Animal Species Compliance Statement: Erf 3927, Still Bay West

chepri (Pty) Ltd

November 21, 2021

Contents

1 Summary

A residential development on Erf 3927, Still Bay West, referred to as the Patrys development, has been proposed (henceforth the proposed site). This document serves as a Fauna Compliance Statement of the proposed development. The Screening Report of the site and its surroundings delineate the proposed development area as of **high relative sensitivity for terrestrial animal species** and very high relative terrestrial biodiversity importance, which is in accordance with its location within the boundaries of a vulnerable ecosystem, namely Albertinia Sand Fynbos, according to the Western Cape Spatial Biodiversity Plan (WCSBP) [1]. Evidence is presented here of the current status quo and business as usual scenario of the proposed site within an animal species context, as assessed using available data and a site investigation of two hour duration of the site and surroundings on both the 18th June 2021 and 4th November 2021 by Dr. Marius van der Vyver (SACNASP: Ecological Science, 118303).

The proposed development site is located on a vulnerable ecosystem (**Albertinia Sand Fynbos**) according to the Western Cape Spatial Biodiversity Plan (WCSBP) [1]. The National Biodiversity Assessment (NBA) [2] and the associated National Vegetation Map [3], however, delineates the entire area as **Hartenbos Dune Thicket** with a conservation status not assessed to date although its status was proposed as Least Concern (LC) [2]. The WCSBP [1] also designates the entire site as an 'Other Natural Area' (ONA). The proposed site occurs on an urban edge and busy road and was found to be relatively degraded through the occurrence of vegetation clearance.

Some areas close to the proposed development site still seem fairly intact and function as habitat for faunal species, but the proposed site itself is imbedded within an established residential area. Evidence is presented here to show how its ecosystem function is currently diminished:

i) The visible fragmentation of remaining natural vegetation on a landscape scale (i.e. loss of ecosystem function and pattern) especially on and immediately surrounding the site due to residential development,

ii) The non-existent or very low frequency of naturally occurring fires and its inhibition through vegetation clearance on the urban edge,

iii) high and increasing degradation through vegetation clearing on the site,

iv) the occurrence of fences, a residential area and a main road surrounding the property preventing or disturbing terrestrial faunal movement,

Other influential factors considered, but for which no evidence is presented here include:

i) the highly improbable change to existing residential infrastructure and main roads with high traffic loads surrounding the site.

The Screening Report delineate the proposed development area and surrounds as of high animal species sensitivity, due to the potential occurrence of sensitive species which include three avian species of high sensitivity, one avian species of medium sensitivity and five invertebrate species (one grasshopper and four butterfly species) of medium sensitivity. None of these nine listed sensitive animal species were found on the site. The site's habitat was potentially suitable or marginal for five of the sensitive species, including African Marsh Harrier (*Circus ranivorus*), Black Harrier (*Circus maurus*), Red copper (*Aloeides thyra orientis*), Coastal Blue (*Lepidochrysops littoralis*) and Claassen's Skolly (*Thestor claassensi*). However, because of the cleared status of the site's natural vegetation (apart from its thicket elements) and its immediate surroundings consisting of a well-established residential area and an adjacent main road, the habitat is now marginal to these species and their occurrence is considered **low**. The site's habitat was not suitable for four of the species namely Yellow-winged Agile Grasshopper (*Aneurphymus montanus*), Brook's Opal (*Chrysoritis brooksi teari*), Knysna Warbler (*Bradypterus sylvaticus*) and Denham's Bustard (*Neotis denhami*).

There were visible signs of mammal activity which included small rodents, likely the cape dune mole-rat (*Bathyergis suillis*) and a mongoose species. No sensitive mammal species were identified by the Screening Tool. The site in its current state has lost most of its corridor functionality and mammal movement is restricted due to it being enveloped by residential areas and a busy road.

The impact on current biodiversity features of the proposed development is considered in the light of the above criteria to have a **Low** Impact.

1 Introduction

The Hessequa component of the Western Cape Biodiversity Spatial Plan [1] (WCBSP) mapped the extent of vulnerable, threatened, endangered and critically endangered vegetation types in and around the Hessequa area. Vegetation types usually stand as proxies of biodiversity patterns in a landscape which entails both fauna and flora components. Topography is often a key factor explaining variation in species assemblages (i.e. local vegetation patterns) on a landscape scale. Anthropogenic disturbance and habitat transformation are increasingly common factors. Based on satellite imagery (Google Earth, 2020) different patches of presumably homogenous vegetation were delineated and then ground truthed in a field investigation of the proposed site and its surrounding landscape while considering the scale and nature of current disturbance factors.

National Biodiversity Assessment tools such as the National Biodiversity Assessment (2018) [2] and the Western Cape Spatial Biodiversity Plan (WCSBP) [1] provide guidance on ecosystem types, extent and conservation status on which important decisions regarding ongoing development planning is to be based.

1.1 Study area

The site is situated adjacent to a residential area on its western and north-western boundary and a main tarred road on its south-eastern boundary (Figure 1).

The proposed site is located on a vulnerable ecosystem, Albertinia Sand Fynbos, according to the Western Cape Spatial Biodiversity Plan (WCSBP) [1] (Figure 2), while the National Biodiversity Assessment (NBA) [2] and the associated National Vegetation Map [3] delineates the area as Hartenbos Dune Thicket (Figure 3). The status of this vegetation type is not assessed to date within this delineation, however, the NBA [2] proposed its conservation status as Least Concern (LC).

The natural vegetation on the proposed site has mostly been cleared sometime in the past of the shrub component, while the thicket component that started establishing within this vegetation type as a result of the absence of fire thrived. Many of the large thicket tree species such as milkwood (*Sideroxylon inerme*), have been left untouched to grow. These provide some habitat for bird species and invertebrates, some of which may include species listed on the screening tool and of conservation concern. Regular clearing seems to be an anthropogenic disturbance factor that kept the shrub component from developing into post fire-succession proteoid fynbos. This disturbance likely would also hamper the potential of the proposed site to harbour some of the Lepidoptera species identified within the landscape and vicinity of the site that appear on the screening tool list and are of conservation concern. Only a few regrowing Bietou shrubs (*Osteospermum moniliferum*), that qualify as potential larval food for one of these listed Lepidoptera species were present on site, while in the nearby vicinity, within a 400-meter radius of the proposed site, a large quantity of these plants is present.

Figure 1: Location map of Erf 3927, Still Bay West.

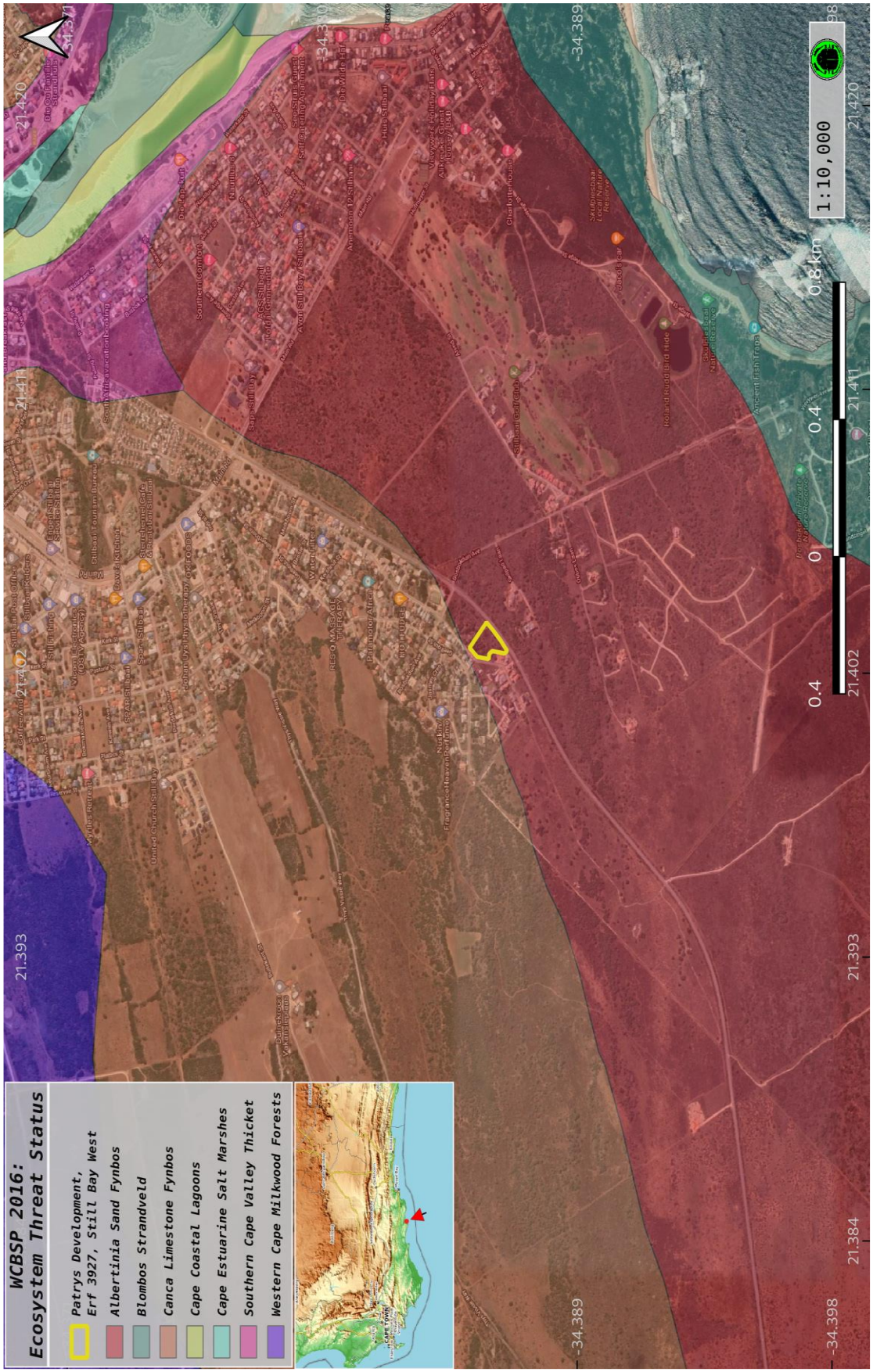


Figure 2: Vegetation units as identified by the WCBSP [1] on Erf 3927, Still Bay West.

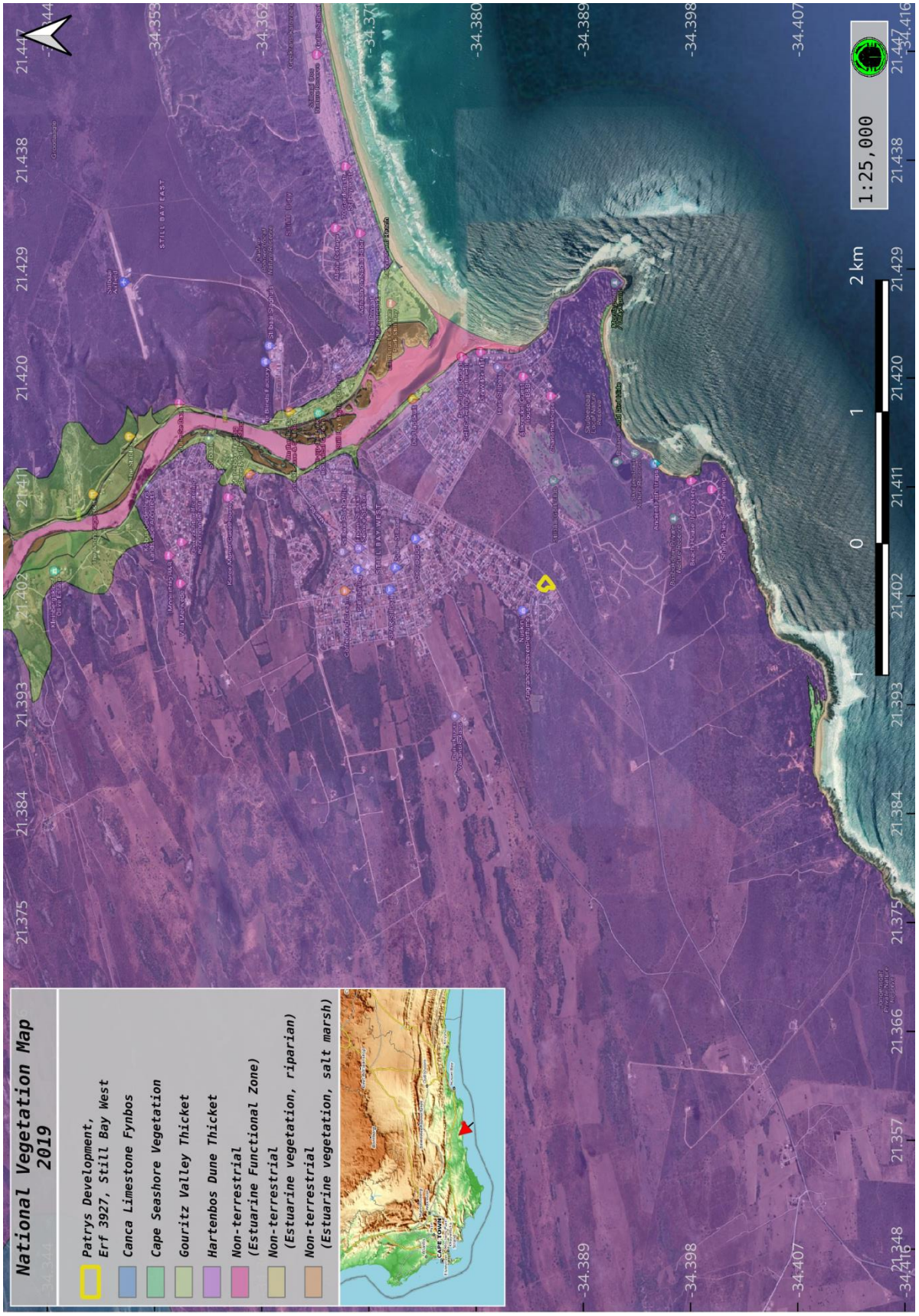


Figure 3: National Vegetation Map (2019) vegetation units on Erf 3927, Still Bay West.

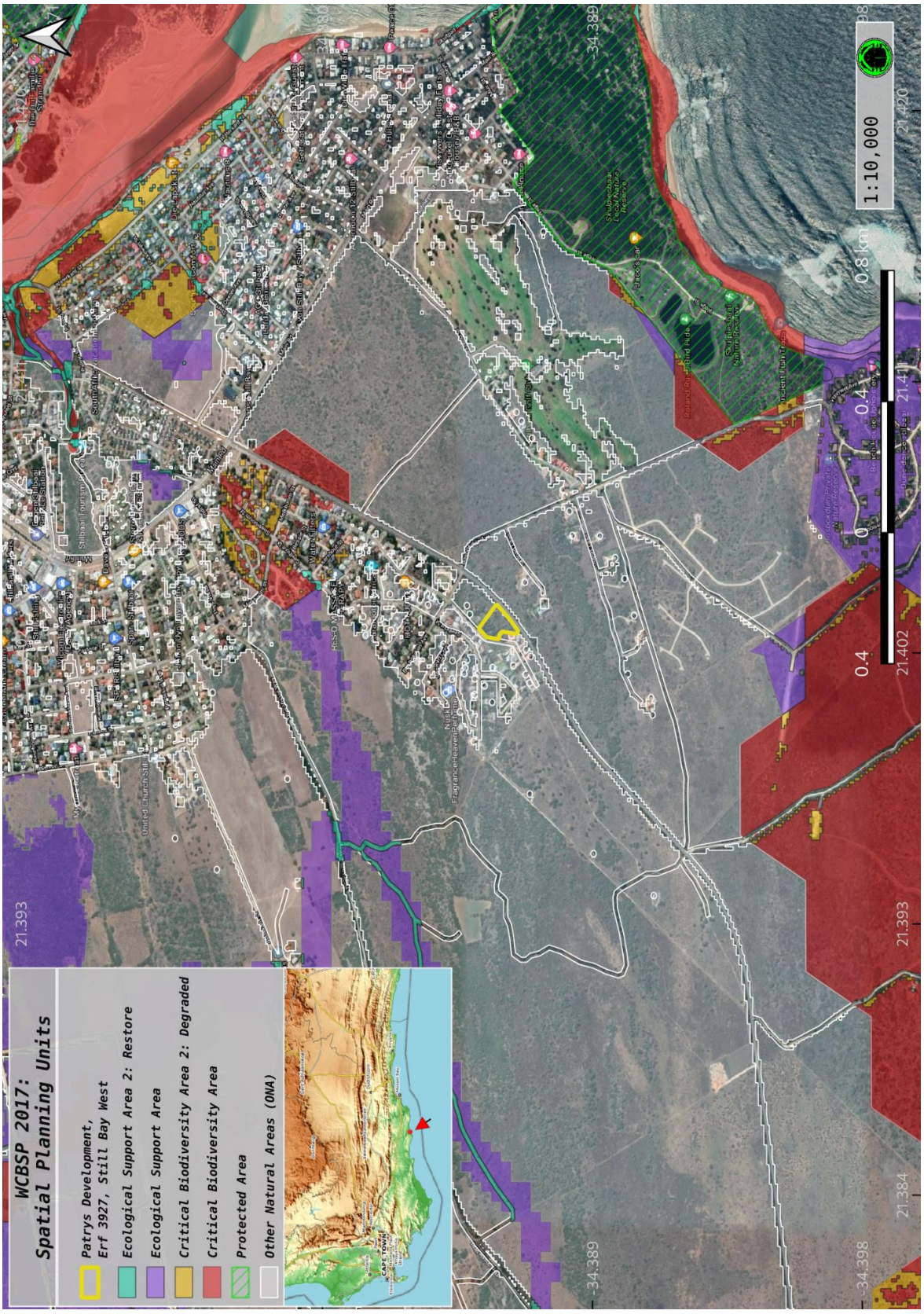


Figure 4: A Map of Conservation Planning Categories from the Western Cape Spatial Biodiversity Plan [1].

1.1.1 Western Cape Spatial Biodiversity Plan (WCSBP, 2017)

The WCSBP (2017) incorporates the spatial planning of the older Biodiversity Sector Plan (BSP) of the Hessequa municipality [4].

Albertinia Sand Fynbos is a Vulnerable ecosystem, one of four variations of Sandplain Fynbos and occurs on the Coastal Plain areas on deep sandy soils [4]. It supports species such as *Thamnochortus insignis*, *Leucadendron galpinii*, *Leucadendron muirii* and *Leucospermum praecox* and various commercial industries, such as the flowering industry [4]. Sandplain Fynbos is under severe pressure from overharvesting, poor fire management regimes, 'dragging' of vegetation to promote thatch but suppress other indigenous woody plants, infestation by invasive alien plants and groundwater abstraction [4].

Hartenbos Dune Thicket consists mostly of thickets or bushclumps scattered across vegetation dominated by fynbos elements on relative deep sands. It is thus considered a mosaic vegetation type. A large number of succulents are included, and fire does not seem to be the major important disturbance factor causing renewal, as much as large herbivores. Several important species reach their easternmost distribution limit in this vegetation type (*Euchaetis burchelli*, *Jordaaniella dubia*, *Orphium frutescens* and *Thamnochortus insignis*) [5]. An endemic or near endemic species to this unit is *Delosperma virens*. A large number of endangered plant species occurs within the unit. The thicket component extends into some of the river valleys, where it becomes denser and more continuous, with species such as *Sideroxylon inerme* (Milkwood) present.

1.1.2 National Biodiversity Assessment (NBA, 2018) and National Vegetation Map (2019)

The National Vegetation Map (updated 2019) [3], and by implication the NBA [2], delineates most of the area as Hartenbos Dune Thicket (Figure 3), with a **conservation status that is not assessed to date**. The Hessequa Municipal Biodiversity Spatial Plan (2010) [4] delineates the area with higher resolution. Under this plan it is designated as Albertinia Sand Fynbos and assigned a ***Vulnerable (V)*** status [4] (Figure 2).

1.1.3 Other Natural Areas and Critical Biodiversity Area 1 (WCSBP, 2017)

The entire area of the proposed site is designated as "Other Natural Area" (ONA) by the WCSBP (Figure 4). These are ". . . areas that have not been identified as a priority in the current biodiversity spatial plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although they have not been prioritized for meeting biodiversity targets, they are still an important part of the natural ecosystem. ONAs should be managed or utilized in a manner that minimises habitat and species loss and ensures ecosystem functionality through strategic landscape planning. These 'other natural areas' offer considerable flexibility in terms of management objectives and permissible land-uses, but some authorisation may still be required for high impact land-uses."

`

2 Methods

The results of this report is derived from the findings of a desktop study and a five hour site visit on 18 June and 4 November 2021 by a Botanical and Ecological Specialist, Dr. Marius van der Vyver (SACNASP: Ecological Science, 118303). The effect of seasonal variation on the results reported here is minimal.

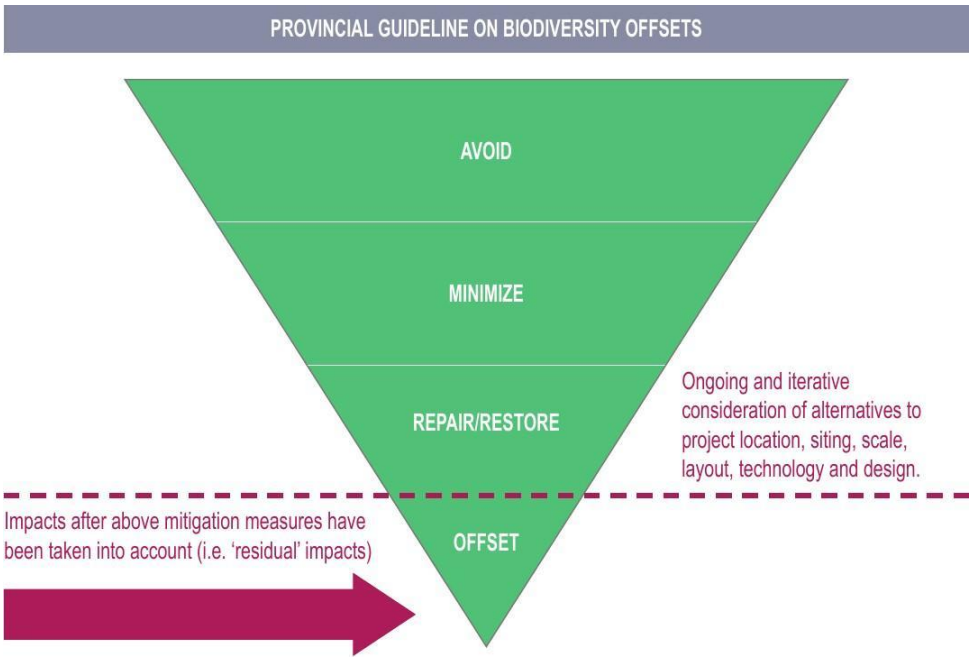


Figure 5: The Mitigation Hierarchy from WCSBP, 2017.

3.1 Background data collection

Recent Google Earth™ imagery were used to delineate the vegetation communities found on site and identify habitat for species of conservation concern (SOCC). The Western Cape Spatial Biodiversity Plan (2017) as well as the updated National Vegetation Map [3] were consulted and studied, along with relevant field guides. Natural areas were identified from the Google Earth images and potential ecological corridors identified. All identified features were then ground-truthed during the site inspection.

3.2 Site investigation

The proposed site area was investigated by walking in multiple transects and identifying plant species relevant to faunal life-cycles and fauna species and noting all observed disturbances that impact on the site. The surrounding landscape within a radius of 500m - 1 km were delineated in terms of different landuse patterns from a recent Google Earth image and investigated where possible. Photographs were taken where relevant and a GPS device were used to mark SOCCs.

3.3 Site sensitivity identification

The identification of sensitive areas was primarily based on consideration of the current state of the proposed site. This state includes the extent to which the area can currently be considered to function as it is designated in terms of the relevant conservation plans such as the WCBSP (Pool et al. 2017) in this case. Highly

fragmented, degraded and transformed areas are considered in terms of the capacity, cost and urgency for active restoration action to be applied to regain that biodiversity function. This methodology takes into account the mitigation hierarchy [1] as guideline (Figure 5).

3.3.1 Plants and vegetation patterns

Research on background information and data and historical mapping of the vegetation in and directly around the site has been used to interpret its current status prior to the field visit. The site was mapped accordingly using homogenous patterns detected from Google Earth satellite images and then ground truthed during site visits. During the site visit the proposed site was traversed in such a way to cover all of the homogenous areas detected from the desktop derived map. A thorough and targeted search was conducted for all of the sensitive species listed by the screening tool, keeping in mind habitat preferences for each species.

3.3.2 Animals

With the use of a pair of binoculars, during both site visits an eye was kept on bird species potentially resembling one of those identified by the screening tool (Table 1; i.e. *Neotis denhami*, *Bradypterus sylvaticus*, *Circus maurus* and *Circus ranivorus*). A large-hoop sweepnet was used to investigate butterfly, moth and grasshopper species sampled during a second two hour site visit on 4 November 2021. Only species that potentially resembled the butterfly species *Lepidochrysops littoralis*, *Aloeides thyra orientis*, *Chrysoritis brooksi tearei* and *Thestor claassensi* and grasshopper species, *Aneurphymus montanus*, were targeted during sampling.

Table 1: Sensitive species detected by the on-line screening tool (19-09-2021)

Sensitivity	**Feature(s)**
High	*Neotis denhami*
High	*Bradypterus sylvaticus*
High	*Circus maurus*
Medium	*Lepidochrysops littoralis*
Medium	*Aneuryphymus montanus*
Medium	*Chrysoritis brooksi tearei*
Medium	*Thestor claassensi*
Medium	*Aloeides thyra orientis*
Medium	*Circus ranivorus*

4 Result

4.1 Site description

The site was degraded with most of the vegetation on the proposed site previously cleared of the shrub and tree component characteristic of the natural vegetation type with some large thicket tree species such as milkwood being left on site (Figure 6). These still provide some habitat for bird species and invertebrates, some of which may include species listed on the screening tool and of conservation concern.

Human infrastructure such as the neighbouring residential area, fences and a main tarred road occur on and next to the site (Figure 7).

Figure 6: Photos showing the general state of the site's vegetation being cleared and the remaining large trees such as milkwood trees.

Figure 7: Photos showing human infrastructure around the site, including a residential area and fences.

4.2 Mammals

No sensitive mammal species were identified by the Screening Tool (Table 1). There was some mammal activity evident on the site in the form of signs such as mole-rat mounds (likely Cape Dune Mole Rat - *Bathyergus suillis*) and mongoose tracks. Species' signs recorded during the site visit included those belonging to, rodents (unknown species), moles or mole-rats (likely *Bathyergus suillis*) (Figure 8) and mongoose species which likely included Cape grey mongoose (*Herpestes pulverulentus*) and/or Water mongoose (*Atilax paludinosus*). There were some domestic dog signs visible on the site.

Figure 8: Photos showing mole or mole-rat mounds - these are likely from the Cape Dune Mole Rat - *Bathyergus suillis*.

4.3 Birds (AVES)

4.3.1 *Circus ranivorus* | African Marsh Harrier

The African Marsh Harrier is found in association with pans, wetlands and wet grasslands. It nests in grasslands and pans in thick vegetation near a wetland or marsh - hence the name. With a number of floodplains, pans and valleys providing suitable habitat within the larger area, a wetland area close to the site and a confirmed presence in the area, albeit a very low reporting rate (0.1-2.5%, http://sabap2.birdmap.africa/coverage/pentad/3420_2120) in the SABAP2 pentad of the area (Figure 9), it is likely that a population of African Marsh Harrier exist in the area. However, due to the human activity and infrastructure in and immediately surrounding the site, rendering this suboptimal or marginal habitat for the species, and the likelihood of its occurrence on the site is considered Low.

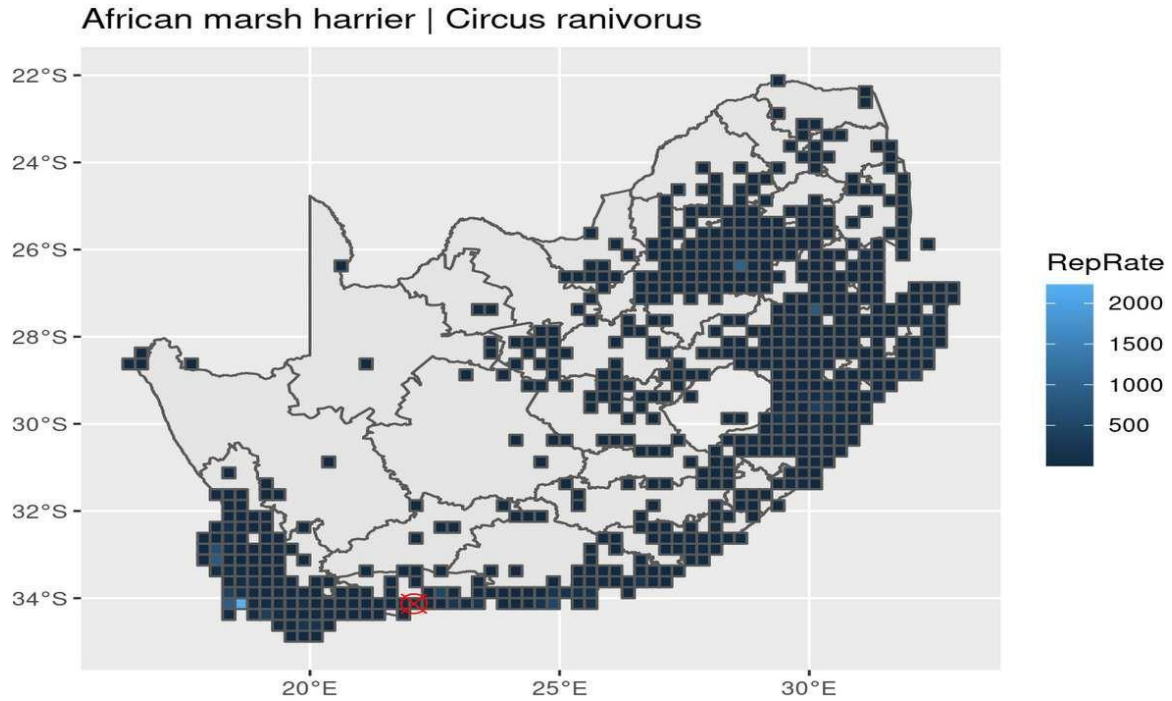


Figure 9: South African Bird Atlas Project (SABAP2) [8] reporting rates of African Marsh Harrier to date. The red icon shows the quarter-degree square cell (resolution unit) within which the site is located. *Data: GBIF.org (19 May 2021) GBIF Occurrence Download https: // doi. org/ 10. 15468/ dl. v6jh4w*

4.3.2 *Circus maurus* | Black Harrier

The Black Harrier is found in association with open grassland, shrublands, semi-deserts and mountainous areas. The proposed site's vegetation is mostly thicket clumps dispersed with grassy fynbos (open areas) and with suitable habitat within the larger area. The human activity and infrastructure in and immediately surrounding the site likely renders this suboptimal or marginal habitat for the species. A very low (1-2.5%) SABAP2 observation rate was reported for this species in the pentad within which the site falls http://sabap2.birdmap.africa/coverage/pentad/3420_2120) (Figure 10).

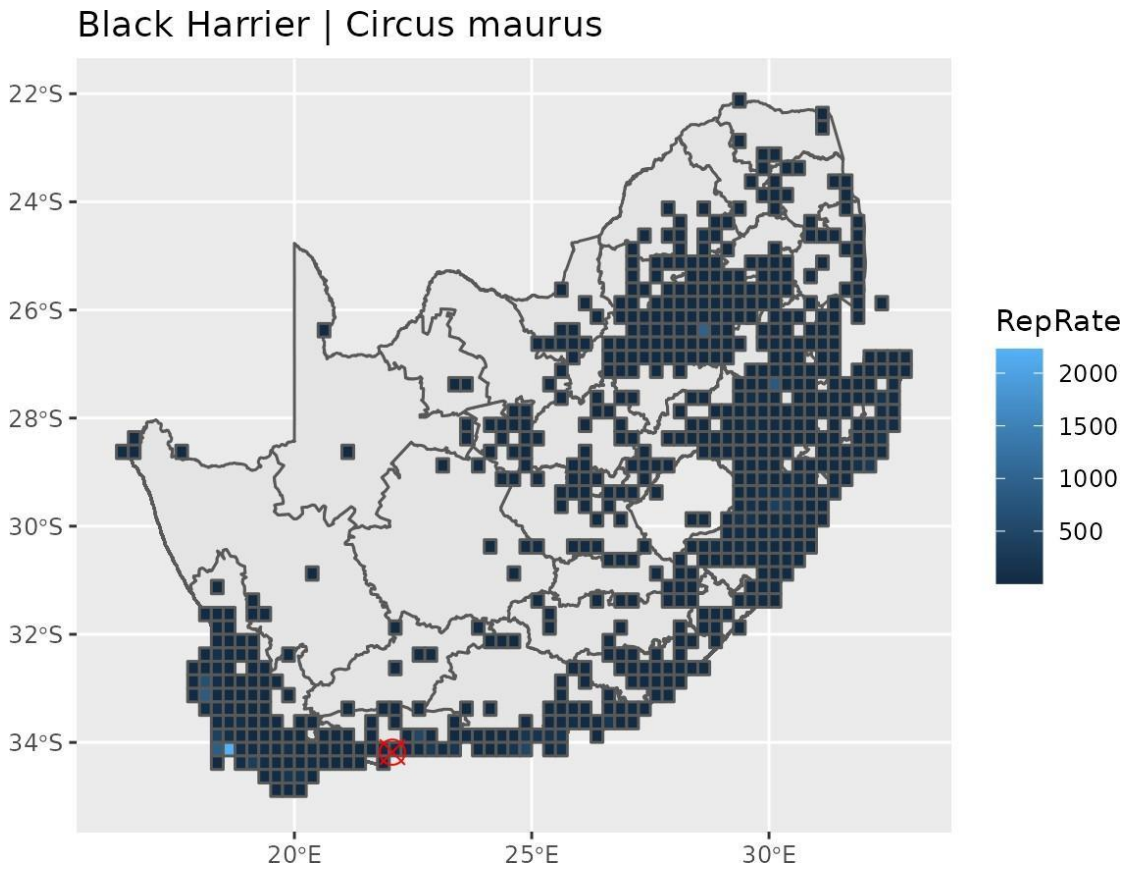


Figure 10: South African Bird Atlas Project (SABAP2) reporting rates of African Marsh Harrier to date. The red icon shows the quarter-degree square cell (resolution unit) within which the site is located. *Data: GBIF.org (19 May 2021) GBIF Occurrence Download https: // doi. org/ 10. 15468/ dl. v6jh4w*

4.3.3 *Neotis denhami* | Denham's bustard

Denham's bustard is usually associated with grassland habitats but can be found in a considerable range of secondary habitats including dense shrubland, light woodland, farmland, dried marsh and arid plains. It is the largest species within the Genus *Neotis*.

Looking strictly at habitat, it is unlikely that this bird would utilise the site, especially due to the anthropogenic disturbance around the site has a highly likelihood to have a strong limiting influence. The SABAP2 observation rate of *N. denhami* was very low (2.01-5%) in the pentad within which the site falls (http://sabap2.birdmap.africa/coverage/pentad/3420_2120) (Figure 11). Denham's bustard generally requires large swathes of grassland with minimal human disturbance. The reason is the large size of the bird, it needs some space and time to get off into flight and thus is vulnerable in a habitat that does not provide open plains and additionally experiences human disturbances. The likelihood that it occurs on the proposed site is therefore **Low**, given the substantial human activity on and around the site.

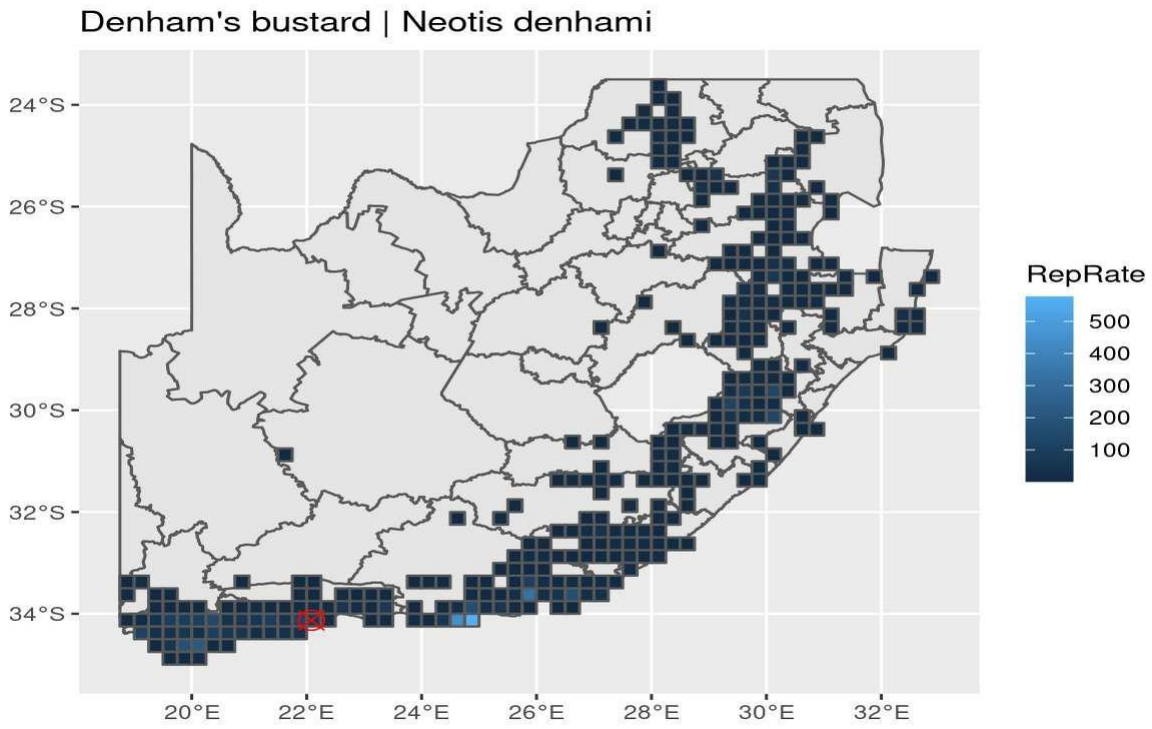


Figure 11: South African Bird Atlas Project (SABAP2) [8] reporting rates of Denham's Bustard to date. The red icon shows the quarter-degree square cell (resolution unit) within which the site is located. *Data: GBIF.org (19 May 2021) GBIF Occurrence Download https: // doi. org/ 10. 15468/ dl. v6jh4w*

4.3.4 *Bradypterus sylvaticus* | Knysna Warbler

The habitat of the Knysna Warbler is dense tangled scrub of forest edges, on or relatively near the coast. It has adapted to non-native bramble thickets and colonised suburban riparian woodland, though without any marked range expansion. Most breeding territories are established in dense vegetation along streams, and nests are placed very close to the ground. The likelihood of occurrence of this species on site is Low as the vegetation on the proposed site is mostly cleared with remaining larger milkwood trees. The species was not sighted on site during the survey and additionally the SABAP2 observation rate was medium to fairly low (30.01-50%) in the pentad within which the site falls (http://sabap2.birdmap.africa/coverage/pentad/3420_2120) (Figure 12). Its likelihood of occurrence on the site is therefore considered **Low**.

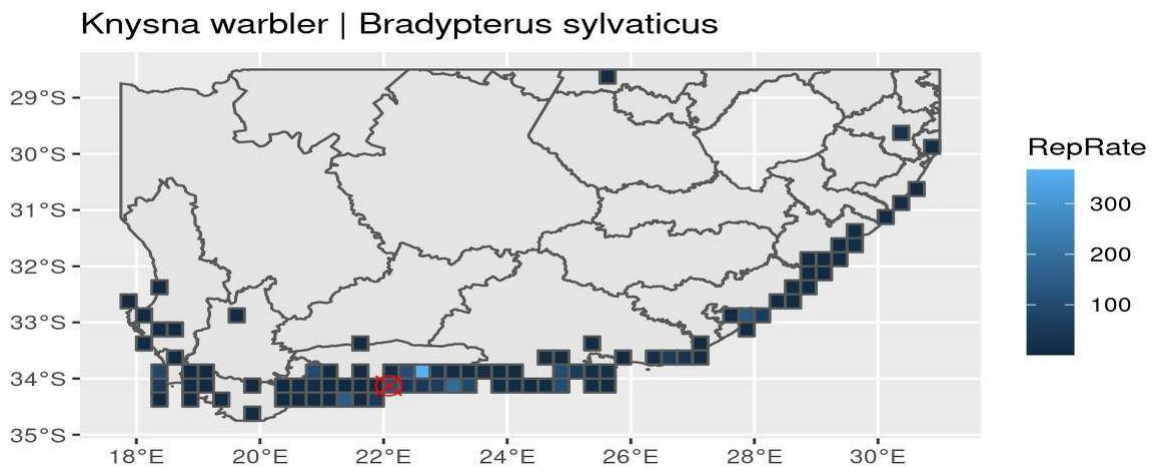


Figure 12: South African Bird Atlas Project (SABAP2) [8] reporting rates of the Knysna Warbler to date. The red icon shows the quarter-degree square cell (resolution unit) within which the site is located. Data: GBIF.org (19 May 2021) GBIF Occurrence Download https://doi. org/10.15468/dl.hrcsxm

4.4 Invertebrates

4.4.1 *Aneurphymus montanus* | Yellow-winged Agile Grasshopper

The description provided by Brown (1960) [6] provided the best means of identification in the field. "This stout bodied insect is found locally common amongst partly burnt stands of evergreen Sclerophyll in the rocky foothills. It is an active geophilous insect which readily flies off when disturbed and is easily distinguished in flight by the pale lemon base of the hind wing. . . When captured and handled both sexes have the objectionable habit of regurgitating a dark brown fluid which readily stains the fingers."

Note the habitat is given as evergreen Sclerophyll-covered rocky foothills. The proposed site is located on a flat bottomland with vegetation on the proposed site being cleared with remaining milkwood trees, and thus the habitat is not ideal for this invertebrate to occur here. No individuals were found on site and its likelihood of occurrence on the proposed site is considered **Low**.

4.4.2 *Aloeides thyra orientis* | Red copper

The red copper is endemic to the Western Cape of South Africa, occurring over an estimated area extent of 2 646 km^2 with only a 72 km^2 occupancy with only six known locations. This taxon suffers from severe fragmentation in its distribution and is experiencing continuing decline in area, extent and quality of its habitat. Its habitat is defined as coastal fynbos or flat sandy ground (natural or anthropogenically disturbed) between 40-240 m above sea level. Anthropogenic encroachment through roads, houses and infrastructure as well as agricultural activities and the spread of invasive alien plants and disrupted fire frequencies (fire suppression mostly) and associated fire intensities when associated with unnatural biomass build-up due to fire suppression are the major threats to this species.

The habitat requirements of the red copper coincide with the conditions found on the proposed site, apart from the fragmentation and high anthropogenic impact evident. Adults are on wing from July to April with peaks in October and February [7]. The larvae feed on *Aspalathus acuminata*, *A. laricifolia* and *A. cymbiformis*. The larvae are attended to by *Lepisiota capensis* ants. No individuals of this species were found on site during the survey (June) nor were any of the host plants present. Therefore, although this species could potentially occur in the site area, in its current degraded state and anthropogenic disturbances, the likelihood of this species to occur on the site is considered **Low**.

4.4.3 *Lepidochrysops littoralis* | Coastal Blue

This species is considered endangered [9]. Adults are on wing from late August to December. Its habitat preference is coastal sand dunes and flatlands covered with fynbos. Males have territories around large clumps of dense shrubs, dune peaks and clearings in dense vegetation [7]. The habitat quality on the proposed site is marginal for this species, and no individuals were found during the survey. There is no data on its larval food source [7].

4.4.4 *Chrysoritis brooksi tearei* | Brook's Opal

This species is considered not sensitive according to the SANBI National Sensitive Species List (http://nssl.sanbi.org.za/species/chrysoritis-brooksi-teari) but indicated as Vulnerable. Flight periods are from September to April, occasionally as late as June and peaks in October/November. Its habitat preference is flatlands or hillsides covered with Fynbos or Succulent Karoo. This species is dependent on *Thesium* and *Zygophyllum* plant species for larval food, which were not present on the site and it is therefore unlikely that Brook's Opal occurs on the site. The species was not found on the site and considering that the habitat quality is unsuitable, due to regular degradation, clearing and human activities, its occurrence on the site is considered **Low**.

4.4.5 *Thestor claassensi* | Claassen's Skolly

This species is considered not sensitive according to the SANBI National Sensitive Species List (http://nssl.sanbi.org.za/species/thestor-claassensi) but indicated as Vulnerable. In terms of habitat, Claassen's Skolly is associated with coastal rocky outcrops [7] in the Stillbay, Vermaaklikheid and Puntjie areas in the Western Cape. It may also occur on flat coastal fynbos and limestone ridges. There is currently no data on its larval food. It's flight period is from November to early December. [7]. The habitat quality on the

proposed site is marginal for this species, and no individuals were found during the survey. The species' possible occurrence on the site is therefore considered to be very **Low.**

4.5 Fauna summary - result

The site provides for some birdlife due to the remaining trees and current regenerating shrubs. But it is an artificial and isolated habitat patch that will likely remain after the proposed development was completed. Although the site is potentially marginal hunting habitat for *Circus ranivorus* and *Circus maurus*, two birds outlined by the screening tool of *High* and *Medium* Sensitivity respectively, it is unlikely that these species occur due to the site location in an already established residential area. In terms of the listed sensitive bird species, *Neotis denhami* and *Bradypterus sylvaticus*, the habitat on the site was unsuitable and therefore not surprising that it was not observed.

Of the invertebrates sampled and found (Grasshoppers and Butterflies/Moths via sweepnet), none belonged to the species identified by the screening tool as of high or medium sensitivity. The habitat requirements marginally correspond to that of the listed butterfly species, *Aloeides thyra orientis*, *Lepidochrysops littoralis* and *Thestor claassensi*, although none of the required larval food plant species were found on site. The site's habitat was not suitable for *Chrysoritis brooksi tearei* in its current state and, even if degradation did not occur, for the listed grasshopper species *Aneurphymus montanus*.

Although no sensitive mammal species were identified by the Screening Tool (Table 1), of all the taxa, the site was visibly used the most by mammals including rodents (unknown species), moles and/or mole-rats (likely the Cape Dune Mole Rat) and a mongoose species. The areas surrounding the site is inundated with infrastructure and the site has therefore lost any corridor functionality or connectivity for mammal movement.

4.6 Findings and Recommendations

None of the sensitive species listed by the Screening tool assessment of the proposed site were found present. The likelihood of occurrence of all the listed sensitive animal species are considered **Low**.

5 Discussion

5.1 Recommendations

Since the likelihood of occurrence of all sensitive species listed by the screening tool assessment of the proposed site is considered Low, there is no need for an impact assessment. Although it is likely that the proposed site would have provided habitat for most of the listed species, it is in its current state (and business as usual scenario) mostly deemed unsuitable.

References

[1] R Pool-Stanvliet, A Duffell-Canham, G Pence, and R Smart. The western cape biodiversity spatial plan handbook. *Stellenbosch: CapeNature*, 2017.

[2] AL Skowno, DC Raimondo, CJ Poole, B Fizzotti, and JA Slingsby. South african national biodiversity assessment 2018 technical report volume 1: Terrestrial realm. south african national biodiversity institute, 2019.

[3] A Dayaram, LR Harris, BA Grobler, S Van der Merwe, AG Rebelo, LW Powrie, JHJ Vlok, PG Desmet, M Qabaqaba, KM Hlahane, et al. vegetation map of south africa, lesotho and swaziland 2018: a description of changes since 2006. bothalia, 49 (1), a2452, 1–11, 2019.

[4] KS Maree and DC Vromans. The biodiversity sector plan for the hessequa and mossel bay municipalities: Supporting land-use planning and decision-making in critical biodiversity areas and ecological support areas, 2010.

[5] JHJ Vlok and ME De Villiers. Vegetation map for the Riversdale domain. Unpublished 1:50 000 maps and report supported by CAPE FSP task team and CapeNature, 2007

[6] HD Brown. New grasshoppers (Acridoidea) from the Great Karroo and the South Eastern Cape Province. Journal of the entomological Society of Southern Africa, 23(1), pp.126-143, 1960.

[7] Steve Woodhall. *Field guide to butterflies of South Africa*. Bloomsbury Publishing, 2020.

[8] M Brooks and P Ryan. Southern African Bird Atlas Project 2. Version 1.43. FitzPatrick Institute of African Ornithology. Occurrence dataset https://doi.org/10.15468/8x5b7h accessed via GBIF.org on 2021-11-21, 2021.

[9] S Mecenero, DA Edge, HS Staude, BH Coetzer, AJ Coetzer, DC Raimondo, MC Williams, AJ Armstrong, JB Ball, JD Bode and KNA Cockburn. Outcomes of the Southern African Lepidoptera Conservation Assessment (SALCA), 2020.

6 Declaration of Independence

I, Dr. Marius L van der Vyver, hereby declare that I

- Act as the independent specialist in this application;
- Will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant and that there are no circumstances that may compromise my objectivity in performing such work;
- Have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- Will comply with the Act, regulations and all other applicable legislation;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority.

I further declare that all the particulars furnished by me in this form are true and correct; and acknowledge that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

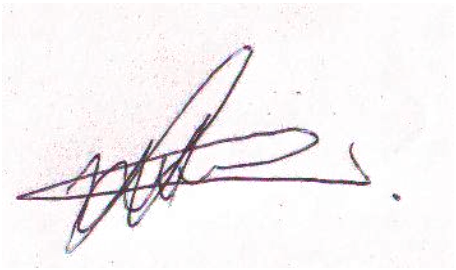
Name of Company

chepri (Pty) Ltd scientific services

Name of Specialist Consultant

Dr. ML van der Vyver

Signature of Specialist Consultant



Datelp

September 14, 2021

7 Specialist details

Dr. Marius L. van der Vyver holds a PhD in Botany from Nelson Mandela University and has more than 15 years' experience as an ecologist and botanist. He is registered with the South African Council of Natural Scientific Professions (SACNASP) as an ecological scientist (reg.no. 118303) and a member of the South African Association of Botanists (SAAB).

Table 2: Project experience table: Dr. M.L. van der Vyver

Client	Name	Location	Description	Role	Year
Nelson Mandela University	Associate Researcher – NRM Restoration Research Group	Eastern and Western Cape	Research manager of a restoration team to investigate and promote spekboom restoration with funding from the Department of Environmental Affairs, Forestry and Fisheries' Natural Resoiuorce Management (NRM) division.	Project Scientist	2019
BMK consulting engineers	Rehabilitation Management Guidelines: Diepsloot Footbridge construction	Diepsloot, Johannesburg	Guidelines for rehabilitation after construction of a pedestrian footbridge over a wetland, Diepsloot, Gauteng	Restoration Ecologist	2019
Envirobalance (Pty) Ltd	Biodiversity Impact Assessment with specialist Vegetation and Mammal Studies for Calmera Estate, Cradel of Mankind.	Cradle of Mankind, Muldersdrift, Gauteng	Biodiversity Impact Study including a specialist Vegetation (botanical) and Mammal study for assessing the impacts of a low-impact residential development	Biodiversity Scientist	Ongoing
Wild Summit Group, Kamala Game Reserve	Ecological Risk Assessment for the introduction of Red Deer (Cervus elaphus) on	Eastern Cape, South	Determine the ecological risk involved with the introduction of a population of Red Deer on Kamala	Ecological Scientist	2019
Integrated Data Management (IDM) (Pty.) Ltd.	Determining trends in Electricity usage from data provided by Maputo Hospital	Maputo, Mozambique	Statistical analyses of energy usage of electricity monitoring data	Statistical analyst	2018

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
IDM, Arcellor Mittal	Energy usage analysis from a steel factory, Arcellor Mittal	Port Elizabeth, South Africa	Statistical analyses of energy usage of electricity monitoring data	Statistical analyst	2018
Wild Summit Group, Kamala Game Reserve	Ecological Risk Assessment for the maintenance of an existing population of Barbary Sheep on Kamala Game Reserve.	Eastern Cape, South Africa	Determine the ecological risk involved with the maintenance of an existing population of Barbary sheep on Kamala Game Reserve.	Ecological Scientist	2018
Resilience Environmental Advice, Enviro-mining, Suralco LCC	Monitoring system for the Revegetation Index – Suralco LCC Mine Closure Project.	Surinam, South America	Develop a monitoring system for the rehabilitation and revegetation of ferro-bauxite mines, based on the inputs of various Biodiversity specialists.	Restoration ecologist, Statistical analyst	2018
CSIR	Biomass estimation of subtropical thicket vegetation in Addo Elephant National Park for calibration with LiDAR and radiometric sensor data.	Addo Elephant National Park, Eastern Cape.	Biomass estimation of aboveground vegetation across Addo Elephant National Park for calibration with LiDAR and radiometric sensor data	Botanical specialist, Statistical analyst	2018

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
African Centre of Coastal Paleosciences, NMU	Vegetation community identification and plant species list for phytolith research on specific extant vegetation types in the Garden Route and Klein Karoo area	Southern Cape including Garden Route and Little Karoo	Botanical input to a post-doc researching phytolith composition in relation to extant vegetation types.	Botanical specialist	2018
Bothalia (academic journal)	Peer-review of a research paper on restoration ecology for publication in the academic journal Bothalia	NA	Peer-review of a research paper on restoration ecology for publication in the academic journal Bothalia	Restoration ecologist	2018
Rhodes University	Develop allometric models for estimating Biomass of Honeybush tea plants	NA	Specialist assistance to develop allometric models from commercially planted and wild honeybush plants sampled	Statistical analyst	2017
C4ES (Pty) Ltd	Statistical analysis and R code development for applying boundary line analysis to various soil datasets	NA	Develop new and debug existing R code to implement the boundary line analysis method and quantile regression to various soil datasets	Statistical analyst	2017
Envirobalance (Pty) Ltd	Biodiversity Screening Report for a proposed township development, Dunottar, Gauteng	Dunnottar, Gauteng	Biodiversity impact screening report on a closed-down gold mine site.	Biodiversity scientist	2017

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
KDS Consortium (Pty) Ltd	Biodiversity Screening Report for a proposed township development, Tshivhazwaulu Extension 1	Makhado area, Limpopo	Biodiversity impact screening report for township development	Biodiversity scientist	2017
Envirobalance (Pty) Ltd	Wetland delineation for Calmera Estate, Cradle of Mankind.	Cradle of Mankind, Muldersdrift, Gauteng	Wetland delineation for a proposed Basic Assessment for a housing development	Wetland specialist	2017
Journal of Applied Ecology (academic journal)	Peer-review of a research paper on restoration ecology for publication in the academic Journal of Applied Ecology	NA	Peer-review of a research paper on restoration ecology for publication in the academic Journal of Applied Ecology	Restoration ecologist	2017
Arid Land Research and Management (academic journal)	Peer-review of a research paper on restoration ecology for publication in the academic Journal of Arid Land Research and Management	NA	Peer-review of a research paper on restoration ecology for publication in the academic Journal of Arid Land Research and Management	Restoration ecologist	2016

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
Sigwela and Associates (Pty) Ltd / DEA (National Resource Management Programmes)	Restoration of Forest Vegetation in Matiwane, near Port St. Johns, Eastern Cape	Port St. Johns area, Eastern Cape.	Monitoring of ongoing forest restoration project and establish research sites to ascertain the feasibility of different clearing protocols and treatments for the restoration of grassland habitat after alien plant clearing by WfW teams.	Restoration ecologist	2016
PeerJ (academic journal)	Peer-review of a research paper on restoration ecology for publication in the academic journal PeerJ	NA	Peer-review of a research paper on restoration ecology for publication in the academic journal PeerJ	Restoration ecologist	2015
Forests, Trees and Livelihoods (academic Journal)	Peer-review of a research paper on restoration ecology for publication in the academic journal Forests, Trees and Livelihoods	NA	Peer-review of a research paper on restoration ecology for publication in the academic journal Forests, Trees and Livelihoods	Botanical specialist	2014
Gamtoos Irrigation Board	Develop allometric models for biomass estimation of 5 major alien invasive plants in the Nelson Mandela Metropolitan area.	Port Elizabeth	Develop allometric models by destructively harvesting a number of prominent Invasive Alien Plant Species	Botanical specialist, Statistical analyst	2013-2014

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
USK Consulting (Pty) Ltd	Ecological Impact Assessment for the proposed Swartwater Solar Energy Facility, Northern Cape	Swartwater, Northern Cape	Botanical and Fauna specialist study	Biodiversity scientist	2013
USK Consulting (Pty) Ltd	Ecological Impact Assessment for the proposed Wesley Wind Energy Facility, Eastern Cape	Wesley, Eastern Cape	Biodiversity (Flora and Fauna) impact specialist study of a proposed Wind Energy Project	Biodiversity scientist	2012
Envirobalance (Pty) Ltd	Ecological Impact Assessment for the proposed Albert Luthuli (Badplaas) Landfill Site	Badplaas, Mpumulanga	Biodiversity (Flora and Fauna) impact specialist study for a proposed landfill site	Biodiversity scientist	2012
Envirobalance (Pty) Ltd	Ecological Screening Report – Kuruman Housing Development and Wastewater Treatment Works	Kuruman, Northern Cape	Biodiversity (Flora and Fauna) screening study for a proposed landfill site	Biodiversity scientist	2012
USK Consulting (Pty) Ltd	Air Quality monitoring at East London Port Harbour	East London, Eastern Cape	Procure, install maintain and manage air quality monitoring instruments and weather stations and analyse data	Environmental scientist	2010-2011

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
NMU Restoration Research Group	Active restoration of woody canopy dominants in degraded south african semi-arid thicket is neither ecologically nor economically feasible	Krompoort, Rhinosterhoek Eastern Cape	Experiment with planting nursery-grown propagules in spekboom restoration stands of diffent ages. Analysis and reporting on the ecological and economic implications of results. Publish results in Journal of Applied Vegetation Science.	Restoration ecologist	2011-2012
NMU Restoration Research Group, DEA	Spontaneous return of biodiversity in restored subtropical thicket: Portulacaria afra as an ecosystem engineer.	Krompoort, Rhinosterhoe Eastern Cape	Survey plant biodiversity and above and belowground carbon pools in different stands ranging from 0-50 years under spekboom restoration treatment and intact stands, and compare results to gauge restoration success in terms of biodiversity. Publish results in the journal Restoration Ecology.	Restoration ecologist	2011-2012
USK Consulting (Pty) Ltd / BCM	Water quality monitoring at Roundhill municipal landfill site in Buffalo City Municipality	East London, Eastern Cape	Water sampling from various locations around and inside the municipal landfill site and lab analysis interpretation and reporting against norms and allowable limits.	Environmental scientist	2010-2011

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
DEA (National Resource Management Programmes), NMU	Habitat and herbivory impact efficient ecological restoration of spekboom (Portulacaria afra)-rich subtropical thicket.	Various locations within the Southern and Eastern Cape	Assessment of local environmental and management factors affecting spekbooom restoration efficacy on 275 experimental restoration plots on a biome-wide scale (Thicket-wide Plot Experiment)	Restoration ecologist, Statistical analyst	2011-2017
DEA (National Resource Management Programmes), NMU	Plant larger truncheons deeper: more effective spekboom (Portulacaria afra) thicket restoration protocol.	Various locations within the Southern and Eastern Cape	Assessment of various propagule treatments and planting protocols affecting spekbooom restoration efficacy on 275 experimental restoration plots on a biome-wide scale (Thicket-wide Plot Experiment)	Restoration ecologist, Statistical analyst	2011-2017
DEA (National Resource Management Programmes), NMU	Contrasted aboveground carbon pool estimations of intact and degraded (Portulacaria afra)-rich subtropical thicket show terrestrial carbon offset potential.	Various locations within the Southern and Eastern Cape	I developed 40 different species-specific allometric models for estimating abovegroound biomass of subtropical thicket vegetation	Botanical specialist, Statistical analyst	2011-2017

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
C4ES (academic journal) / PrimaKlima (academic journal)	Monitoring of aboveground carbon pools on rehabilitated spekboomveld for three sites in the Eastern Cape.	Kaboega, Klipplaat, Jansenville and Uitenhage areas, Eastern Cape	Monitor and quantify aboveground carbon of spekboom restoration plots as terrestrial carbon offsets	Restoration ecologist	2011-2014
USK Consulting (Pty) Ltd	Strategic Environmental Assessment (SEA) for Mnquma Municipality, Eastern Cape.	Mnquma Municipality, Transkei, Eastern Cape	I was responible for the biodiversity (Fauna and Flora) component including extensive mapping and verification/ground-truthing of areas delineated by the Eastern Cape Biodiversity Plan. I managed the GIS component of the project.	Biodiversity scientist and GIS analyst	2011
Envirobalance (Pty) Ltd	Weltevreden Park Wetland Delineation Study, Centurion.	Weltevreden Park, Gauteng	Wetland delineation and map for a BA for proposed housing development	Wetland specialist	2011

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
USK Consulting (Pty) Ltd / Afrisam	Biodiversity Management Plan for Afrisam Dudfield Mine, Lichtenburg	Lichtenburg, North West	A biodiversity management plan including a vegetation map an alien plant control plan and an ecological management plan of a small protected area adjacent to the mining area with plant checklist, botanical baseline, veld condition assessment, game and stocking rate recommendation	Biodiversity scientist	2010
Envirobalance (Pty) Ltd	Vegetation Screening Report: Kuruman Housing development and Wastewater treatment works	Kuruman, Northern Cape	Botanical screening study for a proposed landfill site	Botanical specialist	2010
Envirobalance (Pty) Ltd	Ecological Impact Assessment: Ga-Oria to Tsate road – Sekhukhuneland, Limpopo	Steelpoort area, Mpumulanga	Biodiversity (Flora and Fauna) impact study for a proposed road.	Biodiversity scientist	2010
Envirobalance (Pty) Ltd	Karino Wetland Rehabilitation and Management Plan.	Nelspruit, Mpumulanga	Wetland delineation and rehabilitation plan	Wetland specialist	2010
USK Consulting (Pty) Ltd	Ecological Screening for Tsolo Junction Development, Eastern Cape	Tsolo, Transkei, Eastern Cape	Biodiversity (Flora and Fauna) screening study for a proposed road	Biodiversity specialist	2010

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
USK Consulting (Pty) Ltd	A number of Basic Assessments Reports	East London Area, Eastern Cape	Standard Basic Assessments and various inputs to EIA reports.	Environmental consultant	2009-2011
USK Consulting (Pty) Ltd	Ecological screening report - Riverland Orchard Farm 799/37 Gonubie	Gonubie, Eastern Cape	Biodiversity (Flora and Fauna) screening study for a proposed agricultural clearing	Botanical specialist	2008
Savannah Environmental (Pty) Ltd / Eskom	Scoping report: Ankerlig Power Station Conversion and transmission integration project, Western Cape.	Mossel Bay LM	I co-authored the scoping report and made two site visits and attended public meetings.	Environmental consultant	2008
Savannah Environmental (Pty) Ltd / Eskom	Environmental Management Plan for Ingula Transmission line	Ingula, Ladysmith area, KwaZulu Natal	I developed an environmental management plan for the construction of a large transmission line across sensitive ecologal communities in the KwaZulu Natal midlands.	Environmental scientist	2008
Savannah Environmental (Pty) Ltd / Eskom	Environmental Impact Assessment for building water infrastructure at Medupi Power Plant	Medupi, Limpopo Province	EIA and scoping for a proposed water infrastructure including extensive pipelines and reservoirs	Environmental consultant	2008

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
Savannah Environmental (Pty) Ltd / Eskom	Environmental Compliance Officer (ECO) for construction of pipeline for disposal of waste water and ash at Duvha Power Station, Witbank	Witbank, Mpumulanga	Environmental compliance project auditing the construction activities of a pipeline for the disposal of waste water and ash at Duvha Power Station, Witbank.	Environmental Compliance Officer	2008
Savannah Environmental (Pty) Ltd / DWAF	On-site ECO for construction of the De Hoop Dam and realignment of the provincial road	Steelpoort area, Mpumulanga	Independent Environmental Compliance Monitoring of a large dam construction project (DWAF) and an associated project involving the consequent realignment of the provincial road	Environmental Compliance Officer	2007-2008
Pidwa Conservation Projects (Pty) Ltd	Research and Monitoring support to Pidwa Reserve Management, part of the Greater Makalali Conservation Area, with paying volunteers.	Greater Makalali Conservation Area near Gravelotte, Limpopo	Research and monitoring within a large big-5 game reserve, specifically in terms of Elephant impacts on vegetation, leopard population and home range study, game monitoring and census, alien plant control, predation preferences of lions and management of international paying volunteers and post graduate students	Project and research manager	2006-2007

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
Siyafunda Conservation Projects (Pty) Ltd	Research and Monitoring support to Makalali Reserve Management, part of the Greater Makalali Conservation Area, with paying volunteers.	Greater Makalali Conservation Area near Hoedspruit, Limpopo	Research and monitoring within a large big-5 game reserve, specifically elephant group behaviour with regards to the reserve immuno-contraception program, predation preferences of predators on reserve, hyaena monitoring and home range calculations, elephant impacts on vegetation, leopard population and home range study, game monitoring and census, alien plant control and management of international paying volunteers and post graduate students	Volunteer facilitator, Monitoring officer	2004-2006
Tshwane University of Technology	Botanical surveys, vegetation condition assessments and game stocking recommendation on tribal lands in view of the potential establishment of a reserve.	Greater Giyani region, Limpopo	Botanical surveys, vegetation condition assessments and game stocking recommendation on tribal lands in view of the potential establishment of a reserve (3-month contract).	Botanical specialist	2004

Table 2: Project experience table: Dr. M.L. van der Vyver *(continued)*

Client	Name	Location	Description	Role	Year
Cambridge University, Kalahari Meerkat Project	International research station on small reserve focussed mostly on the behavioural ecology of Meerkats.	Kuruman River Reserve, Van Zylsrus, Northern Cape	Reserve management and research technician	Research technician, Reserve infrastructure manager.	2003-2004
SANParks	Field ranger	Kgalagadi Transfrontier Park	Reserve management duty, 4x4 trail guide, field guide	Field ranger, Field guide, 4x4 trail guide	2003