

ABERDEEN WIND FACILITY 1 ANIMAL SPECIES COMPLIANCE STATEMENT



PRODUCED ON BEHALF OF ABERDEEN WIND FACILITY 1 (PTY) LTD



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February 2023

ABERDEEN WIND FACILITY 1

ANIMAL SPECIES COMPLIANCE STATEMENT

EXECUTIVE SUMMARY

Aberdeen Wind Facility 1 (Pty) Ltd are proposing the construction and operation of the 240 MW Aberdeen Wind Facility 1 west of Aberdeen in the Eastern Cape Province. The development is currently in the EIA process and 3Foxes Biodiversity Solutions has been appointed to provide an Animal Species Compliance Statement for the development.

The DFFE Screening Tool identified the site as having medium sensitivity due to the possible presence of Karoo Dwarf Tortoise. The desktop study indicates that several other fauna SCC are known from the broad area and would potentially be present within the affected area. The vegetation of the site consists of Eastern Lower Karoo and Southern Karoo Riviere vegetation types, with few notable features present. The vegetation within the footprint is typical for the area and consists of low shrubland on wide open plains. The field assessment including active searching within areas of potential habitat indicate that there is no suitable habitat for the Karoo Dwarf Tortoise within the site. Furthermore, the field assessment indicates that none of the other fauna SCC that potentially occur in the area are likely to be present within the affected area on account of a lack of suitable habitat. The affected area is therefore considered to be low sensitivity from an Animal Species Theme perspective.

This Animal Species Theme Compliance Statement therefore finds that the footprint of the Aberdeen Wind Facility 1 is restricted to low sensitivity areas with no observed animal species of conservation concern present, and as such, there are no reasons from a terrestrial faunal perspective to oppose the Aberdeen Wind Facility 1.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Aberdeen Wind Facility 1

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	3Foxes Biodiversity Solutions			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Simon Todd			
Specialist Qualifications:	BSc. (Zool. & Bot.), BSc Hons (Zool.), MSc (Cons. Biol.)			
Professional affiliation/registration:	SACNASP 400425/11			
Physical address:	23 De Villiers Road, Kommetjie 7975			
Postal address:	23 De Villiers Road, Kommetjie			
Postal code:	7975	Cell:	082 3326502	
Telephone:		Fax:		
E-mail:	Simon.Todd@3foxes.co.za			

2. DECLARATION BY THE SPECIALIST

I, Simon Todd, declare that –

- 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 the specialist report relevant to this application, 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 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;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

3Foxes Biodiversity Solutions

Name of Company:

25 February 2023

Date:

Aberdeen Wind Facility 1 (PTY) LTD
Aberdeen Wind Facility 1 Animal Species Compliance Statement
Revision No. 1

Prepared by: 3Foxes Biodiversity Solutions

Date: February 2023

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3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Simon Todd, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

3Foxes Biodiversity Solutions

Name of Company

25 February 2023

Date

Signature of the Commissioner of Oaths

Date

SHORT CV/SUMMARY OF EXPERTISE – SIMON TODD

 <p>3Foxes Biodiversity Solutions ECOLOGICAL SPECIALIST SERVICES Assessment/Management/Research</p>	<p>Simon Todd Pr.Sci.Nat Director & Principle Scientist C: 082 3326502 Simon.Todd@3foxes.co.za</p> <p>23 De Villiers Road Kommetjie 7975</p>	<p>Ecological Solutions for People & the Environment</p>
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Simon Todd is Director and principal scientist at 3Foxes Biodiversity Solutions and has over 20 years of experience in biodiversity measurement, management and assessment. He has provided specialist ecological input on more than 200 different developments distributed widely across the country, but with a focus on the three Cape provinces. This includes input on the Wind and Solar SEA (REDZ) as well as the Eskom Grid Infrastructure (EGI) SEA and Karoo Shale Gas SEA. He is on the National Vegetation Map Committee as representative of the Nama and Succulent Karoo Biomes. Simon Todd is a recognised ecological expert and is a past chairman and current deputy chair of the Arid-Zone Ecology Forum. He is registered with the South African Council for Natural Scientific Professions (No. 400425/11).

Skills & Primary Competencies

- Research & description of ecological patterns & processes in Nama Karoo, Succulent Karoo, Thicket, Arid Grassland, Fynbos and Savannah Ecosystems.
- Ecological Impacts of land use on biodiversity
- Vegetation surveys & degradation assessment & mapping
- Long-term vegetation monitoring
- Faunal surveys & assessment.
- GIS & remote sensing

Tertiary Education:

- 1992-1994 – BSc (Botany & Zoology), University of Cape Town
- 1995 – BSc Hons, Cum Laude (Zoology) University of Natal
- 1996-1997- MSc, Cum Laude (Conservation Biology) University of Cape Town

Employment History

- 2009 – Present – Sole Proprietor of Simon Todd Consulting, providing specialist ecological services for development and research.

- 2007 Present – Senior Scientist (Associate) – Plant Conservation Unit, Department of Botany, University of Cape Town.
- 2004-2007 – Senior Scientist (Contract) – Plant Conservation Unit, Department of Botany, University of Cape Town
- 2000-2004 – Specialist Scientist (Contract) - South African National Biodiversity Institute
- 1997 – 1999 – Research Scientist (Contract) – South African National Biodiversity Institute

A selection of recent work is as follows:

Strategic Environmental Assessments

Co-Author. Chapter 7 - Biodiversity & Ecosystems - Shale Gas SEA. CSIR 2016.

Co-Author. Chapter 1 Scenarios and Activities – Shale Gas SEA. CSIR 2016.

Co-Author – Ecological Chapter – Wind and Solar SEA. CSIR 2014.

Co-Author – Ecological Chapter – Eskom Grid Infrastructure SEA. CSIR 2015.

Contributor – Ecological & Conservation components to SKA SEA. CSIR 2017.

Relevant Studies Related to the Current Project Area

- Nuweveld North, East and West WEFs. Fauna & Flora Specialist Study for EIA. Zutari 2021.
- Beaufort West PV Facility. Fauna & Flora Assessment. SiVest Environmental 2022.
- San Solar PV Facility, Kathu. Fauna & Flora Assessment. Savannah Environmental 2022.
- Soventix Phase 3 PV Facility, De Aar. Fauna & Flora Assessment. Ecologes Environmental Consultants, 2022.
- Sadawa PV Facilities, Tankwa Karoo. Fauna & Flora Assessment. Savannah Environmental 2021.
- Kotulo Tsatsi PV 1 Facility near Kenhardt. Fauna & Flora Assessment. Savannah Environmental 2021.
- Hyperion 2 PV Facility, Kathu. Fauna & Flora Assessment. Savannah Environmental 2021.

Atlantic Renewable Energy Partners (Pty) Ltd
ABERDEEN WIND FACILITY 1
Animal Species Compliance Statement

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ABERDEEN WIND FACILITY 1

Animal Species Compliance Statement

1. INTRODUCTION

Aberdeen Wind Facility 1 (Pty) Ltd is proposing to develop the Aberdeen Wind Facility 1 on a ca. 9200 ha site situated about 30km west of Aberdeen within the Eastern Cape. Savannah Environmental are conducting the required EIA process and 3Foxes Biodiversity Solutions has been appointed on behalf of Aberdeen Wind Facility 1 to provide terrestrial faunal inputs for the proposed Aberdeen Wind Facility 1 as part of the BA application. The project involves the development of a wind energy facility with a total generation capacity of approximately 240 MWac electricity from up to 41 wind turbines. The necessary associated infrastructure, including BESS, access roads, substations and control building(s) form a part of this application.

As part of the required studies for the required Basic Assessment application for environmental authorisation, 3Foxes Biodiversity Solutions has been appointed to provide terrestrial ecological input for the development application. The DFFE Screening Tool indicates that the site has medium sensitivity due to the potential presence of the Karoo Dwarf Tortoise *Chersobius boulengeri* (EN) within the project site (Please see relevant SSVR). However, the site verification indicates that there is no suitable habitat for the Karoo Dwarf Tortoise within the development footprint indicating that the site can be considered low sensitivity in terms of this species. Consequently, an Animal Species Compliance Statement is the recommended level of study for the EIA process. To these ends, this Animal Species Compliance Statement for the Aberdeen Wind Facility 1, addresses the potential impacts of the project on fauna species and their associated habitats and must be included in the BA for the development and any mitigation and monitoring measures as identified, must be incorporated into the EMPr for the development.

1.1 Scope and Objectives

In terms of the GN 1150 30 October 2020, *Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(A) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation*, the Terrestrial Animal Species Compliance Statement should include the following details:

- An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of “medium sensitivity” for terrestrial animal species must submit either a Terrestrial Animal Species Specialist Assessment Report or a Terrestrial Animal Species Compliance Statement, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.

- The compliance statement must be prepared by a SACNASP registered specialist under one of the two fields of practice (Zoological Science or Ecological Science).
- The compliance statement must:
 - be applicable within the study area;
 - confirm that the study area is of “low” sensitivity for terrestrial plant species; and
 - indicate whether or not the proposed development will have any impact on SCC.
- The compliance statement must contain, as a minimum, the following information:
 - contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;
 - a signed statement of independence by the specialist;
 - a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
 - a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;
 - where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;
 - a description of the assumptions made and any uncertainties or gaps in knowledge or data;
 - the mean density of observations/ number of samples sites per unit area; and
 - any conditions to which the compliance statement is subjected.
- A signed copy of the Terrestrial Animal Species Compliance Statement must be appended to the Basic Assessment Report or the Environmental Impact Assessment Report.

2. TECHNICAL DESCRIPTION

2.1 Project Description

The Aberdeen Wind Facility 1 is part of the Aberdeen Wind Facilities Cluster and is located approximately 20 km west of Aberdeen in the Eastern Cape. The layout and location of the Aberdeen Wind Facility 1 is illustrated below in Figure 1 and includes up to 41 potential turbine locations with a maximum output of 240 MW. The estimated total permanent footprint of the Aberdeen WEF Wind Facility 1 is estimated at 62ha. The electricity generated by the proposed WEF development will be fed into the national grid. A Battery Energy Storage System (BESS) will be located next to the onsite up to 132kV substation.

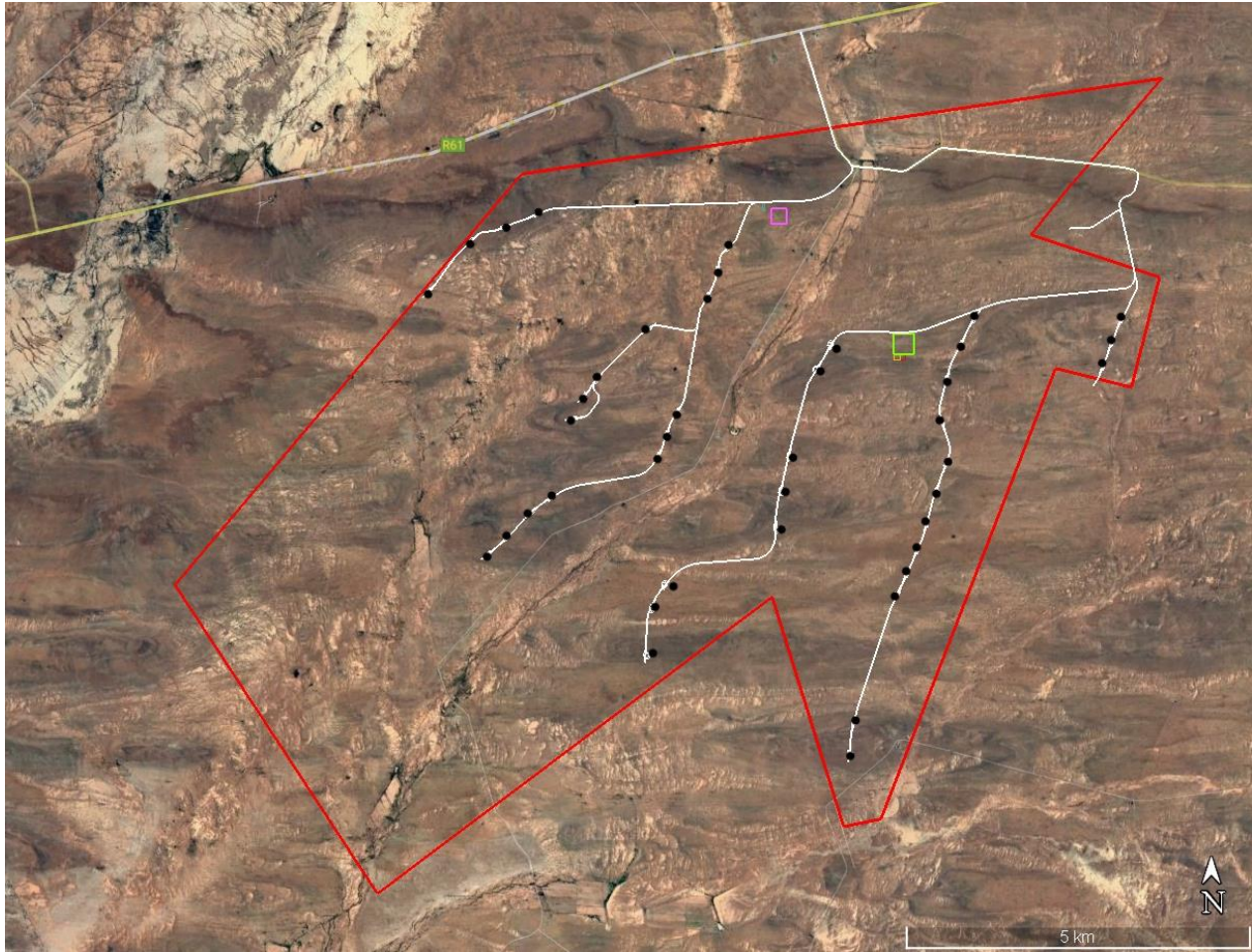


Figure 1. Satellite image showing the layout of the proposed Aberdeen Wind Facility 1, with turbine locations, turbine access roads, substation, battery storage area and laydown area.

3. ASSESSMENT METHODOLOGY

3.1 Site Visit

The Aberdeen Wind Facilities cluster site was visited on two occasions for the current study, from 18-20 March 2022 and 26 August – 02 September 2022. The initial field assessment was used largely to investigate the broad features of the site and the major biodiversity features present. This information was then used to inform a draft sensitivity map of the site. The second field assessment included extensive walk-throughs of sensitive areas, including all rocky outcrops observed. During the walked transects conducted across the site, all animal species directly or indirectly observed were recorded. Within habitats likely to harbour species of concern, active searches were conducted which included looking under rocks, within dense bushes and other shelter sites. In addition, specific attention to the presence of dead tortoise carapaces was paid as this is frequently the only sign of less common species (such as Karoo Dwarf Tortoise) that can readily be observed. If present, sensitive species locations and habitats within the footprint were recorded and mapped with a GPS. The track that was sampled through the Aberdeen Wind Facility 1 project area includes driven roads in excess of 50km and an additional walked track in excess of 10km (Figure 2).

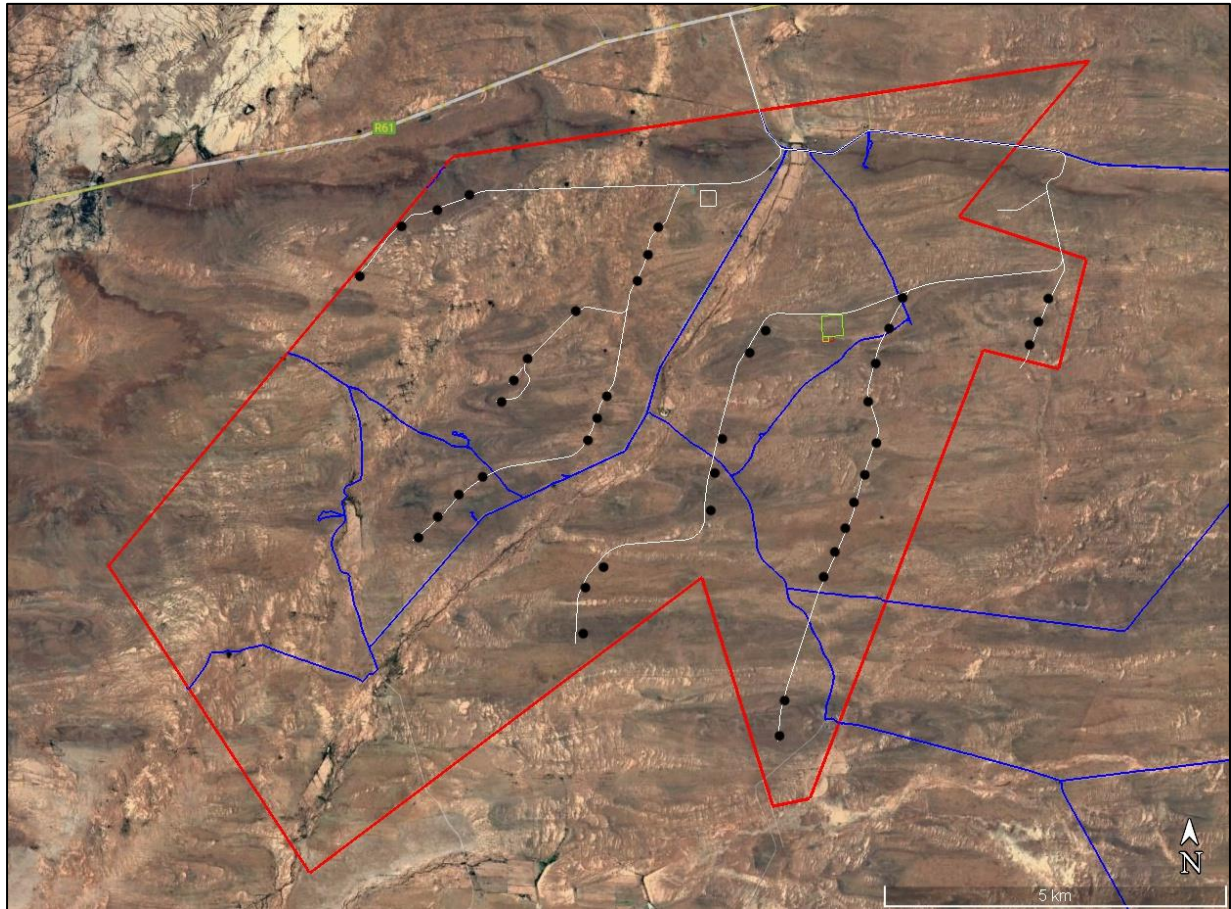


Figure 2. Map showing the sampling track (blue line) that was driven and walked through the Aberdeen Wind Facility 1 project area.

3.2 Data Sourcing and Review

Data sources from the literature consulted and used where necessary in the study includes the following:

- The following web-based sources were searched for faunal records from the broad area:
- Virtual Museum ReptileMap, MammalMap and FrogMap databases https://vmus.adu.org.za/vm_projects.php
- iNaturalist citizen science site <https://www.inaturalist.org/>
- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and the ADU databases (ReptileMap, Frogmap and MammalMap) <http://vmus.adu.org.za>.
- Literature consulted includes Branch (1988) and Alexander and Marais (2007) for reptiles, Du Preez and Carruthers (2009) for amphibians, EWT & SANBI (2016) and Skinner and Chimimba (2005) for mammals.

- The faunal species considered likely to occur at the site are based on species which are known to occur in the broad geographical area, as well as an assessment of the availability and quality of suitable habitat at the site.
- The conservation status of mammals is based on the IUCN Red List Categories (EWT/SANBI 2016), while reptiles are based on the South African Reptile Conservation Assessment (Bates et al. 2013) and amphibians on Minter et al. (2004) as well as the IUCN (2022).

4. ASSUMPTIONS AND LIMITATIONS

A number of limitations and assumptions are inherent in faunal studies generally and with the assessment of rare fauna. These include the following:

- It is not possible to confirm the absence of a species with 100% certainty. A species may be absent from an area during sampling but may move through the area occasionally or seasonally.
- Some species are rare or difficult to locate and it may be very difficult to confirm either the absence or presence of such species without long-term studies.
- The presence of such species is assessed in the current study based on observations of such species from the wider area in the various publicly available databases and citizen science websites (Virtual Museum & iNaturalist), as well as the habitat suitability, quality and condition as observed in the field.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The Aberdeen Wind Facility 1 footprint falls almost entirely within the Eastern Lower Karoo vegetation type with a small extent of Southern Karoo Riviere along the Gannaleegte River in the south of the site (**Error! Reference source not found.**). Although there is some variation in vegetation composition within the site depending on soil depth, underlying geology and rockiness, these differences represent different communities rather than different vegetation types. No unusual habitats or plant communities were observed within the site.

In terms of the fauna that potentially occur at the site, the potential diversity is considered to be moderate and numbers approximately 44 mammals of which 26 are either confirmed present or considered likely to be present, 45 reptiles of which approximately 20 are confirmed present or likely to be present and 13 frogs and toads of which at least 7 are confirmed or likely present (See Appendix 1-3). Mammals observed at the site directly or indirectly include Springbok, Steenbok, Kudu, Aardvark, Cape Hare, Springhare, Cape Porcupine, Suricate, African Wildcat, African Polecat, Bat-eared Fox, Cape Fox, Cape Mongoose, Yellow Mongoose, Common Genet, Aardwolf and Black-backed Jackal. Two red-listed mammal species are known from the area, the Black-footed Cat *Felis nigripes* (VU) and Mountain Reedbuck *Redunca fulvorufula* (EN). The Mountain Reedbuck occurs in the wider area but as there is no suitable habitat for this species within the site,

the site is considered low sensitivity for the Mountain Reedbuck and it is confirmed as absent from the site. The Black-footed Cat is also known from occasional records from the wider area but prefers areas with a mix of more open and higher cover areas. As this is a shy and secretive species, it is difficult to confirm as absent or present within a site. However, given the generally sparse cover at the site, it is considered to have a low favourableness for this species and as a result, the site is considered low sensitivity for the Black-footed Cat (**Table 1**). No other mammals of concern were observed at the site and it is unlikely that any such species are present.

Reptiles and amphibians observed on the site or in the immediate environment include Leopard Tortoise, Angulate Tortoise, Namaqua Sand Lizard, Southern Rock Agama, Spotted Gecko, Variegated Skink, Ground Agama, Common Caco, Giant Bullfrog and Karoo Toad. The Karoo Dwarf is the only reptile species of potential concern that may occur at the site. In terms of the Karoo Dwarf Tortoise, there is no suitable habitat within the development footprint for this species. The Karoo Dwarf Tortoise *Chersobius boulengeri* usually occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes, and peripherally in the Albany Thicket biome in the southeast, at altitudes of approximately 800 to 1,500 m. The vegetation usually consists of dwarf shrubland that often contains succulent and grassy elements. The tortoises usually take shelter under rocks in vegetated areas or in rock crevices. However, they are quite specific in terms of their requirements with the result that suitable retreats for individuals of this species are not common. Due to their strong habitat association, populations are isolated on rocky outcrops with specialized vegetation (Hofmeyr et al. 2018). The typical dolerite outcrops associated with this species do not occur within the wind farm project area and there are no other significant rocky outcrops present within the site that would be likely to offer sufficient shelter for this species. As such, it is concluded that the Aberdeen Wind Facility 1 area can be considered low sensitivity for this species.



Figure 3. Looking out over the Aberdeen Wind Facility 1 site from one of the low ridges that occur within the site, showing the overall homogenous nature of the site.

Table 1. Faunal species conservation concern known from the broad area, and their likely presence within the site.

Species	Wider area	Aberdeen WEF 1 WEF
Mountain Reedbuck (NT)	Confirmed present on the mountainous terrain north of the site.	Not observed within the Aberdeen Wind Facility 1 site. The Aberdeen Wind Facility 1 site is considered low sensitivity for this species.
Black-footed Cat (VU)	Previously recorded occasionally from the wider area. But the shy and secretive nature of this species makes it difficult to confirm absence or presence within an area.	The regular presence of this species within the site is considered unlikely. The site is considered low sensitivity for this species.
Karoo Dwarf Tortoise (NT)	Occasional records from the broad area. Associated with dolerite outcrops.	Considered highly unlikely to be present as there are no dolerite outcrops present that would represent suitable habitat for this species.



Figure 4. Reptiles and amphibians observed at the site include from top right, Cammon Caco, Southern Rock Agama, Giant Bullfrog, Angulate Tortoise, Leopard Tortoise.

6. PROPOSED MITIGATION ACTIONS

The following avoidance and mitigation measures should be included in the EMPr for the Aberdeen Wind Facility 1 in order to avoid, reduce and manage impacts on fauna and associated habitats:

- All vehicles should adhere to a low speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h.
- Driving to the from the site between sunset and sunrise should be minimised and restricted to essential vehicles only.
- All laydown areas, construction sites etc with waste disposal bins, should be provided with lockable bins that are tamper proof by baboons, monkeys and other fauna.
- Search and rescue for reptiles and other vulnerable species during construction, before areas of intact vegetation are cleared. Such search and rescue should be conducted by relevant experts with experience in search and rescue of the faunal groups concerned.
- Limiting access to the site and ensuring that construction staff and machinery remain within the demarcated construction areas during the construction phase. Environmental induction for all staff and contractors on-site.
- No excavated holes or trenches should be left open for extended periods as fauna may fall in become trapped.
- The design should ensure that there is no electrical fencing around substations (and associated battery facilities) or other features within 30cm of the ground as tortoises become stuck against such fences and are electrocuted to death. Alternatively, a guard wire set at 20cm can be used to keep larger tortoises away from the fence.

The following monitoring and management actions should be included in the EMPr:

- A log should be kept detailing all fauna-related incidences or mortalities that occur on site, including roadkill, electrocutions etc. during construction and operation. These should be reviewed annually and used to inform operational management and mitigation measures.

6.1 Cumulative Impacts

Cumulative impacts associated with the Aberdeen Wind Facility 1 are assessed in the Terrestrial Biodiversity Assessment and are not assessed in detail here. From a faunal species and associated habitat perspective, the Aberdeen Wind Facility 1 would have very low impact on fauna SCC and the broader area has been little impacted by renewable energy development to date. As a result, the contribution of the Aberdeen Wind Facility 1 to cumulative impact on fauna is considered acceptable.

7. COMPARATIVE ASSESSMENT OF ALTERNATIVES

There are no alternatives to be considered with regards to the Aberdeen Wind Facility 1.

7.1 No-Go Alternative

Under the no-go alternative, the current land use consisting of extensive livestock grazing would continue. When applied correctly, such livestock grazing is considered to be largely compatible with long-term biodiversity conservation, although in practice there are some negative effects associated with such land use such as predator control and negative impacts on habitat availability for the larger ungulates that would historically have utilized the area. Under the current circumstances, the no-go alternative is considered to represent a low long-term negative impact on the environment, but has less impact than the loss of habitat resulting from the construction of the wind energy facility.

8. CONCLUSION

- This compliance statement is applicable to the Aberdeen Wind Facility 1 development with specific reference to the layout as provided for the assessment.
- Although the DFFE Screening Tool identified the site as having medium sensitivity due to the possible presence of the Karoo Dwarf Tortoise, the field assessment indicates that there is no suitable habitat within or near the footprint area for this species and therefore the specialist disputes the findings of the screening tool.
- A desktop analysis indicates that there are a few other fauna of concern that are confirmed present in the wider area. However, interrogation of the available information and the observed features of the wind farm project area indicates that none of these species are likely to occur within the affected area.
- Given the above results, the site is therefore considered low sensitivity from an Animal Species Theme perspective.

8.1 Impact Statement

The footprint of the Aberdeen Wind Facility 1 is restricted to low sensitivity areas with no observed faunal species of conservation concern present or likely to be present. As such, from a faunal species perspective there are no reasons to oppose the Aberdeen Wind Facility 1.

9. REFERENCES

- Alexander, G. & Marais, J. 2007. A Guide to the Reptiles of Southern Africa. Struik Nature, Cape Town.
- Branch W.R. 1998. Field guide to snakes and other reptiles of southern Africa. Struik, Cape Town.
- Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J. & de Villiers, M. S. 2013. Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. Strelitzia 32. SANBI, Pretoria.
- Department of Environmental Affairs and Tourism, 2007. National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of lists of Critically Endangered, Endangered, Vulnerable and Protected Species. Government Gazette, Republic of South Africa.
- Du Preez, L. & Carruthers, V. 2009. A Complete Guide to the Frogs of Southern Africa. Struik Nature., Cape Town.
- Minter LR, Burger M, Harrison JA, Braack HH, Bishop PJ & Kloepfer D (eds). 2004. Atlas and Red Data book of the frogs of South Africa, Lesotho and Swaziland. SI/MAB Series no. 9. Smithsonian Institution, Washington, D.C.
- Mucina L. & Rutherford M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Skinner, J.D. & Chimimba, C.T. 2005. The mammals of the Southern African Subregion. Cambridge University Press, Cambridge.

Annex 1. List of Mammals

List of mammals known to occur in the broader area based on the MammalMap database for the quarter degree squares 3223BC, 3223BD, 3223DA, 3223DB, 3224CA, 3224CB, 3223DC, 3223DD, 3223CB, 3224DA, 3224AC, 3224AD, 3224BC, 3224DB.

Family	Scientific name	Common name	Red list category	Number of records
Bovidae	<i>Antidorcas marsupialis</i>	Springbok	Least Concern (2016)	3
Bovidae	<i>Oreotragus oreotragus</i>	Klipspringer	Least Concern (2016)	2
Bovidae	<i>Oryx gazella</i>	Gemsbok	Least Concern (2016)	1
Bovidae	<i>Raphicerus campestris</i>	Steenbok	Least Concern (2016)	4
Bovidae	<i>Redunca fulvorufula</i>	Mountain Reedbuck	Vulnerable (2016)	2
Bovidae	<i>Sylvicapra grimmia</i>	Bush Duiker	Least Concern (2016)	2
Bovidae	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern (2016)	1
Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern (2016)	1
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	Least Concern (2016)	2
Canidae	<i>Vulpes chama</i>	Cape Fox	Least Concern (2016)	1
Cercopithecidae	<i>Chlorocebus pygerythrus</i>	Vervet Monkey	Least Concern (2016)	1
Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	LC (IUCN, 2016)	3
Felidae	<i>Caracal caracal</i>	Caracal	Least Concern (2016)	1
Felidae	<i>Felis nigripes</i>	Black-footed Cat	Vulnerable (2016)	7
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern (2016)	1
Herpestidae	<i>Herpestes pulverulentus</i>	Cape Gray Mongoose	Least Concern (2016)	1
Herpestidae	<i>Suricata suricatta</i>	Meerkat	Least Concern (2016)	1
Hyaenidae	<i>Proteles cristata</i>	Aardwolf	Least Concern (2016)	3
Hystriidae	<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern	2
Leporidae	<i>Lepus capensis</i>	Cape Hare	Least Concern	1
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern	2
Leporidae	<i>Pronolagus rupestris</i>	Smith's Red Rock Hare	Least Concern (2016)	1
Leporidae	<i>Pronolagus saundersiae</i>	Hewitt's Red Rock Rabbit	Least Concern (2016)	1
Macroscelididae	<i>Elephantulus edwardii</i>	Cape Elephant Shrew	Least Concern (2016)	1

Macroscelididae	<i>Macroscelides proboscideus</i>	Short-eared Elephant Shrew	Least Concern (2016)	3
Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern	1
Muridae	<i>Desmodillus auricularis</i>	Cape Short-tailed Gerbil	Least Concern (2016)	2
Muridae	<i>Gerbilliscus paeba</i>	Paeba Hairy-footed Gerbil	Least Concern (2016)	3
Muridae	<i>Mus (Nannomys) minutoides</i>	Southern African Pygmy Mouse	Least Concern	1
Muridae	<i>Mus (Mus) musculus</i>	House Mouse	Least Concern	1
Muridae	<i>Otomys unisulcatus</i>	Karoo Bush Rat	Least Concern (2016)	2
Muridae	<i>Parotomys brantsii</i>	Brants's Whistling Rat	Least Concern (2016)	2
Muridae	<i>Rhabdomys pumilio</i>	Xeric Four-striped Grass Rat	Least Concern (2016)	4
Mustelidae	<i>Ictonyx striatus</i>	Striped Polecat	Least Concern (2016)	1
Mustelidae	<i>Mellivora capensis</i>	Honey Badger	Least Concern (2016)	1
Nesomyidae	<i>Malacothrix typica</i>	Large-eared African Desert Mouse	Least Concern (2016)	1
Orycteropodidae	<i>Orycteropus afer</i>	Aardvark	Least Concern (2016)	2
Pedetidae	<i>Pedetes capensis</i>	South African Spring Hare	Least Concern (2016)	1
Procaviidae	<i>Procavia capensis capensis</i>	Cape Rock Hyrax	Least Concern	1
Sciuridae	<i>Xerus inauris</i>	South African Ground Squirrel	Least Concern	3
Soricidae	<i>Crocidura cyanea</i>	Reddish-gray Musk Shrew	Least Concern (2016)	2
Soricidae	<i>Crocidura flavescens</i>	Greater Red Musk Shrew	Least Concern (2016)	2
Soricidae	<i>Myosorex varius</i>	Forest Shrew	Least Concern (2016)	2
Viverridae	<i>Genetta genetta</i>	Common Genet	Least Concern (2016)	2

Annex 2. List of Reptiles

List of reptiles known to occur in the broader area based on the ReptileMap database for the quarter degree squares 3223BC, 3223BD, 3223DA, 3223DB, 3224CA, 3224CB, 3223DC, 3223DD, 3223CB, 3224DA, 3224AC, 3224AD, 3224BC, 3224DB.

Family	Scientific name	Common name	Red list	Number of records
			category	
Agamidae	<i>Agama aculeata aculeata</i>	Common Ground Agama	Least Concern	10
Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern	23
Chamaeleonidae	<i>Bradypodion ventrale</i>	Eastern Cape Dwarf Chameleon	Least Concern	18
Cordylidae	<i>Cordylus cordylus</i>	Cape Girdled Lizard	Least Concern	7
Cordylidae	<i>Karusasaurus polyzonus</i>	Karoo Girdled Lizard	Least Concern	3
Cordylidae	<i>Pseudocordylus microlepidotus fasciatus</i>	Karoo Crag Lizard	Least Concern	15
Elapidae	<i>Aspidelaps lubricus lubricus</i>	Coral Shield Cobra	Least Concern	8
Elapidae	<i>Naja nivea</i>	Cape Cobra	Least Concern	3
Gekkonidae	<i>Afroedura karroica</i>	Karoo Flat Gecko	Least Concern	21
Gekkonidae	<i>Chondrodactylus angulifer</i>	Giant Ground Gecko	Least Concern	1
Gekkonidae	<i>Chondrodactylus bibronii</i>	Bibron's Gecko	Least Concern	13
Gekkonidae	<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern	3
Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern	2
Gekkonidae	<i>Pachydactylus maculatus</i>	Spotted Gecko	Least Concern	19
Gekkonidae	<i>Pachydactylus mariquensis</i>	Marico Gecko	Least Concern	5
Gekkonidae	<i>Ptenopus garrulus maculatus</i>	Spotted Barking Gecko	Least Concern	2
Gerrhosauridae	<i>Gerrhosaurus typicus</i>	Karoo Plated Lizard	Least Concern	5
Lacertidae	<i>Pedioplanis burchelli</i>	Burchell's Sand Lizard	Least Concern	2
Lacertidae	<i>Pedioplanis laticeps</i>	Karoo Sand Lizard	Least Concern	1
Lacertidae	<i>Pedioplanis lineoocellata pulchella</i>	Common Sand Lizard	Least Concern	4
Lacertidae	<i>Pedioplanis namaquensis</i>	Namaqua Sand Lizard	Least Concern	11
Lamprophiidae	<i>Boaedon capensis</i>	Brown House Snake	Least Concern	5
Lamprophiidae	<i>Duberria lutrix lutrix</i>	South African Slug-eater	Least Concern	1
Lamprophiidae	<i>Homoroselaps lacteus</i>	Spotted Harlequin Snake	Least Concern	2
Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern	1

Lamprophiidae	<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout	Least Concern	1
Lamprophiidae	<i>Psammophis crucifer</i>	Cross-marked Grass Snake	Least Concern	1
Lamprophiidae	<i>Psammophis notostictus</i>	Karoo Sand Snake	Least Concern	4
Lamprophiidae	<i>Psammophylax rhombeatus</i>	Spotted Grass Snake	Least Concern	5
Lamprophiidae	<i>Pseudaspis cana</i>	Mole Snake	Least Concern	2
Pelomedusidae	<i>Pelomedusa galeata</i>	South African Marsh Terrapin	Not evaluated	2
Scincidae	<i>Acontias meleagris</i>	Cape Legless Skink	Least Concern	2
Scincidae	<i>Trachylepis capensis</i>	Cape Skink	Least Concern	2
Scincidae	<i>Trachylepis sulcata sulcata</i>	Western Rock Skink	Least Concern	7
Scincidae	<i>Trachylepis variegata</i>	Variiegated Skink	Least Concern	8
Testudinidae	<i>Chersina angulata</i>	Angulate Tortoise	Least Concern	20
Testudinidae	<i>Chersobius boulengeri</i>	Karoo Padloper	Near Threatened	7
Testudinidae	<i>Homopus femoralis</i>	Greater Padloper	Least Concern	1
Testudinidae	<i>Psammobates tentorius subsp. ?</i>	Tent Tortoise (subsp. ?)	Least Concern	25
Testudinidae	<i>Psammobates tentorius tentorius</i>	Karoo Tent Tortoise		60
Testudinidae	<i>Psammobates tentorius trimeni</i>	Namaqua Tent Tortoise	Endangered	1
Testudinidae	<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern	31
Typhlopidae	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern	5
Varanidae	<i>Varanus albigularis albigularis</i>	Rock Monitor	Least Concern	7
Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern	2

Annex 3. List of Amphibians

List of Amphibians known to occur in the broader area based on the FrogMap database for the quarter degree squares 3223BC, 3223BD, 3223DA, 3223DB, 3224CA, 3224CB, 3223DC, 3223DD, 3223CB, 3224DA, 3224AC, 3224AD, 3224BC, 3224DB. 3122DD.

Family	Scientific name	Common name	Red list	Number of
			category	records
Bufo	<i>Poyntonophrynus vertebralis</i>	Southern Pygmy Toad	Least Concern	7
Bufo	<i>Vandijkophrynus gariensis</i>	Karoo Toad (subsp. gariensis)		15
Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern	8
Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern	4
Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)	1
Pyxicephalidae	<i>Amietia fuscigula</i>	Cape River Frog	Least Concern (2017)	16
Pyxicephalidae	<i>Amietia poyntoni</i>	Poynton's River Frog	Least Concern (2017)	5
Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)	49
Pyxicephalidae	<i>Cacosternum nanum</i>	Bronze Caco	Least Concern (2013)	1
Pyxicephalidae	<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Near Threatened	3
Pyxicephalidae	<i>Strongylopus grayii</i>	Clicking Stream Frog	Least Concern	1
Pyxicephalidae	<i>Tomopterna delalandii</i>	Cape Sand Frog	Least Concern	1
Pyxicephalidae	<i>Tomopterna tandyi</i>	Tandy's Sand Frog	Least Concern	5