indicate the acceptability of the project proposal from an ecological perspective; and
- Recommend any mitigation measures to avoid and/or minimise impacts and/or optimise benefits associated with the proposed project.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

No site visit was undertaken, due to the suboptimal season, the transformed nature of the habitat along much of the route, and the author's familiarity with the study area.

Conservation value and sensitivity of habitats are a product of species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, and reversibility of threats (which in this case generally refers to the rehabilitation potential of the habitat; high sensitivity habitats having low rehabilitation potential).

The GIS based South African National Biodiversity Institute (SANBI) vegetation map for South Africa (Mucina & Rutherford 2012 and online updates) was consulted, the CapeNature Spatial Biodiversity Plan (Pence 2017), the City of Cape Town Biodiversity Network, along with the National Spatial Biodiversity Assessment and the associated National List of Threatened Ecosystems (Government of South Africa 2022). Spatial data from the biodiversity website [inaturalist.org](https://www.inaturalist.org) was also used to inform the study. Conclusions were drawn based on this documentation and twenty five years of professional experience in the area and the region.

Google Earth satellite imagery dated January 2023 (and earlier time series) were used to verify prior vegetation patterns, and for mapping purposes.

This is essentially a Compliance Statement, confirming the low faunal and botanical sensitivity of most of the route, and is not a full Impact Assessment. This study does not discuss or assess any wetland elements.

4. STUDY AREA AND REGIONAL CONTEXT

The study area is within a winter rainfall area, with moderate to high annual rainfall (about 560mm/yr), and moderate to hot temperatures in the summer. Soils in the study areas are mostly alluvial sands and sandy clays.

4.1 National and Regional Context

The site is part of the Southern Fynbos bioregion (Mucina & Rutherford 2006), which is within 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 11 500 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 (typically the biggest habitat threat nationally), 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 process undertaken is 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 City of Cape Town Biodiversity Network mapping for the area is shown in Figure 2. This accurately shows that the majority of the study area has no natural habitat, and that there is an important section of CBA 1 (Critical Biodiversity Area level 1; fair condition) mapped west of Strand High School and Morgendal Road, which is the only sensitive part of the pipeline route. This mapping is supported.

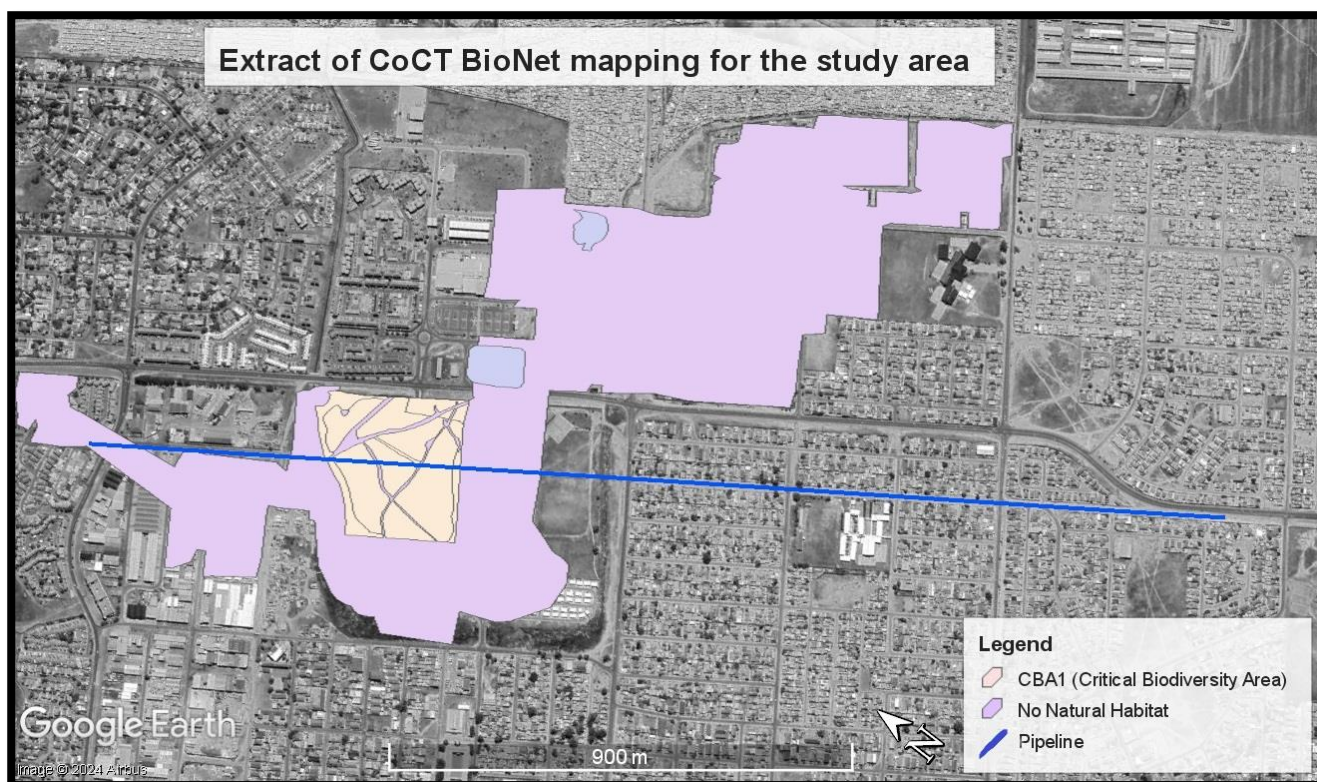


Figure 2: Extract of City of Cape Town Biodiversity Network mapping for the area. This accurately shows that the majority of the study area has no natural habitat, and that there is an important section of CBA 1 (Critical Biodiversity Area level 1; fair condition) mapped west of Strand High School and Morgendal Road. This mapping is supported.

5. THE VEGETATION ON SITE

5.1 Background

According to the SA Vegetation map (Mucina & Rutherford, 2018 update) the only remaining vegetation unit in the study area is a mix of **Cape Flats Sand Fynbos** and **Lourensford Alluvium Fynbos**. No copy of this map is included as it adds no real value, but I do agree with this mapping of the original vegetation units.

Cape Flats Sand Fynbos is gazetted as a **Critically Endangered** habitat on a national basis (Government of South Africa 2022). The unit has less than 19% of its original total extent still remaining, some 1% is conserved, with a national conservation target of 30% (Rouget *et al* 2004). This vegetation type is species rich, with a very high number of habitat endemics and rare species.

Lourensford Alluvium Fynbos is also gazetted as a **Critically Endangered** habitat on a national basis (Government of South Africa 2022). The unit has less than 7% of its original total extent still remaining, some 5% is conserved, with a national conservation target of 30% (Rouget *et al* 2004). This vegetation type is species rich, with few habitat endemics but many rare species.

Fire is an important driver of Lowland Fynbos dynamics and is necessary perhaps once every ten to fifteen years in most Fynbos in order to maintain optimal ecological functioning (Helme & Rebelo 2016). However, the natural habitat remnants in most of the Cape lowlands are now so fragmented that fire cycles are no longer natural, with the result that many areas are not burnt often enough, and others too often. In the absence of fire, grazing, soil moisture, soil depth, and soil type are instead often the primary plant community drivers. The remaining patches of natural vegetation in the study area are exposed to a rather unnatural fire cycle, with too frequent (human induced) fires now being the norm.

There is no remaining natural vegetation along the route, except in the area mapped as CBA1 in Figure 2. High sensitivity areas are also restricted to the area mapped as CBA1, which is largely in accordance with the Screening Tool categorisation, which shows Low sensitivity all along the route except in the far west, where it is High.

Indigenous plant species diversity is very low throughout the study area, except in the High sensitivity CBA 1 area, where it is medium to high.

Ten plant Species of Conservation Concern (SoCC) are known to occur in the High sensitivity area (CBA1), as shown in Table 1. This is a significant number for such a small area, and highlights the conservation importance of this area. There is a moderate likelihood of one or two other SoCC occurring in this area.

Species	Redlist Status
<i>Lachenalia corymbosa</i>	Vulnerable
<i>Protea scolymocephala</i>	Vulnerable
<i>Arctotheca forbesiana</i>	Vulnerable
<i>Gladiolus trichonemifolius</i>	Vulnerable
<i>Babiana angustifolia</i>	Near Threatened
<i>Echiostachys incanus</i>	Vulnerable
<i>Lachnaea grandiflora</i>	Vulnerable
<i>Babiana villosula</i>	Near Threatened
<i>Moraea angulata</i>	Critically Endangered
<i>Pauridia alba</i>	Vulnerable

Table 1: List of the plant Species of Conservation Concern (SoCC) that are known to occur in the High sensitivity area (CBA1) along the route.

6. FAUNA

No large fauna is expected to be resident in the study area, given the heavily urbanised environment, and the resident fauna is thus likely to be dominated by rodents (rats and fieldmice), birds and insects.

Reptiles that may be present (or at least moving through) include Cape Cobra, Molesnake and Pufadder, plus various smaller snakes such as Slugeater. Most of these will spend time hunting rodents (or snails in the case of the Slugeater). The Cape Dwarf Chameleon (*Bradypodion pumilum*, Near Threatened) may occasionally be present in the CBA1, as it has been recorded nearby (iNaturalist.org), mostly in gardens.

The common and widespread Clicking Stream Frog (*Strongylopus grayii*) and *Sclerophrys capensis* (Raucous Toad) may be present in the now highly polluted stream in the CBA1 area, but few other frogs are likely to survive here.

No faunal Species of Conservation Concern (SoCC) are likely to occur in this highly disturbed area on a regular basis.

7. BOTANICAL AND FAUNAL SENSITIVITY

About 80-85% of the pipeline route is deemed to be of Low faunal and botanical sensitivity, with the remainder being of High sensitivity (see Figure 3). The mapped CBA1 area corresponds fairly well to the High sensitivity area.

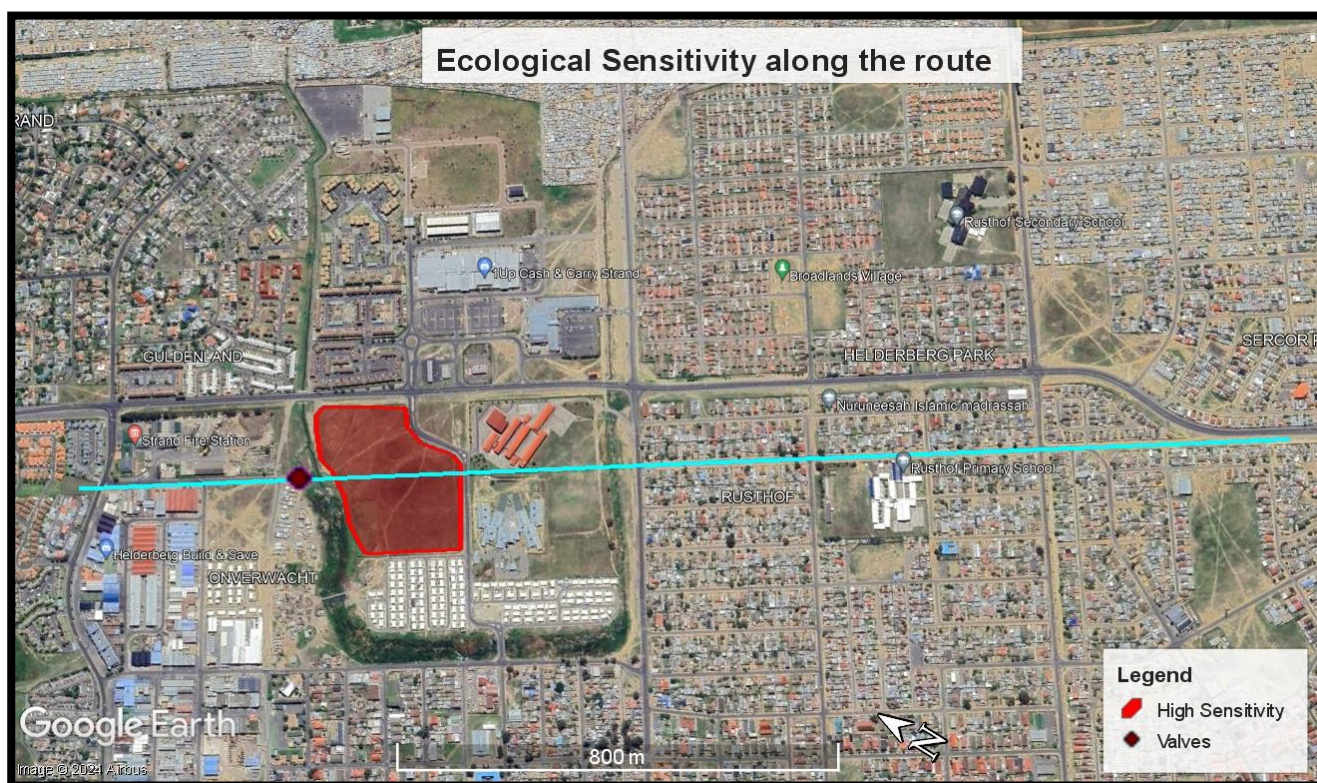


Figure 3: Combined Botanical and Faunal Sensitivity map of the pipeline route (in blue). All unshaded areas along the pipeline are deemed to be of Low sensitivity.

This is in contrast to the default High sensitivity that the Screening Tool generates for most areas within the Cape Floristic Region. This discrepancy is due to the degraded and disturbed nature of

the vegetation and faunal habitat along most of the route, and the consequent low diversity and lack of SoCC in these areas.

8. CONCLUSIONS AND RECOMMENDATIONS

- The vegetation and faunal habitat in more than 80% of the study area is heavily disturbed and degraded, and is consequently of Low sensitivity, and these areas present no constraints to the proposed pipeline operations and maintenance and require no special ecological management or caution.
- A section of about 240m in length, west of the Strand Secondary School, is of High ecological sensitivity. This area mapped as a CBA1 and at least 10 plant Species of Conservation Concern are recorded from here. This is the only section of the route of ecological concern, and disturbance in this area must be minimised.
- Large scale disturbance in the High sensitivity area, such as vehicular access and excavation, could have a Medium or even High negative impact, which is not desirable.
- The following mitigation is required for any work undertaken in the High sensitivity area:
 - Work should ideally be undertaken only in the dry season (late October – end March), when many bulbs are dormant and soils are hard;
 - Activities and disturbance must be restricted to the demarcated servitude area;
 - No vehicular access, except via the two or three existing tweespoor tracks;
 - No dumping of materials, equipment or soil in the high sensitivity area; and
 - All topsoil to a depth of 40cm must be removed in any areas where excavation will take place in the High sensitivity areas. This must be carefully stored outside the High sensitivity areas and covered with black plastic to prevent drying out and germination. Topsoil must be stored for the minimum possible time. This must then be replaced on the surface and gently tamped down whenever work disturbance related work is completed in this area.
- Any specimens of *Lachnaea grandiflora* and *Protea scolymocephala* present in the areas to be disturbed must have seeds harvested by a professional fynbos horticulturist prior to disturbance, and these must then be germinated and grown on for later transplanting back onto the site in a suitable area where they are unlikely to be similarly disturbed in the future. Transplanting should happen two years later, in May. These shrubby species will not survive translocation as adult plants, which is why this extra step mitigation is required for these species, as opposed to all the other SoCC on site, which are geophytes (and should hence survive in topsoil removal and replacement).

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