TERRESTRIAL ANIMAL SPECIES ASSESSMENT

SECTION 24G RECTIFICATION PROCESS FOR THE CLEARING OF VEGETATION ON ERF 1216 IN ST FRANCIS BAY, KOUGA MUNICIPALITY, EASTERN CAPE

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Prepared for	Ms Joclyn Marshall Eco Route Environmental Consultancy • Sedgefield

February 2023

Final Report

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REPORT DETAILS

I, Marietjie Landman, declare that I am an independent consultant and have no business, financial, personal, or other interest in the proposed project in respect of which I was appointed other than fair remuneration for work performed in connection with the project. There are no circumstances that compromise my objectivity in performing such work.

This animal species assessment was prepared in compliance with the protocols for specialist assessments and minimum report content requirements for environmental impacts on terrestrial animal species in terms of the National Environmental Management Act (1998, as amended).

The report is prepared exclusively for Eco Route Environmental Consultancy and their client and is subject to all confidentiality, copyright, and intellectual property law of South Africa.

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Dr Marietjie Landman

Qualifications: BSc Hons (Zoology), PhD (Ecology)
Experience: 17 years as an consulting ecologist (abridged *Curriculum Vitae* in Appendix 1).
Registered Professional Natural Scientist (No 147461)

COMPLIANCE WITH THE PROTOCOLS FOR SPECIALIST ASSESSMENTS AND MINIMUM REPORT CONTENT REQUIREMENTS FOR TERRESTRIAL ANIMAL SPECIES COMPLIANCE STATEMENTS.

Although the Department of Forestry, Fisheries and the Environment's National Web-based Environmental Screening Tool identified the project area as important for terrestrial animal species (Sensitivity rating: Medium), a site sensitivity verification indicated that this Sensitivity rating is not appropriate, and that Sensitivity is instead Low. This means that an animal species compliance statement can be prepared and submitted when applying for environmental authorisation in terms of the National Environmental Management Act (1998, as amended) and the Environmental Impact Assessment Regulations (2014, as amended).

To comply with the procedures for specialist assessments and minimum report content requirements for terrestrial animal species compliance statements[1], this report covers the following:

Details of the scientist that prepared the report.	Appendix 1
A confirmation that the site is of "low" sensitivity for terrestrial animal species.	Sections 3 & 4
An indication of whether or not the proposed development will have an impact on terrestrial animal species of conservation concern.	Section 4
A description of the duration, date and season of the site investigation, and the relevance of the season to the outcome of the assessment.	Section 2
A description of the methodology used to verify terrestrial animal species sensitivities on site, including the equipment and modelling used where relevant.	Section 2
A baseline description of the biodiversity and ecosystems of the site.	Section 3
A description of assumptions made and uncertainties or gaps in knowledge or data.	Section 2.1
Any proposed impact management actions and impact management outcomes for inclusion in the Environmental Management Programme.	Section 4
Any conditions to which this statement is subjected.	Section 2.1

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[1] Published in Government Notice 1150 in Government Gazette 43855 of 30 October 2020.

1. BACKGROUND AND TERMS OF REFERENCE

This terrestrial animal species assessment was commissioned by Eco Route Environmental Consultancy as part of a Section 24G rectification process in terms of the National Environmental Management Act (1998, as amended) for the unauthorised clearing of approximately 982 m^2 of vegetation on Erf 1216 in St Francis Bay, Kouga Municipality, Eastern Cape (Figure 1). The aim of the assessment is to determine the state of animal habitats and animal communities before vegetation clearing to guide the rectification process and, where possible, provide recommendations to limit or avoid further impacts.
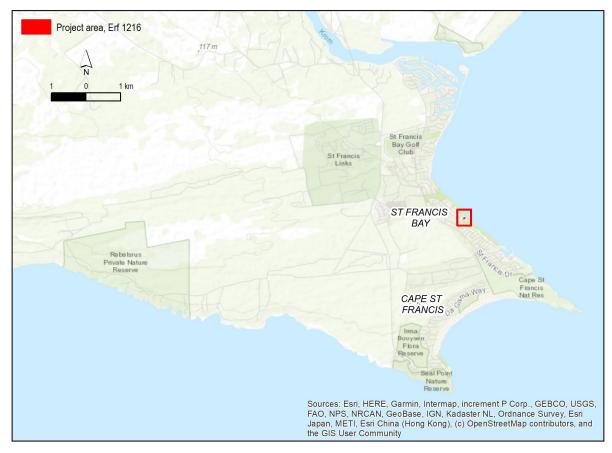

Figure 1: Location of the project area, Erf 1216, in St Francis Bay, Kouga Municipality, Eastern Cape.

This report, therefore, covers the following aspects:

- An assessment of the broad animal habitats on site before and after vegetation clearing.
- A desktop assessment of the terrestrial animal species of conservation concern (SCC) that might have been affected by the clearing of vegetation. Animal species in this case covers amphibians, reptiles, mammals, and birds, and important invertebrate species identified by the Department of Forestry, Fisheries, and the Environment's National Web-based Environmental Screening Tool. SCC include those with restricted distribution ranges, Red Data listing, or TOPS listing.
- An assessment of the sensitive animal habitats that might have been affected by the clearing of vegetation.

- An assessment of the potential impacts of the clearing of vegetation on animal species on site.
- Mitigating measures to avoid or minimise further impacts on animal species associated with the clearing of vegetation on site.

2. APPROACH TO THE ASSESSMENT

To identify the terrestrial animal species that might have been affected by the clearing of vegetation requires knowledge of the features of the broad animal habitats in the vicinity of the project area. Broad habitat types that might have occurred on site prior to vegetation clearing were initially inferred from available published information on vegetation patterns (Cowling 1984, Mucina and Rutherford 2011, South African National Biodiversity Institute 2006-2018) at and adjacent to the site. The state of the vegetation (or habitats) at the site was assessed using satellite images (a total of 12 images captured between March 2006 and January 2021) available from Google Earth. Sensitive habitats were identified as those habitats that are vulnerable to disturbances and potentially support animal SCC.

Records of the animal species (amphibians, reptiles, mammals, and birds) that potentially occur naturally in the vicinity of the project area were obtained from published (Skinner and Chimimba 2005, Alexander and Marais 2007, Du Preez and Carruthers 2017) and online (FrogMap[2], ReptileMap[2], MammalMap[2], Southern African Bird Atlas Project 2 [Harrison et al. 1997[3]]) sources that are continuously updated with new species observations. From these records, SCC were identified to include:

- Species with their distribution ranges limited to the Eastern Cape Province.
- Red Data species identified using the IUCN Red List of Threatened Species[4]. Includes all species that are assessed according to the IUCN Red List Criteria as Critically Endangered, Endangered, Vulnerable, Near Threatened, Rare, or Data Deficient.
- Red Data species identified using the Red List of South African Species[5]. Where appropriate, listings were corroborated with data from the South African amphibian (Measey 2011), reptile (Bates et al. 2013), mammal (Child et al. 2016), and bird (Taylor et al. 2015) conservation assessments.
- Species listed in terms of Section 56 of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004, as amended) and regulated by the Threatened or Protected Species (TOPS) Regulations, 2007[6]. Includes species that are Critically Endangered, Endangered, and Vulnerable.

The identified SCC were scrutinised more rigorously – using published accounts of their ecology and habitat requirements – in terms of their likely use of the project area.

The Department of Forestry, Fisheries, and the Environment's National Web-based Environmental Screening Tool identified the project area as potentially important for terrestrial animal species (Sensitivity rating: Medium), with two SCC requiring specific consideration in the assessment:

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[2] http://vmus.adu.org.za
[3] http://sabap2.adu.org.za
[4] http://iucnredlist.org
[5] http://speciesstatus.sanbi.org
[6] Published in Government Notice 255 of 2015 in Government Gazette 38600 of 31 March 2015.

Group	Species	Common name	Sensitivity rating
		Sensitive species 8	Medium
Invertebrates	*Aneuryphymus montanus*	Yellow-winged agile grasshopper	Medium

A Sensitivity rating: Medium indicates that the site might have contained suitable habitat for these species (based on spatial models), but that there are no distribution records in the area.

The site was assessed on 15 December 2022 (austral summer) to determine its potential suitability for animal species and particularly SCC. Key activities during the site assessment included:

– Verifying the likely presence and state of broad habitat types identified during the desktop assessment using vegetation features at and adjacent to the site. While some properties adjacent to the project area have been converted for residential use, others remain undeveloped and maintain indigenous vegetation.
– Identifying potentially important fine scale habitats (e.g., rocky outcrops used as refuges) at the site.
– Assessing the extent of threats (not project related) on animal communities.

2.1 Assumptions and limitations of the approach

The retrospective nature of the 24G rectification process means that assessment of the state of biodiversity (i.e., animal habitats and animal communities) is limited because the unauthorised activities have already occurred. Additionally, available information on animal species distributions is often incomplete in terms of the species and areas covered, distribution maps only allow for very generalised species ranges to be determined, and the scales of these maps do not always match between animal groups. While the assessment made use of historical satellite images to develop insights into the state of animal habitats before the unauthorised activities occurred, the approach of matching habitat features with the habitat requirements of animal species is a further robust way of dealing with information gaps. In the face of uncertainty, the precautionary principle is applied.

The site visit took place in early summer (December 2022) during a period of elevated rainfall, which meant that habitats were in a good condition for sampling. Although multiple site visits are preferred to gain a comprehensive understanding of the opportunities (and limits) for animals, the desktop approach followed here is sufficiently robust to account for animal opportunities that might have been missed during the site visit.

Information presented in this assessment has reference to the project area only and cannot be applied to any other area.

3. RESULTS

- **Broad animal habitats**

Cowling (1984) and Mucina and Rutherford (2011, as part of the Vegetation Map of South Africa, Lesotho, and Swaziland) both recognised the likely presence of thicket mosaic vegetation types on dune sands in the project area, which typically comprise tall, dense shrublands of large-leaved shrubs (key species: *Cussonia thyrsiflora, Maytenus procumbens, Olea exasperata, Osteospermum moniliferum Tarchonanthus camphoratus, Searsia* spp.). Intact Dune Thicket habitats can support a range of cover-loving animal species.

While the site assessment confirmed the historical presence of Dune Thicket habitats in the project area (using vegetation features at and adjacent to the site; Plate 1), few of the elements that typically characterise these habitats were likely present on site before the clearing of vegetation occurred. Dune Thicket habitats adjacent to the site are fragmented and transformed and where disturbances have occurred, alien invasive Rooikrans *Acacia cyclops* and Port Jackson willow *Acacia saligna* have established. The site contains evidence that these alien invasive plants also occurred locally (Plate 1). Perusal of the satellite images confirmed a history of habitat disturbances at the site (before the unauthorised activities occurred; Plate 2), which would have facilitated encroachment by alien invasive plants. No sensitive animal habitats were recognised in the project area during the assessment.

The replacement of indigenous plants with alien plants is well known to cause biotic homogenization (McKinney and Lockwood 1999, Proches et al. 2008, Clusella-Trullas and Garcia 2017) and alter a range of ecological processes, including interspecific interactions, soil processes, water resources, nutrient cycling, and fire regimes (Le Maitre et al. 2011). Thus, while intact Dune Thicket habitats can support a range of indigenous animal species, the project area with an abundance of alien invasive plants likely supported fewer indigenous species before vegetation clearing occurred. Alien invasive plants that resprout from intact rootstocks and recruiting seedlings pose a risk to the restoration of a Dune Thicket-type habitat (and animal community) on site.

- **Animal species of conservation concern**

The assessment identified five SCC that could have occurred on site before vegetation clearing occurred (Table 1). However, for all the identified SCC, probability of occurrence is expected to be low, which reduces the sensitivity of the site for SCC to low. The low probability of occurrence reflects the low suitability of the habitat (i.e., fragmented and transformed Dune Thicket) at the site.

Table 1: Animal species of conservation concern that could have occurred in the project area before vegetation clearing occurred. Included is the expected probability of occurrence of each animal species.

Species	Common name	Conservation concern	Probability of occurrence
Reptiles			
Acontias lineicauda	Algoa legless skink	Endemic (EC)	Low
Acontias orientalis	Eastern Cape legless	Endemic (EC)	Low
Scelotes anguineus	Algoa dwarf burrowing	Endemic (EC)	Low
Mammals			
Aonyx capensis	African clawless otter	Global & SA Red List: Near Threatened	Low
Birds			
Campethera notata	Knysna woodpecker	Global & SA Red List: Near Threatened	Low

SCC listing definition: Near Threatened, species that do not qualify for the Critically Endangered, Endangered or Vulnerable categories now, but may be close to qualifying, or is likely to qualify, for a threatened category in the near future.

It is unlikely that any amphibian SCC or SCC identified by the Screening Tool were affected by the clearing of vegetation. SCC identified by the Screening Tool either require rocky fynbos (in the case of the Yellow-winged agile grasshopper *Aneuryphymus montanus*, Brown 1960, Hochkirck et al. 2018) or intact forested or wooded (Sensitive species 8, Skinner and Chimimba 2005) habitats, neither of which likely occurred on site. Habitat transformation usually causes populations of Sensitive species 8 to collapse.

Plate 1: Examples of the vegetation features used to assess animal habitats in the project area before vegetation clearing occurred. A, Dune Thicket habitats adjacent to the project area where alien invasive Rooikrans *Acacia cyclops* and Port Jackson willow *Acacia saligna* have established. B, Several Thicket shrubs and trees have resprouted at the site after vegetation clearing occurred, while alien invasive plants will likely resprout from rootstocks that were left intact (inset) and recruiting seedlings.

Plate 2: Selection of satellite images used to assess the state of the vegetation (or habitats) at the site before vegetation clearing occurred. May 2022 shows the unauthorised clearing.

Plate 2 (continue): Selection of satellite images used to assess the state of the vegetation (or habitats) at the site before vegetation clearing occurred.

Plate 2 (continue): Selection of satellite images used to assess the state of the vegetation (or habitats) at the site before vegetation clearing occurred. May 2022 shows the unauthorised clearing.

The project area is not located in any of South Africa's Important Bird and Biodiversity Areas (Marnewick et al. 2015).

While it is possible that threats other than the fragmentation and transformation of habitat could have influenced animal species occurrences in the project area (e.g., harvesting of indigenous animal species with snares, predation of animal species by domestic dogs, disturbances of animal species during harvesting or due to anthropogenic noise) before vegetation clearing occurred, determining the relative importance of such threats retrospectively is difficult. However, because the project area is located in an urban / peri-urban area, it is likely that at least some of these direct impacts on animal communities do occur from time to time. The extent to which this might have been the case before vegetation clearing is not known and was not considered in the assessment.

4. CONCLUSIONS AND RECOMMENDATIONS

The results indicate that animal habitats in the project area were fragmented and transformed before the unauthorised activities occurred, which reduced the suitability of the site for indigenous animal species (amphibians, reptiles, mammals, and birds) and particularly species of conservation concern. No sensitive animal habitats would have occurred in the past. This means that the present unauthorised clearing of vegetation has not affected any important animal habitats or animal communities.

However, it is suggested that the following mitigation measures should be considered:

- The regrowth of alien invasive plants should be monitored, and any such species should be removed on an ongoing basis.
- Runoff from any areas should be managed to prevent soil erosion.

With these measures in place the significance of the vegetation clearing impacts could be considered to be low.

5. LITERATURE SOURCES

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EDUCATION

PhD (Ecology) • Nelson Mandela University • 2013

EXPERIENCE

Consulting ecologist • Freelance • 2006–present
I consult in the conservation field, advising on strategy and planning in relation to wildlife ecology and management, monitoring and research, and in the environmental field, providing specialist biodiversity advice for developments in the agricultural-, energy-, infrastructure-, and mining sectors. I have specialist expertise and experience in terrestrial animals (particularly large mammals) and in the arid and semi-arid environments of South Africa.

Research Associate • Nelson Mandela University • 2019–present
Through my research activities, I study the interactions between large herbivores and their habitats and the consequences of these interactions for ecosystem functioning. I work primarily in African arid and semi-arid environments as well as European forests and have used both empirical and theoretical approaches and manipulative field experiments to develop a mechanistic understanding of ecological patterns and processes.

Senior lecturer • Sol Plaatje University Department of Biological and Agricultural Sciences • 2019–2020
Teaching undergraduate courses in Zoology and fulfilling various university services. I lead the implementation of the 4th year Biological Sciences programme, which included programme planning and integration, curriculum development, resource organization, budgeting, and staff management and mentoring.

Postdoctoral research fellow • Nelson Mandela University • 2014–2018
2017–2018, assessed the dynamics (conservation, socioeconomics, management) of small elephant populations across South Africa to support policy development for conservation and management; 2014–2016, large collaborative programme that used environmental-DNA to determine the feeding niches and microbiomes of African large herbivores.

Vegetation scientist • South African National Parks • 2013–2014
Lead scientist assessing the long-term influences of large herbivores on vegetation dynamics, including modelling future scenarios. To respond to the need for adaptive monitoring, we combined stakeholder inputs, remote-sensing, and field surveys to derive habitat monitoring thresholds for decision-making.

Lecturer • Nelson Mandela University Department of Zoology • 2009–2018
Teaching of undergraduate and postgraduate courses in Zoology (incl. animal diversity, behaviour, evolution, evolutionary ecology, and biostatistics). Between 2009–2021, I served as academic (co)advisor on 2 PhD, 10 MSc, 16 BSc Hons and 2 undergraduate research programmes, covering work on herbivore-plant, herbivore-herbivore and herbivore-carnivore interactions in African and European ecosystems.

Research scientist • Nelson Mandela University Centre for African Conservation Ecology • 2007–2013
Lead several projects within a larger programme on the effects of megaherbivores on biodiversity. This work focussed primarily on optimal diet and habitat selection, movement dynamics, spatial and temporal interactions with vegetation and fauna, and interactions with ecological processes. Outcomes from this work have contributed towards national debates on managing and monitoring the effects of particularly elephants on biodiversity as is evidenced by contributions to the South African National Elephant Assessment (2008) and the South African Elephant Research Strategy (2014).

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OTHER ACTIVITIES

Member	Southern African Wildlife Management Association	2022–
	Editorial Advisory Board	Forest Ecology and Management	2021–
	South African Rhino Research Strategy Advisory Committee	2019–
	Editorial Board	Mammal Research	2013–
Specialist advisor	Board of Kuzuko Private Game Reserve	2019–

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Marietjie Landman

Registration Number: 147461

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective   7 September 2022   Expires   31 March 2023

_____   _____
Chairperson   Chief Executive Officer

To verify this certificate scan this code

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

PROJECT TITLE

Section 24G rectification process for the clearing of vegetation on Erf 1216 in St Francis Bay, Kouga Municipality, Eastern Cape.

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4.2 The SPECIALIST

I, Marietjie Landman, declare that –

General declaration:

- I act as the independent Specialist in this application

- I 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

- I declare that there are no circumstances that may compromise my objectivity in performing such work;

- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;

- I will comply with the Act, regulations and all other applicable legislation;

- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;

- I have no, and will not engage in, conflicting interests in the undertaking of the activity;

- I 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 will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;

- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by

interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;

- I will keep a register of all interested and affected parties that participated in a public participation process; and

- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not

- all the particulars furnished by me in this form are true and correct;

- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and

- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

_____

_____

Signature of the specialist:

_____

Name of company:

9 January 2022

Date: _____

Signature of the Commissioner of Oaths: _____

2023-01-09
Date: _____

LST
Designation: _____

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