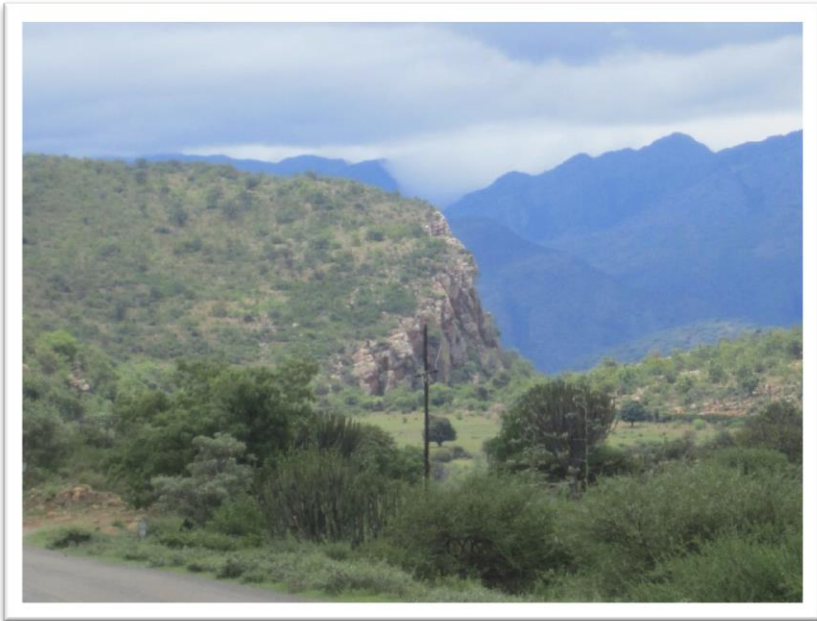


FOSKOR – MERENSKY 400KV POWER LINE

AVIFAUNAL SPECIALIST STUDY



January 2013 (amended to 400KV February 2017)

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EXECUTIVE SUMMARY

Eskom have identified a need to strengthen the network between the existing Foskor Substation near Phalaborwa, and the existing Merensky Substation near Steelpoort. The proposed project consists of approximately 130km of new 400kV overhead power line between the above two localities. Eskom appointed Nsovo Environmental Consulting to conduct the necessary Environmental Impact Assessment. Since a project of this type has the potential to impact significantly on birds, WildSkies Ecological Services (Jon Smallie) was appointed to conduct an avifaunal specialist study for the project. **This project was assessed as a 275kV line in 2012-2013, with several route alternatives. In February 2017 this report was amended to assess a 400kV power line on the approved route only.** All relevant bird information was consulted again and updated to provide an updated assessment, bearing in mind that the project is essentially already authorized.

A project of this nature has the potential to impact on avifauna through: habitat destruction and disturbance of birds (both during construction predominantly); and collision of birds with the overhead cables during the operational phase. Birds are also able to cause electrical faults on the power line, through mechanisms explained in this report.

The study area is home to an exceptionally broad diversity of bird species, up to 439 species having been recorded by the first Southern African Bird Atlas Project (Harrison *et al*, 1997; www.sabap2.adu.org.za). A large number of these (45 species) are Red Listed species (Taylor *et al*, 2015), and many of these will in fact be at risk of interaction with the proposed power line. The likelihood and implication of these interactions has been assessed by this study. Most of the vulture and large eagle species identified as key for this study do not have healthy populations in South Africa outside of protected areas. The lowveld protected area complex, adjoining to the Kruger National Park, is therefore an extremely important refuge for these species. The same is true for some of the stork species. This makes it extremely important to protect these species from additional human induced threats within these areas. Presumably these species' ranges have contracted over the years to their current state as a result of anthropogenic threats. If these threats are allowed to occur at high levels within the current ranges we could force even more range contraction and place these species at risk of local extinction. In addition to the lowveld area, the escarpment is also extremely important, due to the presence of breeding Taita Falcons *Falco faschiinucha* and Cape Vultures *Gyps coprotheres*, amongst many other species. Most of the escarpment is designated as Important Bird & Biodiversity Area status, and should be considered as extremely sensitive. It is therefore imperative that this area be handled carefully with respect to this power line.

The impact of collision of certain bird species with the overhead cables (in particular the earth wires) has been judged to be of medium significance. This can be reduced to low significance with mitigation. In order to implement effective mitigation measures it will be necessary to conduct an avifaunal walk through as part of the site specific Environmental Management Plan (EMP). It is also essential that sufficient time be budgeted for in order to do a thorough job with the walk through. This exercise will identify those exact spans of the power line that require mitigation. Generically speaking the key areas are likely to be river crossings, wetlands, dams and the main escarpment. Some of these areas will require extensive mitigation due to the high risk of collisions.

Destruction and alteration of habitat will be of medium significance. Since this is difficult to mitigate for (a certain amount of vegetation has to be removed or altered) it is not possible to reduce this to low significance with mitigation.

Disturbance of birds is judged to be of low significance. However, if threatened raptors are found to breed close to the alignment during the above recommended avifaunal walk through this would change, and would require case specific management.

The risk of electrical faulting caused by birds is judged to be of medium significance. This is however an impact on the business, not the birds, and is best mitigated reactively if a problem is identified once the line is operational. Those towers that will obviously require Bird Guards installed will be identified during the avifaunal walk through.

This proposed power line route passes through an area that is rich in avifauna, due to its varied geology and vegetation, and the protected status of much of the land (by virtue of game farming). This means that the potential interactions of birds with the power line are likely to be significant. However, given that a power line of this size has to be built between these two substations (we assume that effective network planning has been conducted), the approved route is as wise as possible with respect to avifauna. The upgrade of the voltage from the previously authorized 275kV line to the current proposed 400kV line does not make a material difference to the impacts on avifauna in our view.

The issue of building new transmission power lines near Cape Vulture *Gyps coprotheres* breeding colonies is worthy of discussion here. Although little data exists on Cape Vulture collisions with overhead power lines to date, it is considered likely that where vultures congregate for any reason (such as at colonies) close to power lines birds are likely to collide with the overhead cables. Unfortunately to date little data in this regard exists, due partly to the lack of focused efforts to systematically patrol such power lines. It is recommended that Eskom give this matter urgent attention and preferably initiate a national programme

to monitor existing power lines close to colonies. The findings from such a programme will facilitate more informed impact assessments for power lines in such situations in the future.

If the recommendations of this report are adhered to, this project can proceed.

SPECIALIST DETAILS

Professional registration

The Natural Scientific Professions Act of 2003 aims to “Provide for the establishment of the South African Council of Natural Scientific Professions (SACNASP) and for the registration of professional, candidate and certified natural scientists; and to provide for matters connected therewith.”

“Only a registered person may practice in a consulting capacity” – Natural Scientific Professions Act of 2003 (20(1)-pg 14)

Investigator:	Jon Smallie (Pri.Sci.Nat)
Qualification:	BSc (Hons) Wildlife Science – University of Natal MSc Environmental Science – University of Witwatersrand
Affiliation:	South African Council for Natural Scientific Professions
Registration number:	400020/06
Fields of Expertise:	Ecological Science
Registration:	Professional Member

Professional experience

Jon Smallie has been involved in bird interactions with energy infrastructure for 17 years. During this time he has completed impact assessments for at least 100 projects, many of which have been transmission power lines. A full *Curriculum Vitae* can be supplied on request.

Declaration of Independence

The specialist investigator declares that:

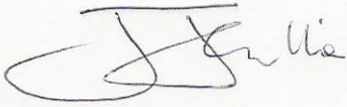
- » We act as an independent specialist for this project.
- » We consider ourselves bound by the rules and ethics of the South African Council for Natural Scientific Professions.
- » We do not have any personal or financial interest in the project except for financial compensation for specialist investigations completed in a professional capacity as specified by the National Environmental Management Act - Environmental Impact Assessment Regulations, 2014.
- » We will not be affected by the outcome of the environmental process, of which this report forms part of.
- » We do not have any influence over the decisions made by the governing authorities.

- » We do not object to or endorse the proposed developments, but aim to present facts and our best scientific and professional opinion with regard to the impacts of the development.
- » We undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan, or document required in terms of the National Environmental Management Act - Environmental Impact Assessment Regulations, 2014.

Terms and Liabilities

- » This report is based on a short term investigation using the available information and data related to the site to be affected. No long term investigation or monitoring was conducted.
- » The Precautionary Principle has been applied throughout this investigation.
- » Additional information may become known or available during a later stage of the process for which no allowance could have been made at the time of this report.
- » The specialist investigator reserves the right to amend this report, recommendations and conclusions at any stage should additional information become available.
- » Information, recommendations and conclusions in this report cannot be applied to any other area without proper investigation.
- » This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist investigator as specified above.
- » Acceptance of this report, in any physical or digital form, serves to confirm acknowledgment of these terms and liabilities.

Signed on the 20th February 2017 by Jon Smallie in his capacity as specialist investigator.

A handwritten signature in black ink, appearing to read 'Jon Smallie', is written on a light-colored rectangular background.

1. INTRODUCTION & BACKGROUND

Eskom have identified a need to strengthen the network between the existing Foskor Substation near Phalaborwa, and the existing Merensky Substation near Steelpoort. The proposed project consists of approximately 130km of new 400kV overhead power line between the above two localities. Eskom appointed Nsovo Environmental Consulting to conduct the necessary Environmental Impact Assessment. Since a project of this type has potential to impact significantly on birds, WildSkies Ecological Services (Jon Smallie) was appointed to conduct an avifaunal specialist study for the project.

This project was assessed as a 275kV line in 2012-2013 and approved by the DEA. In February 2017 this report was amended to assess the proposed upgrade from a 275kV to 400kV power line on the approved route. The relevant avifaunal information was consulted again and updated for the purpose of this report, bearing in mind that is already authorised.

A project of this nature has the potential to impact on avifauna through: habitat destruction and disturbance of birds (both during construction); and collision of birds with the overhead cables during the operational phase. Birds are also able to cause electrical faults on the power line, through mechanisms explained elsewhere in this report.

The study area is home to an exceptionally broad diversity of bird species, up to approximately 539 species having been recorded by the first and second Southern African Bird Atlas Projects (Harrison *et al*, 1997; and www.sabap2.adu.org.za). A large number of these (48 species) are Red Listed species (Taylor *et al*, 2015), and many of these will in fact be at risk of interaction with the proposed power line. Two key issues for this project are the presence of the large Cape Vulture *Gyps coprotheres* breeding colony at Manoutsa, and a breeding pair of Taita Falcon *Falco fasciinucha* – both on the escarpment close to where the proposed power lines must descend. The likelihood and implication of these interactions has been assessed by this study.

1.1. Terms of reference

The following terms of reference were utilized for this study:

- » Present the status quo of avifauna in the area.
- » Identify and discuss avifaunal impacts and rate them according to a specified methodology.
- » Identify and provide mitigation measures for each impact.

- » Conclude with a recommendation on whether the project should proceed or not and if so to what extent avifauna will be impacted upon.

1.2. Description of proposed project

The proposed power line is approximately 130km in length and will be 400kV. There were four proposed alternative corridors for the power line, as shown in Figure 1. Later in the project two expanded corridors were added as shown in Figure 2. Finally, under the 2013 EIA, the route shown in Figure 3 below was approved for a 275kV power line.

Various possible tower structure designs have been received from Nsovo. These include a self-supporting tower; cross rope suspension tower; and guyed V tower type. Since a line of this size (voltage) cannot electrocute birds, the only implications that the tower structure has for birds is in determining the risk of electrical faulting caused by birds. If the tower structure provides suitable perching space directly above the live conductors there is a strong likelihood that birds will cause faults on the line, as explained elsewhere in this report. The cross rope suspension tower design does not provide much perching space for birds above conductors and so is better in this regard.

The original 275kV power line would have required a servitude of 47m width, whilst the new proposed 400kV line would require 55m. The 400kV towers will be slightly higher, and wider than those used for a 275kV line. This will not make any difference to the impacts on birds in our view.

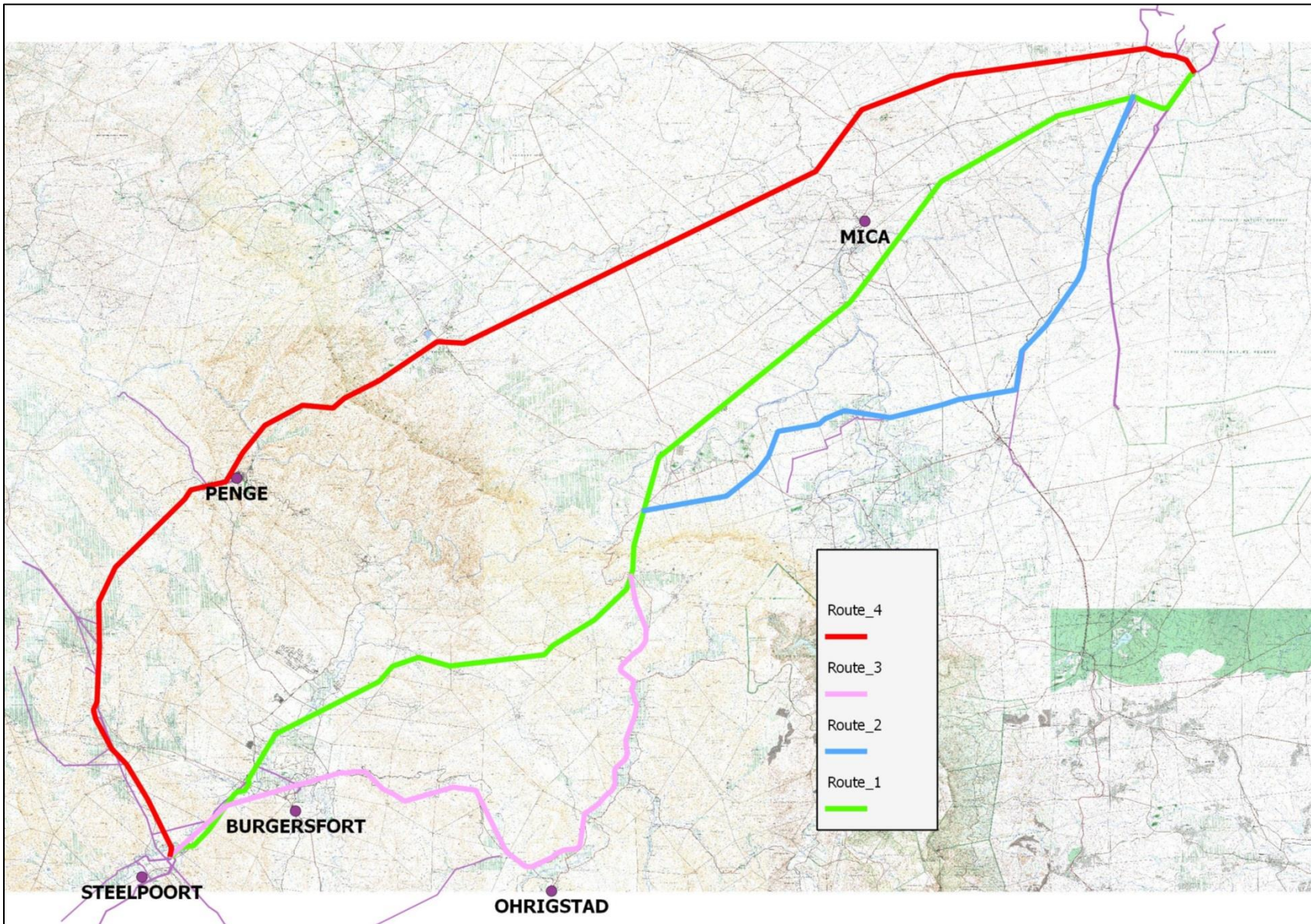


Figure 1. The general study area and proposed routes for the Foskor Merensky 400kV power line.

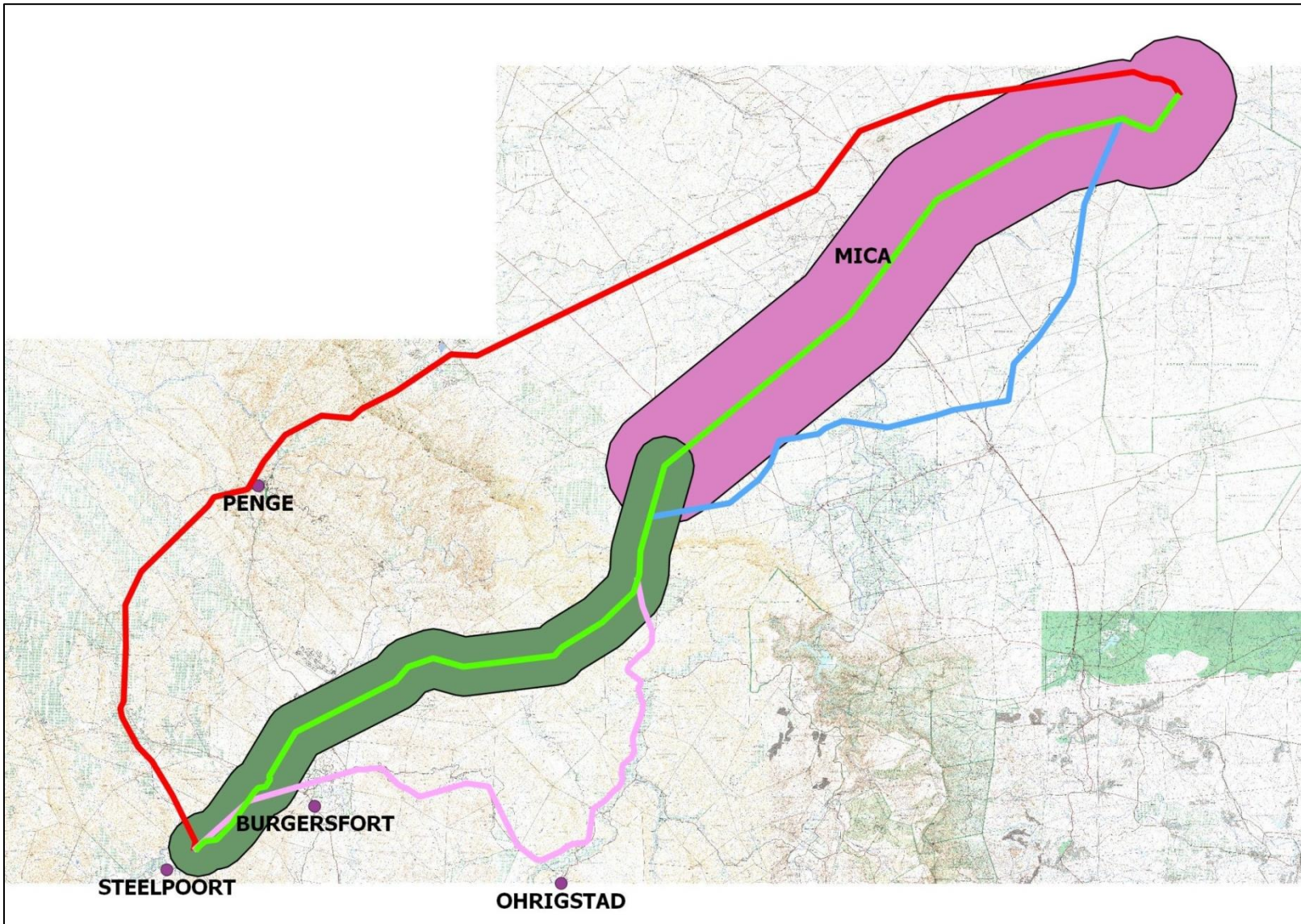


Figure 2. The general study area and proposed routes for the Foskor Merensky 400kV power line – with corridors added.

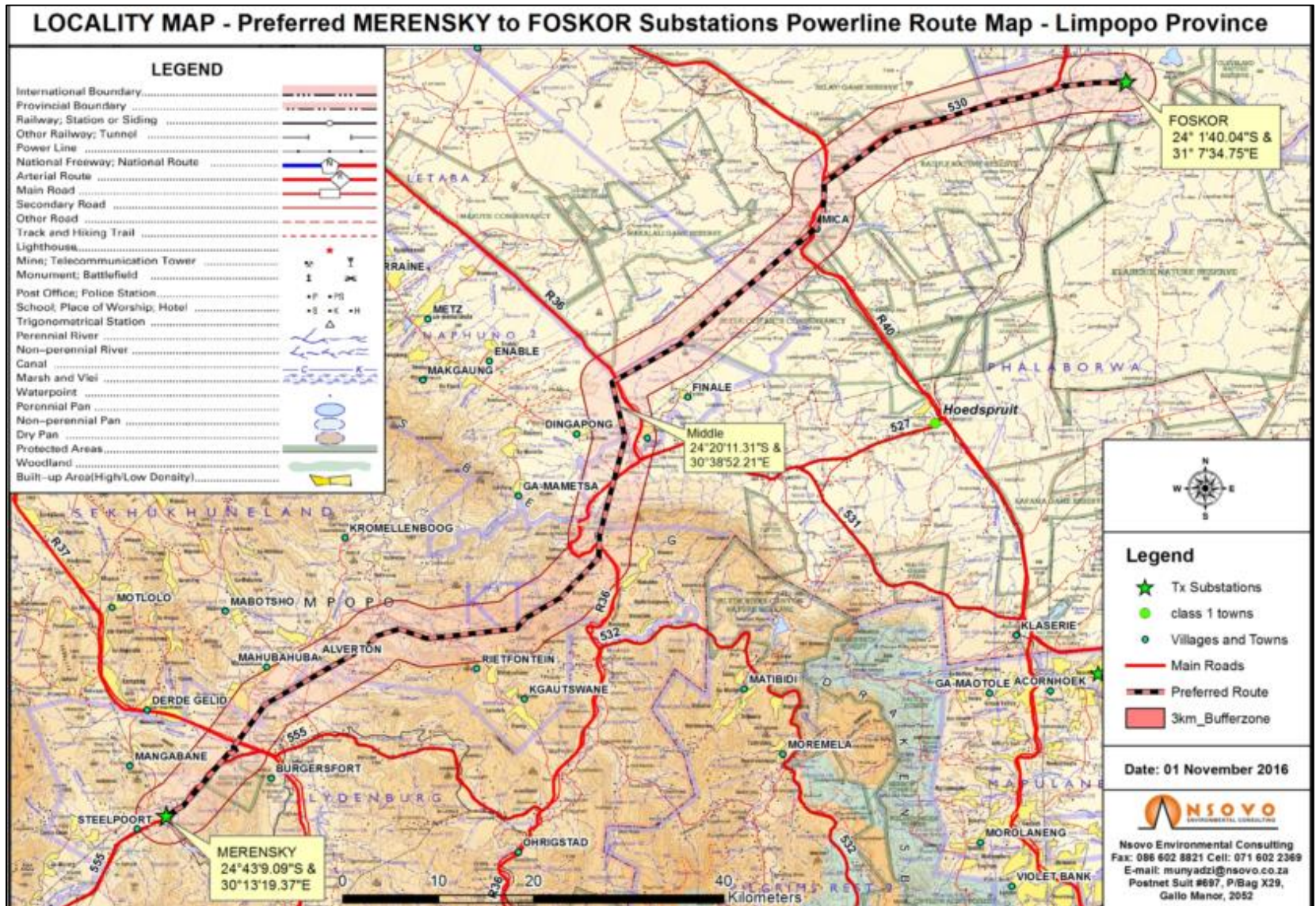


Figure 3. The approved route for the Foskor Merensky 400kV power line.

2. POTENTIAL IMPACTS OF PROPOSED POWER LINE ON BIRDS

2.1. Bird collision with conductors and earth wires

Various bird species are vulnerable to collision with the earth wires or conductors of overhead power lines. This occurs because the birds can't see the cables, particularly against dark backgrounds, or may not be able to take evasive action quickly enough once they do see the cables. Large birds such as cranes, storks, and bustards are particularly vulnerable due to their large wing span and slow flight characteristics. In recent times vultures have also emerged as vulnerable to collision, particularly when congregating at roosts or feeding sites. Only one site in South Africa has to my knowledge been reported to kill large numbers of Cape Vultures through collision, where a vulture restaurant is placed less than 1km from a transmission line. The birds feed at the feeding site and return to roost on the power line when full and at low light conditions (since food is placed at the site in the late afternoon frequently). The Eskom-Endangered Wildlife Trust Strategic Partnership has to date recorded 1 028 Cape Vulture mortalities (1996 to 2017) on power lines, of which 838 were caused by electrocution and 185 by collision. Certain biases exist in this data including: that electrocution victims fall closer to poles and therefore are more likely to be found by maintenance staff; that certain high collision risk sections of power line traverse valleys and steep terrain where detection of carcasses would be unlikely (although the same applies to electrocution to some extent); and various others. However it does seem that based on the actual data collected, electrocution (which is not possible on the proposed 400kV power line) is by far the greater threat to Cape Vultures in South Africa. This does not mean that the collision threat should not be addressed by conservationists and Eskom, but it does place the threat in perspective. At the Manoutsa colony, Naser *et al* (2011) recognized electrocution and collision as the number one threat to the birds, and recommended mitigation on surrounding power lines. No data is presented in that report on the extent of this risk. Collision is anticipated to be a possible impact on the proposed power line and is discussed in more detail in Section 5. Falcons, such as the Taita Falcon, are also believed to be at high risk of collision with overhead power lines, although they are underrepresented in the data (probably due to the low likelihood of detecting collision victims).

2.2. Habitat destruction during construction & maintenance

During the construction phase of power lines, a certain amount of habitat destruction and alteration takes place on the site. This happens with the construction of access roads, the clearing of the site itself and any associated infrastructure. The servitude also has to be maintained free of any natural vegetation, amongst other reasons to minimize the risk of fire. We note that the new proposed 400kV power line will require a servitude of 55m width, versus the previously authorized 47m for the 275kV. We anticipate that the 400kV line will require slightly

more bush clearing than the originally proposed 275kV line. In our view this difference will be a few metres if anything and will not make a material difference to the significance of this impact. The width of actual bush clearing has not been supplied by Nsovo or Eskom. Based on our experience, the bush clearing does not occur for the full servitude width, and we certainly recommend this. Bush clearing should be kept to an absolute minimum in order to reduce the impact on bird habitat. The destruction or alteration of natural habitat has an impact on birds breeding, foraging and roosting in close proximity to the site. Since the proposed power line routes pass largely through bushveld, this impact could be significant.

2.3. Disturbance of birds during construction & maintenance activities

Similarly, the above mentioned construction and maintenance activities impact on birds through disturbance, particularly during breeding activities. The potential exists for the impact of disturbance to influence a greater area than the site itself. This site is relatively un-disturbed by other infrastructure in parts, particularly in the protected areas. There is a strong likelihood of sensitive species such as large eagles and vultures nesting in the vicinity of the proposed power line alignment. This means that the impact of disturbance could be significant for this project.

2.4. Electrocutation of birds on tower structures

Electrocutation refers to the scenario whereby a bird bridges the gap between two phases or a phase and an earthed component thereby causing an electrical short circuit. The larger bird species such as vultures and eagles are particularly vulnerable to this impact, as obviously the larger the wingspan and other dimensions of a bird, the greater the likelihood of it being able to bridge the gap between hardware. On transmission lines such the proposed 400kV power line the impact of electrocutations is not possible due to the large clearances between phases and/or phases and earthed structures. This impact is not discussed further.

2.5. Electrical faulting due to birds

Birds are able to cause electrical faults on transmission power lines through their faeces and/or nest material. Large birds sitting above live conductors can cause flashovers when they produce long continuous 'streamers' of excrement which bridges the critical air gap, or through buildup of faeces on insulators to the point where the insulation is compromised and a fault occurs. Material used to build nests on towers can also intrude into the air gap and cause short circuits. With the likely abundance of large eagles and vultures in this study area, this interaction is a strong likelihood for the proposed power line. This impact is very dependent on the exact tower

structure used for the power line, with the cross rope suspension tower being preferred as it does not provide perching area for birds above conductors. This impact has been described in more detail in Section 5.

3. METHODOLOGY

3.1. Information sources used

The following information sources were consulted in order to conduct this study:

- » Bird distribution data of the first and second Southern African Bird Atlas Project (Harrison *et al*, 1997; www.sabap2.adu.org.za) was obtained for the quarter degree squares and pentads which cover the study area, from www.mybirdpatch.org.za, as a means to ascertain which species occur within the study area.
- » The conservation status of all bird species occurring in the area was determined with the use of The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland (Taylor, Peacock & Wanless, 2015).
- » Google Earth was used to examine the study area on a desktop level.
- » The location of the project in relation to the Important Bird & Biodiversity Areas (IBBA's) (Marnewick, Retief, Theron, Wright & Anderson, 2015) was examined and is shown in Figure 5.
- » The location of Co-ordinated Water bird Counts (CWAC) (Taylor *et al*, 1999) was examined and illustrated in Figure 5.
- » A site visit was conducted in November 2011 to examine the micro-habitats available in the area and get an overall idea of what the site looks like. Unfortunately access was not possible to all parts of the study area due to much of it being managed as private game farm, and difficult road access near the escarpment.
- » Information on the Manoutsa Cape Vulture breeding colony was obtained from the VulPro 2016 annual report, and information on Taita Falcon was obtained from Dr Andrew Jenkins, the BirdLife SA website, and Taylor *et al*, 2015.
- » The Eskom-Endangered Wildlife Trust was consulted to obtain data on vulture collisions on power lines. This is a strategic partnership between Eskom and an NGO, the Endangered Wildlife Trust, which aims to manage and reduce interactions between birds and Eskoms' infrastructure.

4. DESCRIPTION OF RECEIVING ENVIRONMENT

4.1. Vegetation and micro-habitats

This site is comprised of a complex set of vegetation types, particularly in the south. According to Mucina & Rutherford (2006), twenty separate vegetation types occur on or near the site (Figure 4). The majority of these occur above the escarpment in the south of the study area. Below the escarpment, the route passes mostly through “Granite Lowveld”, “Lowveld rugged Mopaneveld” and “Phalaborwa Timbavati Mopaneveld”. In summary, the majority of the study area is classified as bushveld or mopane veld. In the escarpment area grassland, sourveld and even fynbos exist. It is this diversity that gives rise to the diversity of bird species recorded in the area, described elsewhere in this report.

More informative than vegetation type in understanding bird distribution and abundance, is the micro habitats available to birds on site. Micro habitats are formed by a number of factors, one of which is vegetation. Others include land use, topography, and other anthropogenic influences.

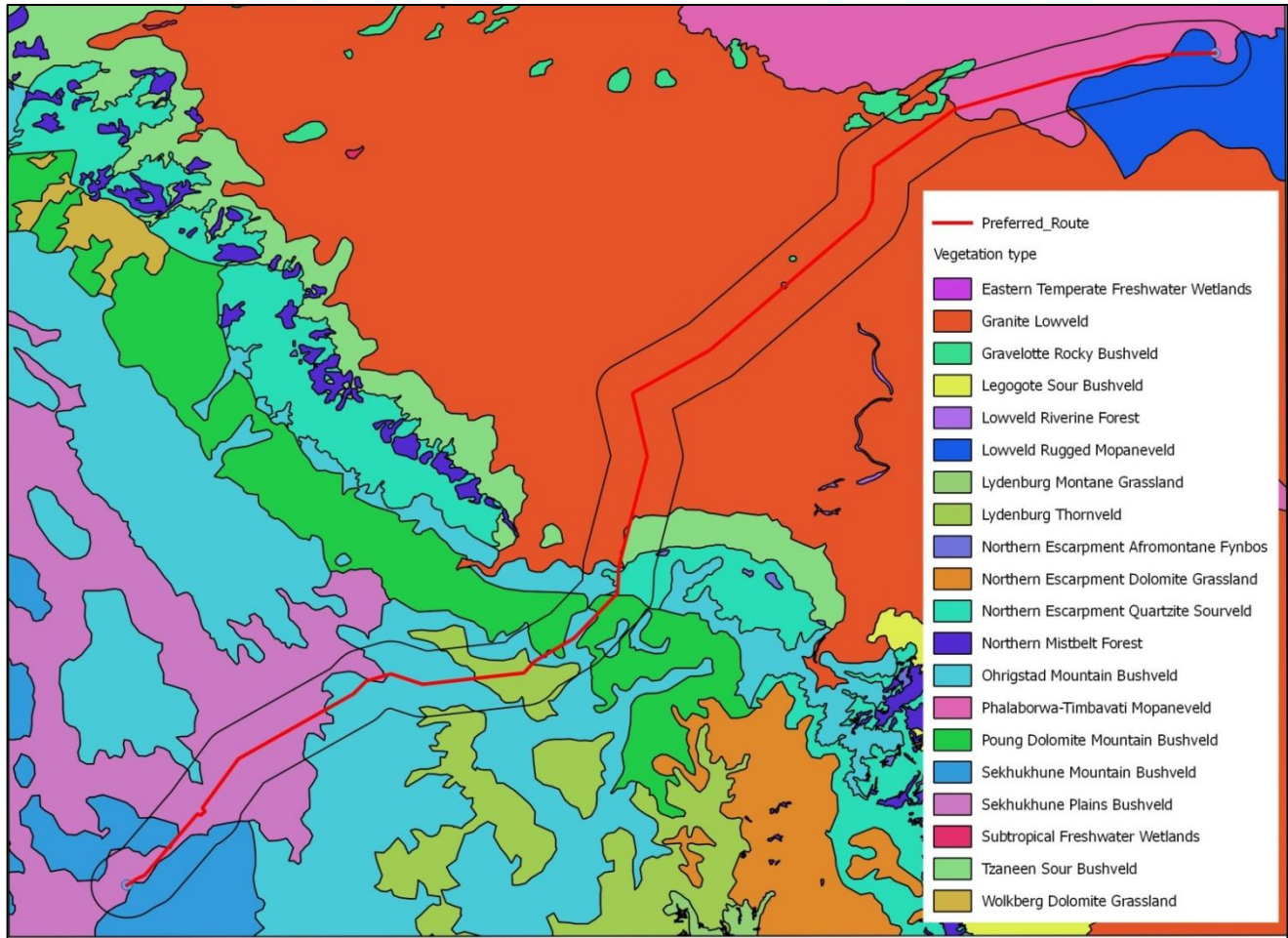


Figure 4. Vegetation classification for the approved Foskor Merensky 400kV power line route.

By far the most dominant micro habitat available to birds in the area is woodland or bushveld. Almost all of the natural vegetation remaining in the study area is woodland, and it varies in nature. In the south towards Steelpoort, much of the woodland consists of lower vegetation and appears degraded in places as a result of firewood harvesting and other human impacts (see Figure 4 a, c and i). In the northern lowveld parts of the study area the woodland is taller and appears in better condition, perhaps as a result of being protected in game farms and protected areas (see Figure 4 f). Where reliable water exists, in the form of rivers, some cultivation has taken place. Arable areas are planted to various crops, and in the lowveld to fruit orchards. Orchards are not particularly attractive micro habitats for sensitive bird species, although some crops are, particularly at certain stages of the crop cycle. Several major rivers are crossed by power line route, including the Steelpoort and Olifants Rivers. These areas represent a different vegetation type normally, with riparian species occurring along their banks. This will generally attract slightly different avifauna to the area. River courses also typically form

flight paths for various species through the landscape and as such represent high risk areas for bird – power line collision.



a – settlement in the Southern section of the study area



b – a typical river crossing in the study area



c – vegetation in the southern parts of the study area



d – an arable land in the Blyde River area



e – the Olifants river close to the base of the escarpment



f – small rocky outcrop, typical woodland in lowveld section



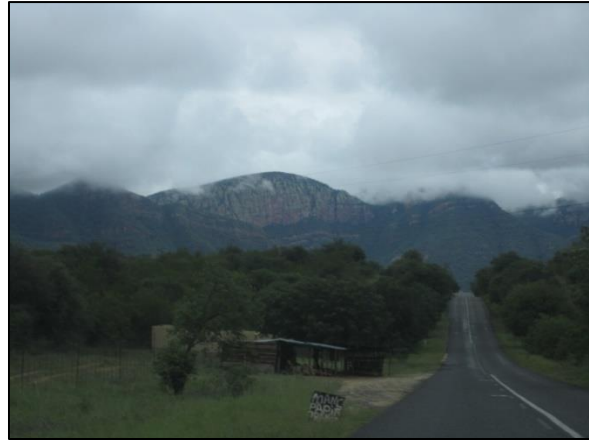
g – a young orchard in the lowveld section



h – the escarpment, near Penge



i – typical low woodland close to Steelpoort



j – the main escarpment close to Strydom tunnel.

Figure 5. Examples of the micro habitats available to avifauna in the Foskor Merensky 400kV power line study area

4.2. Relevant bird populations

Up to approximately 539 bird species have been recorded within the broader area within which the proposed power line is situated. It is important to note that these species could have been recorded anywhere in this broader area, and not necessarily exactly along the power line route. It does however mean that these species could occur in the proposed study area if suitable habitat exists.

Table 1 below shows only the Red Listed species recorded by in the area (the full data set is in Appendix 2). A total of 48 Red Listed species have been recorded, of which 2 are “Critically Endangered” (the Blue Swallow *Hirundo atrocaerulea* and Taita Falcon *Falco faschiinucha*), 15 are “Endangered”; 17 are “Vulnerable”; and 17 “Near-threatened”. Twenty-two bird species are endemic or near-endemic to the region.

Table 1 shows how important this proposed site is for the Red Listed species. This will ultimately determine the significance of any likely impacts of the proposed power line on these species.

This group of species includes: woodland species, such as vultures and large eagles; riverine species, such as African Finfoot *Podica senegalensis* and storks; and open woodland large terrestrials such as Kori Bustard *Neotis kori* and Secretarybird *Sagittarius serpentarius*. The vultures and eagles are anticipated to interact with the power line predominantly through perching, nesting and roosting on the infrastructure. This may place them at risk of collision with the earth wires. The storks and large terrestrials will be at risk of collision with the power line. In the region of the escarpment, the Taita Falcon *Falco fasciinucha* could also be at risk of collision and disturbance. The Cape Vulture will be at risk of collision, particularly if birds fly along the escarpment frequently, thereby crossing the proposed power line frequently. Most of the species mentioned above are physically large species. These are the species most at risk of direct interaction with the proposed power line. However all species, including the small passerines, could be affected by the power line, particularly through disturbance and habitat destruction. This impact assessment also focuses by necessity on the Red Listed species. This does not mean that the impacts on non-Red Listed species are totally ignored. It is believed that the mitigation proposed for Red Listed species will also provide protection for non-Red Listed species in many cases.

Most of the vulture and large eagle species identified as key for this study do not have healthy populations in South Africa outside of protected areas. The lowveld protected area complex, adjoining to the Kruger National Park, is an extremely important refuge for these species. The same is true to some extent for some of the stork species. This makes it extremely important to protect these species from additional human induced threats within these areas. Presumably these species' ranges have contracted over the years to their current state as a result of anthropogenic threats. If these threats are allowed to occur at high levels within the current ranges we could force even more range contraction and place these species at risk of local extinction.

Several key avifaunal features exist in the proposed study area. These features affect the significance of possible impacts of the proposed power line and influence the selection of the route on which to build the line. These features are described in more detail below:

Kruger National Park – Important Bird & Biodiversity Area (IBBA) – SA002:

The Kruger National Park is approximately 320km long on its north-south axis, and 65km wide on its east-west axis. The IBA includes the private game reserves on its western boundary, such as Klaserie, Timbavati, Sabi Sand and several others. At its closest point the IBBA western boundary is 1.5km from the authorized route for the proposed power line (see Figure 6). The IBA consists predominantly of undulating flats, with a wide geological

diversity giving rise to a diversity of habitats and bird species. The park supports approximately 55% of the bird species recorded in southern Africa (over 490 species). As mentioned elsewhere in this report, the park forms a refuge for various bird species which have suffered from various threats elsewhere in the region. This includes species such as Marabou Stork *Leptoptilus crumeniferus*, Hooded Vulture *Necrosyrtes monachus*, White-backed Vulture *Gyps africanus*, Lappet-faced Vulture *Torgos tracheliotus*, White-headed Vulture *Aegypius occipitalis*, Martial Eagle *Polemaetus bellicosus*, Bateleur *Terathopius ecaudatus*, Tawny Eagle *Aquila rapax*, Kori Bustard *Neotis kori* and Ground Hornbill *Bucorvus leadbeteri* (Barnes, 1998). Several Drakensberg forest species also migrate down into the park during winter, often along river courses draining off the escarpment.

These factors make this an extremely important IBBA in the national context. It is good that the current proposed power line routes avoid the IBBA to the west. However in reality, the areas immediately west of the western boundary of Kruger and the IBBA are probably almost as important for birds. Every attempt should therefore be made to place the power line as far as possible away from these areas. Unfortunately due to the location of the Foskor Substation, the line has to cross some lowveld bushveld. Given the need for network strengthening in the area this is unavoidable. This will be discussed in more detail in Section 5.2.

Table 1. Red Listed bird species which could occur on site, their preferred micro habitats, likelihood of occurring and importance of the site.

Common name	Scientific name	SAB AP1	SAB AP2	Taylor 2015	TOPS list	IUCN 2013	Endemic/near	Preferred micro habitat	Likelihood of occurring on site	Relative importance of site
Falcon, Taita	<i>Falco fasciinucha</i>	1	1	CR	VU	NT		Cliffs, gorges	Confirmed breeding	Very high
Swallow, Blue	<i>Hirundo atrocaerulea</i>	1		CR	CE	VU		Mistbelt grassland	Unlikely	
Bateleur	<i>Terathopius ecaudatus</i>	1	1	EN	VU	NT		Woodland	Probable in north	Medium in north
Crane, Grey Crowned	<i>Balearica regulorum</i>	1	1	EN	E	EN		Wetland, grassland, croplands	Possible	Low
Eagle, Martial	<i>Polemaetus bellicosus</i>	1	1	EN	VU	VU		Woodland	Probable in north	Medium in north
Eagle, Tawny	<i>Aquila rapax</i>	1	1	EN	VU	LC		Woodland	Probable in north	Medium in north
Fishing-owl, Pel's	<i>Scotopelia peli</i>	1	1	EN	E	LC		Riverine	Possible in north	Low
Ground-hornbill, Southern	<i>Bucorvus leadbeateri</i>	1	1	EN	P	VU		Open woodland	Possible	Low
Hawk, Bat	<i>Macheiramphus alcinus</i>	1	1	EN		LC		Woodland	Unlikely	
Marsh-harrier, African	<i>Circus ranivorus</i>	1	1	EN	P	LC		Grassland, wetland	Possible in south	Low
Stork, Saddle-billed	<i>Ephippiorhynchus senegalensis</i>	1	1	EN	E	LC		Riverine, floodplain	Probable in north	Medium in north
Stork, Yellow-billed	<i>Mycteria ibis</i>	1	1	EN		LC		Riverine, floodplain, dam, wetland	Probable in north	Medium
Vulture, Cape	<i>Gyps coprotheres</i>	1	1	EN	E	VU	1	Woodland, grassland	Definite, breeding colony present	Very high
Vulture, Hooded	<i>Necrosyrtes monachus</i>	1	1	EN	E	EN		Woodland	Probable	Medium in Lowveld in north
Vulture, White-backed	<i>Gyps africanus</i>	1	1	EN	E	EN		Woodland	Probable	Medium in north
Vulture, Lappet-faced	<i>Aegyptius tracheliotos</i>	1	1	EN	VU	EN		Woodland	Probable	Medium in

Vulture, White-headed	<i>Aegypius occipitalis</i>	1	1	EN	VU	VU		Woodland	Probable	north Medium in north
Blackcap, Bush	<i>Lioptilus nigricapillus</i>	1	1	VU		NT		Indigenous forest	Possible on escarpment	Low
Bustard, Denham's	<i>Neotis denhami</i>	1	1	VU	P	NT		Grassland	Possible in south	Low
Eagle, African Crowned	<i>Stephanoaetus coronatus</i>	1	1	VU		NT		Indigenous forest	Possible on escarpment	Low
Eagle, Verreaux's	<i>Aquila verreauxii</i>	1	1	VU		LC		Cliffs	Probable on escarpment	Medium
Falcon, Lanner	<i>Falco biarmicus</i>	1	1	VU		LC		Generalist	Probable	Low
Finfoot, African	<i>Podica senegalensis</i>	1	1	VU		LC		Riverine	Probable	Medium
Grass-owl, African	<i>Tyto capensis</i>	1		VU	VU	LC		Grassland, wetland	Possible in south-east	Low
Ibis, Southern Bald	<i>Geronticus calvus</i>	1	1	VU	VU	VU	1	Grassland, cliff	Possible on escarpment	Low
Korhaan, White-bellied	<i>Eupodotis senegalensis</i>	1	1	VU		LC		Grassland	Possible but unlikely	Low
Night-Heron, White-backed	<i>Gorsachius leuconotus</i>	1	1	VU		LC		Riverine	Possible	Low
Painted-snipe, Greater	<i>Rostratula benghalensis</i>	1	1	VU		LC		Wetland	Possible in south	Low
Pelican, Great White	<i>Pelecanus onocrotalus</i>	1		VU		LC		Open water	Possible	Medium
Pelican, Pink-backed	<i>Pelecanus rufescens</i>	1	1	VU	E	LC		Open water	Possible	Medium
Pygmy-Goose, African	<i>Nettapus auritus</i>	1		VU		LC		Riverine	Possible	Low
Secretarybird	<i>Sagittarius serpentarius</i>	1	1	VU		VU		Open woodland	Probable	Medium
Stork, Black	<i>Ciconia nigra</i>	1	1	VU	VU	LC		Riverine, cliff	Possible	Medium
Bustard, Kori	<i>Ardeotis kori</i>	1	1	NT	VU	NT		Open woodland, grassland	Possible	Medium
Crane, Blue	<i>Anthropoides paradiseus</i>	1	1	NT	E	VU	1	Grassland, arable land, wetland, dam	Possible in south	Low
Duck, Maccoa	<i>Oxyura maccoa</i>	1		NT		NT		Open water, dams etc	Possible	Low
Falcon, Red-footed	<i>Falco vespertinus</i>	1	1	NT		NT		Open areas	Possible	Low
Flamingo, Greater	<i>Phoenicopterus ruber</i>	1	1	NT		LC		Dam,	Possible	Low

Flamingo, Lesser	<i>Phoenicopterus minor</i>	1	1	NT	NT	floodplain Dam, floodplain	Possible	Low
Ground-thrush, Orange	<i>Zoothera gurneyi</i>	1	1	NT	LC	Forest	Possible	Low
Harrier, Pallid	<i>Circus macrourus</i>	1		NT	NT	Grassland, wetland, open woodland	Possible	Low
Kingfisher, Half-collared	<i>Alcedo semitorquata</i>	1	1	NT	LC	Riverine	Possible	Low
Roller, European	<i>Coracias garrulus</i>	1	1	NT	NT	Woodland	Probable	Low
Stork, Abdim's	<i>Ciconia abdimii</i>	1	1	NT	LC	Arable lands, grassland, wetland	Probable throughout	Medium
Stork, Marabou	<i>Leptoptilos crumeniferus</i>	1	1	NT	LC	Riverine, floodplain, dam, wetlands, waste sites	Probable in north	Medium

Blyde River Canyon – Important Bird & Biodiversity Area – SA010

The Blyde River Canyon is approximately 20km long and up to 700m deep. The approved power line route passes through this IBA. The gorge is flanked by a number of spectacular peaks and sheer cliff faces. Key features include the Blydepoort Dam, patches of indigenous forest, the cliff faces and patches of montane grassland. This general area is the only known breeding area for Taita Falcon *Falco fasciinucha* - arguably now one of South Africa's most rare bird species (see discussion later). One breeding site appears relevant to the proposed power line at this stage, but other sites may exist that have not yet been discovered (Jenkins, pers comm). The area west of where the Olifants River descends the escarpment has not yet been surveyed at all and could conceivably contain more breeding pairs, and other relevant species. Blue Swallow *Hirundo atrocaerulea* also breed in the grasslands, and a large (the world's 4th largest) breeding colony of Cape Vulture (see later discussion) is found at the cliffs at Manoutsa. Black Stork *Ciconia nigra* and Peregrine Falcon also breed in the area.

It is far from ideal for a power line of this nature to be built through this IBBA. Important Bird and Biodiversity Areas are recognized internationally for their importance for the conservation of birds. Any developments within an IBBA face likely criticism from BirdLife South Africa and Birdlife International. Since there is already an existing power line of this size, and countless other smaller voltage lines within this IBBA, it would however be difficult to argue that no power lines can be built in IBBA's. Also the boundaries of IBBA's do not always reflect any distinct difference in bird abundance on the ground. For example examining Figure 6 one can see that IBBA SA010 has a very abrupt western boundary, which has been drawn in along farm boundaries predominantly. The area immediately west of this boundary, and in fact up until SA005 could be argued to be equally important for the protection of birds, if perhaps a little less well known and studied. In addition, the IBBA boundaries should according to BirdLife South Africa be considered soft boundaries. In other words they are a broad indication of where the important bird species reside, and developments outside of the boundaries can still impact on the birds within the IBBA itself. The result is that the entire escarpment could be argued to be important for the protection of birds. This would pose a significant challenge to the distribution of electricity to the lowveld.

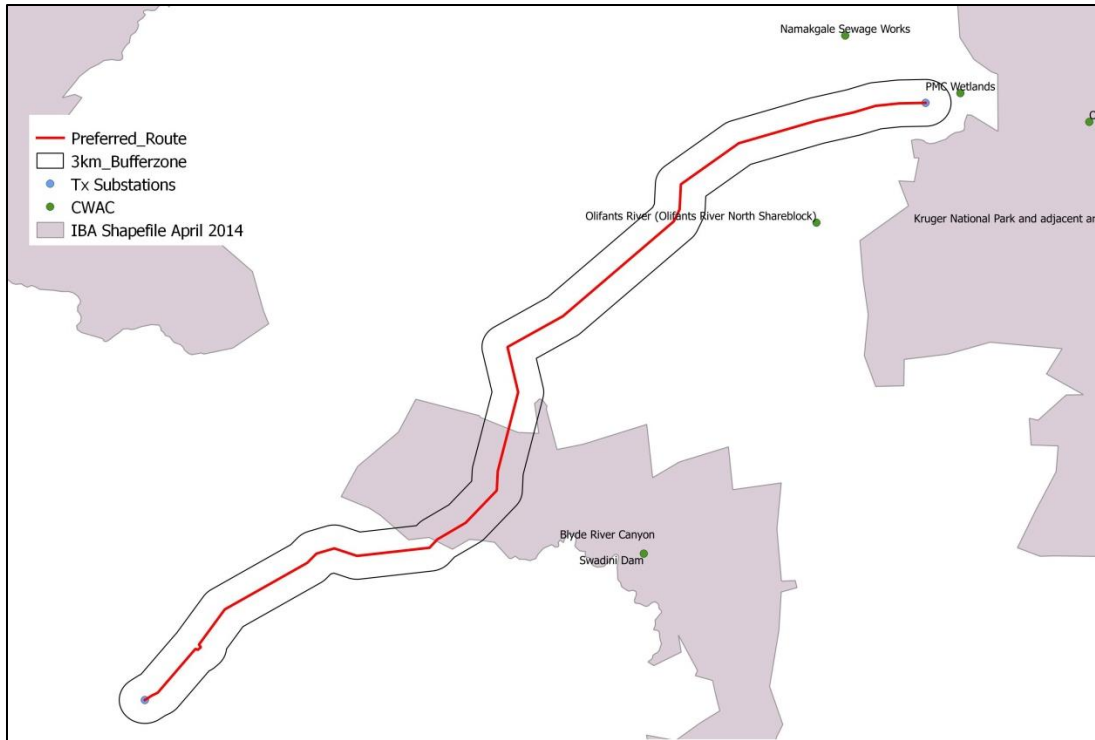


Figure 6. Avifaunal features in the Foskor Merensky 400kV power line study area. Important Bird & Biodiversity Areas (IBA) and Co-ordinated Water bird Count (CWAC) locations are shown.

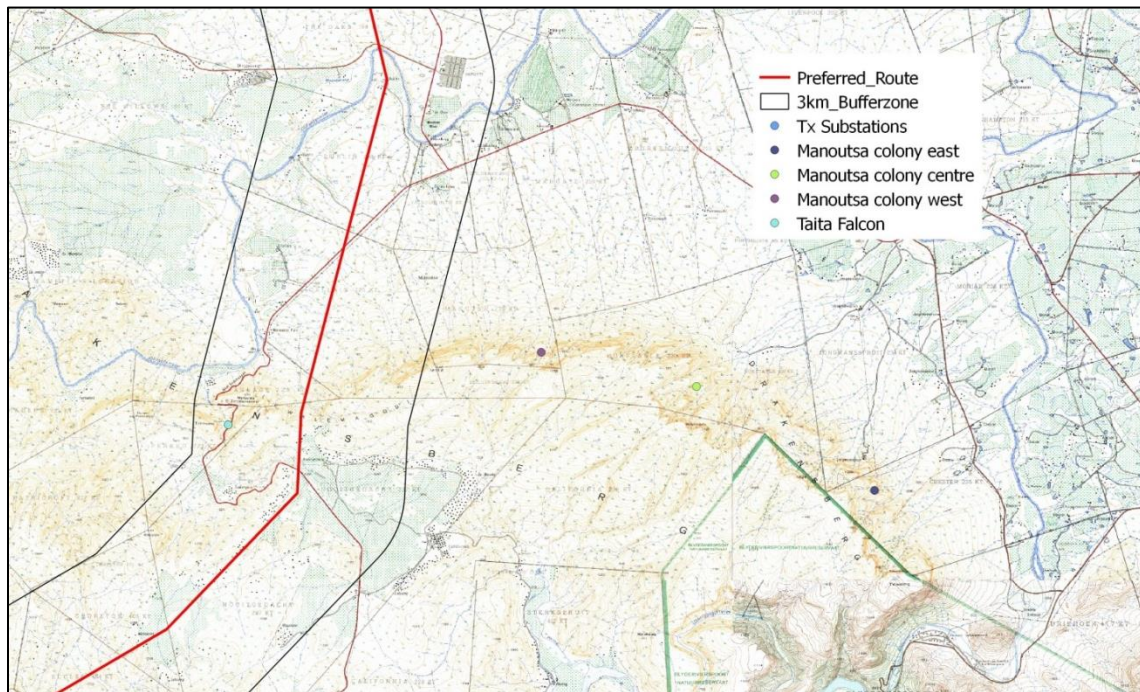


Figure 7. The position of relevant sensitive bird species information relative the approved route.

Figure 7 illustrates the escarpment area. A known Taita Falcon breeding site is situated approximately 2km west of the approved route. The western part of the Manoutsa Cape Vulture breeding colony is approximately 6.8km east of approved route. It is our opinion that this distance is sufficient to prevent disturbance of the vulture colony, and the falcon breeding, so only collision with the power line remains as a potential threat. This has been discussed in Section 2. Where the power line traverses the escarpment, the new line must be built adjacent to the existing, on the centre line of the corridor. It must not be built more west (As it will become too close to the Taita Falcon breeding area) or east (too close to Cape Vulture breeding colony).

Figure 6 also shows the position of Co-ordinated Water bird Count (CWAC) sites close to or in the study area. These are sites where water birds are regularly counted. Although they are not necessarily sensitive features, and are often man made (such as the Namakgale Sewage Works site) they give a good indication of which water associated bird species can be expected in the area. Three such sites exist close to the authorized power line route in the north: Namakgale Sewage Works; Olifants River; and PMC Wetlands. The Namakgale Sewage Works site has records for most of the more common water birds, and also Yellow-billed and Marabou Storks, both key species for this study. The Olifants River site has records for African Fish Eagle and Pel's Fishing Owl, and the PMC Wetlands site has records for African Fish Eagle, Pel's Fishing Owl, Pink-backed Pelican, Marabou Stork, Saddle-billed Stork, Woolly-necked Stork, Yellow-billed Stork, and Greater and Lesser Flamingo. Although these sites are all some distance from the proposed alignments, the data does bear relevance in terms of which bird species can be expected in the broader area.

Taita Falcon

The global population of this species is estimated at 1 000 adults (Birdlife International 2014). Only approximately 40 current and active breeding pairs of Taita Falcon exist globally (Jenkins *et al*, 2008). Seven of these breeding sites are in SA (Taylor *et al*, 2015). The escarpment area relevant to this proposed power line has been surveyed several times for this species (Jenkins *et al* 2008; Jenkins 2010; Jenkins 2007, Birdlife SA 2013). Early in December 2013 the survey results were not encouraging. Two known sites appeared to be permanently vacant, three held only single birds, two held pairs that failed to breed in 2013, and only two territories featured actively breeding pairs, with a total of only five chicks raised to near-fledging age.

Most relevant to this assessment is the location one known breeding site approximately 2km west of the approved route. As described elsewhere in this report this clearance may not be reduced at all for any reason.

Cape Vulture

The Manoutsa breeding colony consists of 621 breeding pairs at the last count (2016 – VulPro 2016). This is an exceptionally important breeding colony for the species, and risks to it should be managed carefully. The power line route is currently a distance of approximately 6.8km west of the westernmost part of the breeding colony. As described elsewhere in this report this clearance may not be reduced at all for any reason.

5. EVALUATION OF IMPACTS AND CHOICE OF ALTERNATIVE

5.1. Evaluation of impacts

The impacts of the proposed development have been assessed and rated using the tables below and the criteria found in Appendix 1 (standard criteria for a study of this nature):

Table 2. Assessment of the impact of Bird collisions on the overhead cables, in particular the earth wires.

Nature: Bird collisions on the overhead cables, in particular the earth wires		
	Without mitigation	With mitigation
Extent	2	2
Duration	4	4
Magnitude	4	4
Probability	4	2
Significance	40 (medium)	20 (low)
Status	Negative	Negative
Reversibility	Irreversible	Irreversible
Irreplaceable loss of resources	Yes birds killed	Yes birds killed
Can impacts be mitigated	Yes – through marking relevant sections of power line	
<p>Mitigation: High risk sections of power line will need to be marked with a suitable, effective Eskom approved line marking device on the earth wires as per Eskom standards. These high risk sections of line need to be identified once the final route is available and tower positions have been surveyed and finalized. This will need to be done through an avifaunal walk through as part of the site specific EMP. It will be Eskom's responsibility to monitor the effectiveness of this mitigation and add further mitigation if it is not effective enough or if the materials do not last. This detail should be written into the conditions of the Environmental Authorisation. At this stage it is possible to say that all river crossings, the escarpment, and all line close to dams will need to be mitigated.</p> <p>Eskom should also plan and implement a systematic monitoring programme for existing power lines close to Cape Vulture breeding colonies nationally, so that data is obtained on this matter.</p>		
<p>Cumulative impacts: The cumulative impacts of power lines on the relevant species (listed elsewhere in this report) will be significant if not managed, since these species mostly already suffer from significant power line mortalities.</p>		

Residual impacts: Low – if lines were removed, impact would cease

Table 3. Assessment of the impact of habitat destruction and alteration on birds.

Nature: Habitat destruction and alteration during construction		
	Without mitigation	With mitigation
Extent	1	1
Duration	4	4
Magnitude	3	3
Probability	4	4
Significance	32 (medium)	32 (medium)
Status	Negative	Negative
Reversibility	Irreversible	Irreversible
Irreplaceable loss of resources	Yes- bird habitat	Yes-Bird habitat
Can impacts be mitigated	Yes – but only partially, a certain amount of habitat destruction is inevitable	
Mitigation: Standard construction best practices must be followed. A construction EMP must be developed and implemented by an on-site environmental control officer during construction. In this way the impact can be mitigated to an acceptable level. Key issues are location of construction camp, access of large vehicles and heavy machinery to sensitive areas, and control of labour (i.e. preventing firewood harvesting etc). Key sensitive areas include the IBA, the escarpment, river crossings and natural bushveld. An avifaunal walk through should be conducted once the power line alignment is finalized, to confirm the above information.		
Cumulative impacts: for the more sensitive habitats near the escarpment this could be quite significant		
Residual impacts: High – if lines were removed, impact would persist		

Table 4. Assessment of the impact of disturbance of birds during construction.

Nature: Disturbance of birds during construction		
	Without mitigation	With mitigation
Extent	1	1
Duration	2	2
Magnitude	4	4
Probability	3	3
Significance	21 (Low)	21 (Low)
Status	Negative	Negative

Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Possible loss of breeding success	Possible loss of breeding success
Can impacts be mitigated	Yes -partially	
Mitigation: An avifaunal walk through must be conducted on the final authorized power line alignment, to identify any breeding sites of sensitive bird species. Care must be taken if any breeding sensitive species are encountered close to the servitude. Case specific advice can be sought from the avifaunal consultant should such sites be found. Where the power line traverses the escarpment, the new line must be built adjacent to the existing, on the centre line of the corridor. It must not be built more west (As it will become too close to the Taita Falcon breeding area) or east (too close to Cape Vulture breeding colony).		
Cumulative impacts: Negligible		
Residual impacts: Low – temporary impact		

Table 5. Assessment of the impact of electrical faulting on the power lines.

Nature: Electrical faulting on the power lines		
	Without mitigation	With mitigation
Extent	1	1
Duration	4	4
Magnitude	4	3
Probability	4	2
Significance	36 (Medium)	16 (Low)
Status	Negative-for business	Negative-for business
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	No	No
Can impacts be mitigated	Yes – quite straight forward	
Mitigation: It is recommended that this issue be assessed when the tower structure is finalized and appropriate mitigation measures developed at that stage. The cross rope suspension tower would be preferred in this regard as it provides less perching substrate for birds above conductors.		
Cumulative impacts: n/a		
Residual impacts: Low		

5.2. Evaluation of alternatives

Since the route alternatives were already dealt with the original 2013 assessment, this section will focus only on the difference between the previously approved 275kV power line and the now proposed 400kV line.

There is essentially very little difference in the impacts on avifauna of a 400kV line versus a 275kV line from an avifaunal perspective. The width of the bush cleared may be slightly greater for the larger voltage line, although this is speculative. If it is this would increase the impact of habitat destruction slightly, although not enough to change the categorical ratings in Section 5.1. The other impacts of collision with earth wires, disturbance and electrical faulting will be unchanged by the change in voltage. The slight increase in tower height and width as a result of the increased voltage to 400kV would not materially increase the significance of impacts on avifauna.

6. CONCLUSION

This proposed 400kV power line route passes through an area that is rich in avifauna, due to its varied geology and vegetation, and the protected status of much of the land (by virtue of game farming). This means that the potential interactions of birds with the power line are likely to be of relatively high significance. However, given that a power line of this size has to be built between these two substations (we assume that effective network planning has been conducted), the approved route is as wise as possible with respect to avifauna. It is also essential that the other recommendations of this report are accepted and implemented, in particular the avifaunal walk through to be done during the site specific Environmental Management Plan for the line. This walk through will identify sensitive sections of the routes for collision mitigation, and will as far as possible identify any large breeding raptors close to the alignment.

Although little data exists on Cape Vulture collisions with overhead power lines, it is considered likely that where vultures congregate for any reason (such as at colonies) close to power lines birds are likely to collide with the overhead cables. Unfortunately to date little data in this regard exists, due partly to the lack of focused efforts to systematically patrol such power lines. It is recommended that Eskom give this matter urgent attention and preferably initiate a national programme to monitor existing power lines close to colonies. The findings from such a programme will facilitate more informed impact assessments for power lines in such situations in the future.

If the recommendations of this report are adhered to, this project can proceed.

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APPENDIX 1- Criteria for assessment of the impacts

The following criteria were used to evaluate the significance of the anticipated impacts:

Extent of the impact:

The extent of the impact was assessed accordingly:

- (1) Limited to the site and its immediate surroundings
- (2) Local/Municipal extending only as far as the local community or urban area
- (3) Provincial/Regional
- (4) National i.e. South Africa
- (5) Across International borders

Duration of the impact:

The lifespan of the impact was assessed to be:

- (1) Immediate (less than 1 year)
- (2) Short term (1-5 years)
- (3) Medium term (6-15 years)
- (4) Long term (the impact will cease after the operational life span of the project)
- (5) Permanent (no mitigation measures of natural process will reduce the impact after construction)

Magnitude of the impact:

The magnitude or severity of the impacts is indicated as either:

- (0) None (where the aspect will have no impact on the environment)
- (1) Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
- (2) Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
- (3) Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
- (4) High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or

- **(5)** Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).

Probability of occurrence:

The likelihood of the impact actually occurring was indicated as either:

- **(0)** None (impact will not occur)
- **(1)** Improbable (the possibility of the impact materializing is very low as a result of design, historic experience or implementation of adequate mitigation measures)
- **(2)** Low probability (there is a possibility that the impact will occur)
- **(3)** Medium probability (the impact may occur)
- **(4)** High probability (it is most likely that the impact will occur)
- **(5)** Definite / do not know (the impact will occur regardless of the implementation of any prevention or corrective actions or if the specialist does not know what the probability will be based on too little published information)

Status of the Impact:

The impacts are assessed as either having a:

- Negative effect (i.e. at a cost to the environment)
- Positive effect (i.e. at a benefit to the environment)
- Neutral effect on the environment.

Accumulative Impact:

The impact of the development is considered together with additional developments of the same or similar nature and magnitude. The combined impacts may be:

- Negligible (i.e. the net effect is the same as a single development)
- Marginal (i.e. the impact of the two developments of a similar nature is less than twice the impact of a single development. This implies it is better to place the two developments in the same environment rather than in separate environments.
- Compounding (i.e. the impact of the two developments is more than twice the impact of two single developments. This implies that it is better to split the two developments into separate environments.

Significance of the Impact:

Based on a synthesis of the information contained in the points above, the potential impacts were assigned a significance weighting (S). The weighting is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact hence $S=(E+D+M)P$.

- *Low (less than 30 points)*: the impact does not have a direct influence on the decision to develop the area
- *Medium (30-60 points)*: the impact could influence the decision to develop in the area unless it is effectively mitigated
- *High (above 60 points)*: where the impact must have an influence on the decision to proceed to develop in the area

APPENDIX 2. BIRD DATA FOR THE SITE FROM SABAP1 & SABAP2

'1' denotes presence not abundance

Common name	Scientific name	SAB AP1	SAB AP2	Taylor 2015	TOPS list	IUCN 2013	End emic	Near-Endemic
Apalis, Bar-throated	<i>Apalis thoracica</i>	1	1					
Apalis, Yellow-breasted	<i>Apalis flavida</i>	1	1					
Avocet, Pied	<i>Recurvirostra avosetta</i>	1	1					
Babbler, Arrow-marked	<i>Turdoides jardineii</i>	1	1					
Barbet, Acacia Pied	<i>Tricholaema leucomelas</i>	1	1					
Barbet, Black-collared	<i>Lybius torquatus</i>	1	1					
Barbet, Crested	<i>Trachyphonus vaillantii</i>	1	1					
Bateleur, Bateleur	<i>Terathopius ecaudatus</i>	1	1	EN	VU	NT		
Batis, Cape	<i>Batis capensis</i>	1	1					
Batis, Chinspot	<i>Batis molitor</i>	1	1					
Bee-eater, Blue-cheeked	<i>Merops persicus</i>	1						
Bee-eater, European	<i>Merops apiaster</i>	1	1					
Bee-eater, Little	<i>Merops pusillus</i>	1	1					
Bee-eater, Southern Carmine	<i>Merops nubicooides</i>	1	1					
Bee-eater, Swallow-tailed	<i>Merops hirundineus</i>	1	1					
Bee-eater, White-fronted	<i>Merops bullockoides</i>	1	1					
Bishop, Southern Red	<i>Euplectes orix</i>	1	1					
Bishop, Yellow	<i>Euplectes capensis</i>	1	1					
Bishop, Yellow-crowned	<i>Euplectes afer</i>	1	1					
Bittern, Dwarf	<i>Ixobrychus sturmii</i>	1	1					
Bittern, Little	<i>Ixobrychus minutus</i>	1	1					
Blackcap, Bush	<i>Lioptilus nigricapillus</i>	1	1	VU		NT		
Bokmakierie, Bokmakierie	<i>Telophorus zeylonus</i>	1	1					
Boubou, Southern	<i>Laniarius ferrugineus</i>	1	1					
Brownbul, Terrestrial	<i>Phyllastrephus terrestris</i>	1	1					
Brubru, Brubru	<i>Nilaus afer</i>	1	1					
Buffalo-weaver, Red-billed	<i>Bubalornis niger</i>	1	1					
Bulbul, Dark-capped	<i>Pycnonotus tricolor</i>	1	1					
Bunting, Cape	<i>Emberiza capensis</i>	1	1					
Bunting, Cinnamon-breasted	<i>Emberiza tahapisi</i>	1	1					
Bunting, Golden-breasted	<i>Emberiza flaviventris</i>	1	1					
Bunting, Lark-like	<i>Emberiza impetuani</i>		1					
Bush-shrike, Black-fronted	<i>Telophorus nigrifrons</i>	1	1					
Bush-shrike, Gorgeous	<i>Telophorus quadricolor</i>	1	1					
Bush-shrike, Grey-headed	<i>Malaconotus blanchoti</i>	1	1					
Bush-shrike, Olive	<i>Telophorus olivaceus</i>	1	1					
Bush-shrike, Orange-breasted	<i>Telophorus sulfureopectus</i>	1	1				1	

Bustard, Black-bellied	<i>Lissotis melanogaster</i>	1	1	NT		LC	
Bustard, Denham's	<i>Neotis denhami</i>	1	1	VU	P	NT	
Bustard, Kori	<i>Ardeotis kori</i>	1	1	NT	VU	NT	
Buttonquail, Kurrichane	<i>Turnix sylvaticus</i>	1	1				
Buzzard, Forest	<i>Buteo trizonatus</i>	1	1				
Buzzard, Jackal	<i>Buteo rufofuscus</i>	1	1				
Buzzard, Lizard	<i>Kaupifalco monogrammicus</i>	1	1				
Buzzard, Steppe	<i>Buteo vulpinus</i>	1	1				
Camaroptera, Green-backed	<i>Camaroptera brachyura</i>	1	1				
Camaroptera, Grey-backed	<i>Camaroptera brevicaudata</i>	1	1				
Canary, Black-throated	<i>Crithagra atrogularis</i>	1	1				
Canary, Brimstone	<i>Crithagra sulphuratus</i>	1	1				
Canary, Cape	<i>Serinus canicollis</i>	1	1				1
Canary, Forest	<i>Crithagra scotops</i>	1	1				
Canary, Yellow-fronted	<i>Crithagra mozambicus</i>	1	1				
Chat, Anteating	<i>Myrmecocichla formicivora</i>	1					
Chat, Arnot's	<i>Myrmecocichla arnoti</i>	1	1				
Chat, Buff-streaked	<i>Oenanthe bifasciata</i>	1	1				1
Chat, Familiar	<i>Cercomela familiaris</i>	1	1				
Cisticola, Cloud	<i>Cisticola tetricus</i>	1	1				
Cisticola, Croaking	<i>Cisticola natalensis</i>	1	1				
Cisticola, Desert	<i>Cisticola aridulus</i>	1	1				
Cisticola, Lazy	<i>Cisticola aberrans</i>	1	1				
Cisticola, Levallant's	<i>Cisticola tinniens</i>	1	1				
Cisticola, Rattling	<i>Cisticola chiniana</i>	1	1				
Cisticola, Red-faced	<i>Cisticola erythrops</i>	1	1				
Cisticola, Wailing	<i>Cisticola lais</i>	1	1				
Cisticola, Wing-snapping	<i>Cisticola ayresii</i>	1	1				
Cisticola, Zitting	<i>Cisticola juncidis</i>	1	1				
Cliff-chat, Mocking	<i>Thamnolaea cinnamomeiventris</i>	1	1				
Cliff-swallow, South African	<i>Hirundo spilodera</i>	1					
Coot, Red-knobbed	<i>Fulica cristata</i>	1	1				
Cormorant, Reed	<i>Phalacrocorax africanus</i>	1	1				
Cormorant, White-breasted	<i>Phalacrocorax carbo</i>	1	1				
Coucal, Burchell's	<i>Centropus burchelli</i>	1	1				
Coucal, White-browed	<i>Centropus superciliosus</i>	1					
Courseur, Bronze-winged	<i>Rhinoptilus chalcopterus</i>	1	1				
Courseur, Temminck's	<i>Cursorius temminckii</i>	1	1				
Crake, African	<i>Crecoptis egregia</i>	1	1				
Crake, Black	<i>Amaurornis flavirostris</i>	1	1				
Crake, Striped	<i>Aenigmatolimnas marginalis</i>		1				
Crane, Blue	<i>Anthropoides paradiseus</i>	1	1	NT	E	VU	1
Crane, Grey Crowned	<i>Balearica regulorum</i>	1	1	EN	E	EN	
Crested-flycatcher, Blue-mantled	<i>Trochocercus cyanomelas</i>	1	1				
Crombec, Long-billed	<i>Sylvietta rufescens</i>	1	1				

Crow, Cape	<i>Corvus capensis</i>	1	1			
Crow, Pied	<i>Corvus albus</i>	1	1			
Cuckoo, African	<i>Cuculus gularis</i>	1	1			
Cuckoo, African Emerald	<i>Chrysococcyx cupreus</i>	1	1			
Cuckoo, Black	<i>Cuculus clamosus</i>	1	1			
Cuckoo, Common	<i>Cuculus canorus</i>	1	1			
Cuckoo, Diderick	<i>Chrysococcyx caprius</i>	1	1			
Cuckoo, Great Spotted	<i>Clamator glandarius</i>	1	1			
Cuckoo, Jacobin	<i>Clamator jacobinus</i>	1	1			
Cuckoo, Klaas's	<i>Chrysococcyx klaas</i>	1	1			
Cuckoo, Levaillant's	<i>Clamator levaillantii</i>	1	1			
Cuckoo, Madagascar	<i>Cuculus rochii</i>		1			
Cuckoo, Red-chested	<i>Cuculus solitarius</i>	1	1			
Cuckoo, Thick-billed	<i>Pachycoccyx audeberti</i>	1	1			
Cuckoo-shrike, Black	<i>Campephaga flava</i>	1	1			
Cuckoo-shrike, Grey	<i>Coracina caesia</i>	1	1			
Cuckoo-shrike, White-breasted	<i>Coracina pectoralis</i>	1	1			
Darter, African	<i>Anhinga rufa</i>	1	1			
Dove, African Mourning	<i>Streptopelia decipiens</i>	1	1			
Dove, Laughing	<i>Streptopelia senegalensis</i>	1	1			
Dove, Lemon	<i>Aplopelia larvata</i>	1	1			
Dove, Namaqua	<i>Oena capensis</i>	1	1			
Dove, Red-eyed	<i>Streptopelia semitorquata</i>	1	1			
Dove, Rock	<i>Columba livia</i>	1	1			
Dove, Tambourine	<i>Turtur tympanistria</i>	1	1			
Drongo, Fork-tailed	<i>Dicrurus adsimilis</i>	1	1			
Drongo, Square-tailed	<i>Dicrurus ludwigii</i>	1	1			
Duck, African Black	<i>Anas sparsa</i>	1	1			
Duck, Comb	<i>Sarkidiornis melanotos</i>	1	1			
Duck, Fulvous	<i>Dendrocygna bicolor</i>	1	1			
Duck, Maccoa	<i>Oxyura maccoa</i>	1		NT	NT	
Duck, White-backed	<i>Thalassornis leuconotus</i>	1				
Duck, White-faced	<i>Dendrocygna viduata</i>	1	1			
Duck, Yellow-billed	<i>Anas undulata</i>	1	1			
Eagle, African Crowned	<i>Stephanoaetus coronatus</i>	1	1	VU	NT	
Eagle, Booted	<i>Aquila pennatus</i>	1	1		LC	
Eagle, Lesser Spotted	<i>Aquila pomarina</i>	1	1			
Eagle, Long-crested	<i>Lophaetus occipitalis</i>	1	1			
Eagle, Martial	<i>Polemaetus bellicosus</i>	1	1	EN	VU	VU
Eagle, Steppe	<i>Aquila nipalensis</i>	1	1			
Eagle, Tawny	<i>Aquila rapax</i>	1	1	EN	VU	LC
Eagle, Verreaux's	<i>Aquila verreauxii</i>	1	1	VU		LC
Eagle, Wahlberg's	<i>Aquila wahlbergi</i>	1	1			
Eagle-owl, Cape	<i>Bubo capensis</i>	1	1			LC
Eagle-owl, Spotted	<i>Bubo africanus</i>	1	1			

Eagle-owl, Verreaux's	<i>Bubo lacteus</i>	1	1			
Egret, Cattle	<i>Bubulcus ibis</i>	1	1			
Egret, Great	<i>Egretta alba</i>	1	1			
Egret, Little	<i>Egretta garzetta</i>	1	1			
Egret, Yellow-billed	<i>Egretta intermedia</i>	1	1			
Eremomela, Burnt-necked	<i>Eremomela usticollis</i>	1	1			
Eremomela, Green-capped	<i>Eremomela scotops</i>	1	1			
Eremomela, Yellow-bellied	<i>Eremomela icteropygialis</i>	1	1			
Falcon, Amur	<i>Falco amurensis</i>	1	1			
Falcon, Lanner	<i>Falco biarmicus</i>	1	1	VU		LC
Falcon, Peregrine	<i>Falco peregrinus</i>	1	1		VU	
Falcon, Red-footed	<i>Falco vespertinus</i>	1	1	NT		NT
Falcon, Taita	<i>Falco fasciinucha</i>	1	1	CR	VU	NT
Finch, Cuckoo	<i>Anomalospiza imberbis</i>	1	1			
Finch, Cut-throat	<i>Amadina fasciata</i>	1	1			
Finch, Red-headed	<i>Amadina erythrocephala</i>	1	1			
Finch, Scaly-feathered	<i>Sporopipes squamifrons</i>	1	1			
Finfoot, African	<i>Podica senegalensis</i>	1	1	VU		LC
Firefinch, African	<i>Lagonosticta rubricata</i>	1	1			
Firefinch, Jameson's	<i>Lagonosticta rhodopareia</i>	1	1			
Firefinch, Red-billed	<i>Lagonosticta senegala</i>	1	1			
Fiscal, Common (Southern)	<i>Lanius collaris</i>	1	1			
Fish-eagle, African	<i>Haliaeetus vocifer</i>	1	1			LV
Fishing-owl, Pel's	<i>Scotopelia peli</i>	1	1	EN	E	LC
Flamingo, Greater	<i>Phoenicopterus ruber</i>	1	1	NT		LC
Flamingo, Lesser	<i>Phoenicopterus minor</i>	1	1	NT		NT
Flufftail, Buff-spotted	<i>Sarothrura elegans</i>	1	1			
Flufftail, Red-chested	<i>Sarothrura rufa</i>	1	1			
Flycatcher, African Dusky	<i>Muscicapa adusta</i>	1	1			
Flycatcher, Ashy	<i>Muscicapa caerulescens</i>	1	1			
Flycatcher, Fairy	<i>Stenostira scita</i>	1				1
Flycatcher, Fiscal	<i>Sigelus silens</i>	1	1			1
Flycatcher, Marico	<i>Bradornis mariquensis</i>	1	1			
Flycatcher, Pale	<i>Bradornis pallidus</i>	1	1			
Flycatcher, Southern Black	<i>Melaenornis pammelaina</i>	1	1			
Flycatcher, Spotted	<i>Muscicapa striata</i>	1	1			
Francolin, Coqui	<i>Peliperdix coqui</i>	1	1			
Francolin, Crested	<i>Dendroperdix sephaena</i>	1	1			
Francolin, Grey-winged	<i>Scleroptila africanus</i>	1	1			
Francolin, Red-winged	<i>Scleroptila levaillantii</i>	1	1			
Francolin, Shelley's	<i>Scleroptila shelleyi</i>	1	1			
Go-away-bird, Grey	<i>Corythaixoides concolor</i>	1	1			
Goose, Egyptian	<i>Alopochen aegyptiacus</i>	1	1			
Goose, Spur-winged	<i>Plectropterus gambensis</i>	1	1			
Goshawk, African	<i>Accipiter tachiro</i>	1	1			

Goshawk, Dark Chanting	<i>Melierax metabates</i>	1	1			
Goshawk, Gabar	<i>Melierax gabar</i>	1	1			
Grassbird, Cape	<i>Sphenoeacus afer</i>	1	1			
Grass-owl, African	<i>Tyto capensis</i>	1		VU	VU	LC
Grebe, Great Crested	<i>Podiceps cristatus</i>	1				LC
Grebe, Little	<i>Tachybaptus ruficollis</i>	1	1			
Greenbul, Sombre	<i>Andropadus importunus</i>	1	1			
Greenbul, Yellow-bellied	<i>Chlorocichla flaviventris</i>	1	1			
Greenbul, Yellow-streaked	<i>Phyllastrephus flavostriatus</i>	1	1			
Green-pigeon, African	<i>Treron calvus</i>	1	1			
Greenshank, Common	<i>Tringa nebularia</i>	1	1			
Ground-hornbill, Southern	<i>Bucorvus leadbeateri</i>	1	1	EN	P	VU
Ground-thrush, Orange	<i>Zoothera gurneyi</i>	1	1	NT		LC
Guineafowl, Helmeted	<i>Numida meleagris</i>	1	1			
Gull, Grey-headed	<i>Larus cirrocephalus</i>	1	1			
Hamerkop, Hamerkop	<i>Scopus umbretta</i>	1	1			
Harrier, Montagu's	<i>Circus pygargus</i>	1	1			
Harrier, Pallid	<i>Circus macrourus</i>	1		NT		NT
Harrier-Hawk, African	<i>Polyboroides typus</i>	1	1			
Hawk, African Cuckoo	<i>Aviceda cuculoides</i>	1	1			
Hawk, Bat	<i>Macheiramphus alcinus</i>	1	1	EN		LC
Hawk-eagle, African	<i>Aquila spilogaster</i>	1	1			
Hawk-eagle, Ayres's	<i>Aquila ayresii</i>	1				
Helmet-shrike, Retz's	<i>Prionops retzii</i>	1	1			
Helmet-shrike, White-crested	<i>Prionops plumatus</i>	1	1			
Heron, Black	<i>Egretta ardesiaca</i>	1	1			
Heron, Black-headed	<i>Ardea melanocephala</i>	1	1			
Heron, Goliath	<i>Ardea goliath</i>	1	1			
Heron, Green-backed	<i>Butorides striata</i>	1	1			
Heron, Grey	<i>Ardea cinerea</i>	1	1			
Heron, Purple	<i>Ardea purpurea</i>	1	1			
Heron, Squacco	<i>Ardeola ralloides</i>	1	1			
Hobby, Eurasian	<i>Falco subbuteo</i>	1	1			
Honeybird, Brown-backed	<i>Prodotiscus regulus</i>	1	1			
Honey-buzzard, European	<i>Pernis apivorus</i>		1			
Honeyguide, Greater	<i>Indicator indicator</i>	1	1			
Honeyguide, Lesser	<i>Indicator minor</i>	1	1			
Honeyguide, Scaly-throated	<i>Indicator variegatus</i>	1	1			
Hoopoe, African	<i>Upupa africana</i>	1	1			
Hornbill, African Grey	<i>Tockus nasutus</i>	1	1			
Hornbill, Crowned	<i>Tockus alboterminatus</i>	1	1			
Hornbill, Damara	<i>Tockus damarensis</i>	1	1			
Hornbill, Hybrid Damara/Red-billed	<i>Tockus damarensis/erythrorhynchus</i>	1				
Hornbill, Redbilled	<i>Tockus erythrorhynchus</i>	1				
Hornbill, Red-billed	<i>Tockus erythrorhynchus</i>	1	1			

Hornbill, Southern Red-billed	<i>Tockus rufirostris</i>		1				
Hornbill, Southern Yellow-billed	<i>Tockus leucomelas</i>	1	1				
Hornbill, Trumpeter	<i>Bycanistes bucinator</i>	1	1				
House-martin, Common	<i>Delichon urbicum</i>	1	1				
Ibis, African Sacred	<i>Threskiornis aethiopicus</i>	1	1				
Ibis, Glossy	<i>Plegadis falcinellus</i>	1	1				
Ibis, Hadedda	<i>Bostrychia hagedash</i>	1	1				
Ibis, Southern Bald	<i>Geronticus calvus</i>	1	1	VU	VU	VU	1
Indigobird, Dusky	<i>Vidua funerea</i>	1	1				
Indigobird, Purple	<i>Vidua purpurascens</i>	1	1				
Indigobird, Village	<i>Vidua chalybeata</i>	1	1				
Jacana, African	<i>Actophilornis africanus</i>	1	1				
Kestrel, Dickinson's	<i>Falco dickinsoni</i>	1					
Kestrel, Greater	<i>Falco rupicoloides</i>	1					
Kestrel, Lesser	<i>Falco naumanni</i>	1	1		VU		
Kestrel, Rock	<i>Falco rupicolus</i>	1	1				
Kingfisher, Brown-hooded	<i>Halcyon albiventris</i>	1	1				
Kingfisher, Giant	<i>Megaceryle maximus</i>	1	1				
Kingfisher, Grey-headed	<i>Halcyon leucocephala</i>	1	1				
Kingfisher, Half-collared	<i>Alcedo semitorquata</i>	1	1	NT			LC
Kingfisher, Malachite	<i>Alcedo cristata</i>	1	1				
Kingfisher, Pied	<i>Ceryle rudis</i>	1	1				
Kingfisher, Striped	<i>Halcyon chelicuti</i>	1	1				
Kingfisher, Woodland	<i>Halcyon senegalensis</i>	1	1				
Kite, Black	<i>Milvus migrans</i>	1					
Kite, Black	<i>Milvus migrans</i>		1				
Kite, Black-shouldered	<i>Elanus caeruleus</i>	1	1				
Kite, Yellow-billed	<i>Milvus aegyptius</i>	1	1				
Korhaan, Red-crested	<i>Lophotis ruficrista</i>	1	1				
Korhaan, White-bellied	<i>Eupodotis senegalensis</i>	1	1	VU			LC
Lapwing, African Wattled	<i>Vanellus senegallus</i>	1	1				
Lapwing, Blacksmith	<i>Vanellus armatus</i>	1	1				
Lapwing, Black-winged	<i>Vanellus melanopterus</i>	1	1				
Lapwing, Crowned	<i>Vanellus coronatus</i>	1	1				
Lapwing, Senegal	<i>Vanellus lugubris</i>	1	1				
Lapwing, White-crowned	<i>Vanellus albiceps</i>	1	1				
Lark, Agulhas Long-billed	<i>Certhilauda brevirostris</i>	1		NT		NR	1
Lark, Benguela Long-billed	<i>Certhilauda benguelensis</i>	1					
Lark, Cape Long-billed	<i>Certhilauda curvirostris</i>	1					1
Lark, Dusky	<i>Pinarocorys nigricans</i>	1	1				
Lark, Eastern Long-billed	<i>Certhilauda semitorquata</i>	1	1				1
Lark, Flappet	<i>Mirafrā rufocinnamomea</i>	1	1				
Lark, Karoo Long-billed	<i>Certhilauda subcoronata</i>	1					
Lark, Longbilled	<i>Mirafrā curvirostris</i>	1					
Lark, Monotonous	<i>Mirafrā passerina</i>	1	1				

Lark, Red-capped	<i>Calandrella cinerea</i>	1	1			
Lark, Rufous-naped	<i>Mirafrā africana</i>	1	1			
Lark, Sabota	<i>Calendulauda sabota</i>	1	1			
Longclaw, Cape	<i>Macronyx capensis</i>	1	1			
Longclaw, Yellow-throated	<i>Macronyx croceus</i>	1	1			
Lourie, Knysna	<i>Tauraco corythaix</i>	1				
Mannikin, Bronze	<i>Spermestes cucullatus</i>	1	1			
Mannikin, Magpie	<i>Spermestes fringilloides</i>					1
Mannikin, Red-backed	<i>Spermestes bicolor</i>	1	1			LC
Marsh-harrier, African	<i>Circus ranivorus</i>	1	1	EN	P	LC
Martin, Banded	<i>Riparia cincta</i>		1			
Martin, Brown-throated	<i>Riparia paludicola</i>	1	1			
Martin, Rock	<i>Hirundo fuligula</i>	1	1			
Martin, Sand	<i>Riparia riparia</i>	1	1			
Masked-weaver, Lesser	<i>Ploceus intermedius</i>	1	1			
Masked-weaver, Southern	<i>Ploceus velatus</i>	1	1			
Moorhen, Common	<i>Gallinula chloropus</i>	1	1			
Moorhen, Lesser	<i>Gallinula angulata</i>	1	1			
Mousebird, Red-faced	<i>Urocolius indicus</i>	1	1			
Mousebird, Speckled	<i>Colius striatus</i>	1	1			
Myna, Common	<i>Acridotheres tristis</i>		1			
Neddicky, Neddicky	<i>Cisticola fulvicapilla</i>	1	1			
Night-Heron, Black-crowned	<i>Nycticorax nycticorax</i>	1	1			
Night-Heron, White-backed	<i>Gorsachius leuconotus</i>	1	1	VU		LC
Nightingale, Thrush	<i>Luscinia luscinia</i>		1			
Nightjar, European	<i>Caprimulgus europaeus</i>	1	1			
Nightjar, Fiery-necked	<i>Caprimulgus pectoralis</i>	1	1			
Nightjar, Freckled	<i>Caprimulgus tristigma</i>	1	1			
Nightjar, Pennant-winged	<i>Macrodipteryx vexillarius</i>	1				
Nightjar, Rufous-cheeked	<i>Caprimulgus rufigena</i>	1	1			
Nightjar, Square-tailed	<i>Caprimulgus fossii</i>	1	1			
Olive-pigeon, African	<i>Columba arquatrix</i>	1	1			
Openbill, African	<i>Anastomus lamelligerus</i>	1	1			
Oriole, African Golden	<i>Oriolus auratus</i>	1	1			
Oriole, Black-headed	<i>Oriolus larvatus</i>	1	1			
Oriole, Eurasian Golden	<i>Oriolus oriolus</i>	1	1			
Osprey, Osprey	<i>Pandion haliaetus</i>	1	1			
Ostrich, Common	<i>Struthio camelus</i>	1	1			
Owl, Barn	<i>Tyto alba</i>	1	1			
Owl, Marsh	<i>Asio capensis</i>	1				
Owlet, African Barred	<i>Glaucidium capense</i>	1	1			
Owlet, Pearl-spotted	<i>Glaucidium perlatum</i>	1	1			
Oxpecker, Red-billed	<i>Buphagus erythrorhynchus</i>	1	1			
Oxpecker, Yellow-billed	<i>Buphagus africanus</i>		1			LC
Painted-snipe, Greater	<i>Rostratula benghalensis</i>	1	1	VU		LC

Palm-swift, African	<i>Cypsiurus parvus</i>	1	1			
Palm-thrush, Collared	<i>Cichladusa arquata</i>					1
Paradise-flycatcher, African	<i>Terpsiphone viridis</i>	1	1			
Paradise-whydah, Long-tailed	<i>Vidua paradisaea</i>	1	1			
Parrot, Brown-headed	<i>Poicephalus cryptoxanthus</i>	1	1			
Parrot, Cape	<i>Poicephalus robustus</i>	1				
Parrot, Cape Parrot	<i>Poicephalus robustus</i>	1	1			
Parrot, Grey-headed Parrot	<i>Poicephalus fuscicollis</i>	1				
Pelican, Great White	<i>Pelecanus onocrotalus</i>	1		VU		LC
Pelican, Pink-backed	<i>Pelecanus rufescens</i>	1	1	VU	E	LC
Penduline-tit, Cape	<i>Anthoscopus minutus</i>	1	1			
Penduline-tit, Grey	<i>Anthoscopus caroli</i>	1	1			
Petronia, Yellow-throated	<i>Petronia superciliaris</i>	1	1			
Pigeon, Speckled	<i>Columba guinea</i>	1	1			
Pipit, African	<i>Anthus cinnamomeus</i>	1	1			
Pipit, Buffy	<i>Anthus vaalensis</i>	1	1			
Pipit, Bushveld	<i>Anthus caffer</i>	1	1			
Pipit, Long-billed	<i>Anthus similis</i>	1	1			
Pipit, Plain-backed	<i>Anthus leucophrys</i>	1	1			
Pipit, Striped	<i>Anthus lineiventris</i>	1	1			
Plover, Caspian	<i>Charadrius asiaticus</i>	1	1			
Plover, Common Ringed	<i>Charadrius hiaticula</i>					1
Plover, Kittlitz's	<i>Charadrius pecuarius</i>	1	1			
Plover, Three-banded	<i>Charadrius tricollaris</i>	1	1			
Plover, White-fronted	<i>Charadrius marginatus</i>	1	1			
Pochard, Southern	<i>Netta erythrophthalma</i>	1	1			
Pratincole, Collared	<i>Glareola pratincola</i>	1	1			
Prinia, Black-chested	<i>Prinia flavicans</i>	1	1			
Prinia, Drakensberg	<i>Prinia hypoxantha</i>	1	1			1
Prinia, Karoo	<i>Prinia maculosa</i>	1	1			1
Prinia, Spotted	<i>Prinia hypoxantha</i>	1				
Prinia, Tawny-flanked	<i>Prinia subflava</i>	1	1			
Puffback, Black-backed	<i>Dryoscopus cubla</i>	1	1			
Pygmy-Goose, African	<i>Nettapus auritus</i>	1		VU		LC
Pygmy-Kingfisher, African	<i>Ispidina picta</i>	1	1			
Pytilia, Green-winged	<i>Pytilia melba</i>	1	1			
Pytilia, Orange-winged	<i>Pytilia afra</i>	1				
Quail, Common	<i>Coturnix coturnix</i>	1	1			
Quail, Harlequin	<i>Coturnix delegorguei</i>	1	1			
Quailfinch, African	<i>Ortygospiza atricollis</i>	1	1			
Quelea, Red-billed	<i>Quelea quelea</i>	1	1			
Rail, African	<i>Rallus caerulescens</i>	1	1			
Raven, White-necked	<i>Corvus albicollis</i>	1	1			
Reed-warbler, African	<i>Acrocephalus baeticatus</i>	1	1			
Reed-warbler, Great	<i>Acrocephalus arundinaceus</i>	1	1			

Robin, White-starred	<i>Pogonocichla stellata</i>	1	1		
Robin-chat, Cape	<i>Cossypha caffra</i>	1	1		
Robin-chat, Chorister	<i>Cossypha dichroa</i>	1	1		
Robin-chat, Red-capped	<i>Cossypha natalensis</i>	1	1		
Robin-chat, White-browed	<i>Cossypha heuglini</i>	1	1		
Robin-chat, White-throated	<i>Cossypha humeralis</i>	1	1		
Rock-thrush, Cape	<i>Monticola rupestris</i>	1	1		1
Rock-thrush, Sentinel	<i>Monticola explorator</i>	1	1		1
Rock-thrush, Short-toed	<i>Monticola brevipes</i>	1	1		
Roller, Broad-billed	<i>Eurystomus glaucurus</i>	1	1		
Roller, European	<i>Coracias garrulus</i>	1	1	NT	NT
Roller, Lilac-breasted	<i>Coracias caudatus</i>	1	1		
Roller, Purple	<i>Coracias naevius</i>	1	1		
Ruff, Ruff	<i>Philomachus pugnax</i>	1	1		
Rush-warbler, Little	<i>Bradypterus baboecala</i>	1	1		
Sandgrouse, Double-banded	<i>Pterocles bicinctus</i>	1	1		
Sandpiper, Common	<i>Actitis hypoleucos</i>	1	1		
Sandpiper, Curlew	<i>Calidris ferruginea</i>	1	1		
Sandpiper, Green	<i>Tringa ochropus</i>	1	1		
Sandpiper, Marsh	<i>Tringa stagnatilis</i>	1	1		
Sandpiper, Wood	<i>Tringa glareola</i>	1	1		
Saw-wing, Black (Southern race)	<i>Psalidoprocne holomelaena</i>	1	1		
Scimitarbill, Common	<i>Rhinopomastus cyanomelas</i>	1	1		
Scops-owl, African	<i>Otus senegalensis</i>	1	1		
Scops-owl, Southern White-faced	<i>Ptilopus granti</i>	1	1		
Scrub-robin, Bearded	<i>Cercotrichas quadrivirgata</i>	1	1		
Scrub-robin, Brown	<i>Cercotrichas signata</i>	1	1		
Scrub-robin, Kalahari	<i>Cercotrichas paena</i>	1	1		
Scrub-robin, White-browed	<i>Cercotrichas leucophrys</i>	1	1		
Secretarybird, Secretarybird	<i>Sagittarius serpentarius</i>	1	1	VU	VU
Seedeater, Streaky-headed	<i>Crithagra gularis</i>	1	1		
Shikra, Shikra	<i>Accipiter badius</i>	1	1		
Shoveler, Cape	<i>Anas smithii</i>	1			
Shrike, Crimson-breasted	<i>Laniarius atrococcineus</i>	1	1		
Shrike, Lesser Grey	<i>Lanius minor</i>	1	1		
Shrike, Magpie	<i>Corvinella melanoleuca</i>	1	1		
Shrike, Red-backed	<i>Lanius collurio</i>	1	1		
Shrike, Southern White-crowned	<i>Eurocephalus anguitimens</i>	1	1		
Snake-eagle, Black-chested	<i>Circaetus pectoralis</i>	1	1		
Snake-eagle, Brown	<i>Circaetus cinereus</i>	1	1		
Snipe, African	<i>Gallinago nigripennis</i>	1	1		
Sparrow, Cape	<i>Passer melanurus</i>	1	1		
Sparrow, Great	<i>Passer motitensis</i>	1	1		

Sparrow, Grey-headed	<i>Passer diffusus</i>	1				
Sparrow, House	<i>Passer domesticus</i>	1	1			
Sparrow, Northern Grey-headed	<i>Passer griseus</i>	1	1			
Sparrow, Southern Grey-headed	<i>Passer diffusus</i>	1	1			
Sparrowhawk, Black	<i>Accipiter melanoleucus</i>	1	1			
Sparrowhawk, Little	<i>Accipiter minullus</i>	1	1			
Sparrowhawk, Ovambo	<i>Accipiter ovampensis</i>	1	1			
Sparrowhawk, Rufous-chested	<i>Accipiter rufiventris</i>	1	1			
Sparrowlark, Chestnut-backed	<i>Eremopterix leucotis</i>	1	1			
Sparrowlark, Grey-backed	<i>Eremopterix verticalis</i>					1
Sparrow-weaver, White-browed	<i>Plocepasser mahali</i>	1	1			
Spoonbill, African	<i>Platalea alba</i>	1	1			
Spurfowl, Natal	<i>Pternistis natalensis</i>	1	1			
Spurfowl, Red-necked	<i>Pternistis afer</i>	1	1			
Spurfowl, Swainson's	<i>Pternistis swainsonii</i>	1	1			
Starling, Black-bellied	<i>Lamprotornis corruscus</i>					1
Starling, Burchell's	<i>Lamprotornis australis</i>	1	1			
Starling, Cape Glossy	<i>Lamprotornis nitens</i>	1	1			
Starling, Greater Blue-eared	<i>Lamprotornis chalybaeus</i>	1	1			
Starling, Red-winged	<i>Onychognathus morio</i>	1	1			
Starling, Violet-backed	<i>Cinnyricinclus leucogaster</i>	1	1			
Starling, Wattled	<i>Creatophora cinerea</i>	1	1			
Stilt, Black-winged	<i>Himantopus himantopus</i>	1	1			
Stint, Little	<i>Calidris minuta</i>	1	1			
Stonechat, African	<i>Saxicola torquatus</i>	1	1			
Stork, Abdim's	<i>Ciconia abdimii</i>	1	1	NT		LC
Stork, Black	<i>Ciconia nigra</i>	1	1	VU	VU	LC
Stork, Marabou	<i>Leptoptilos crumeniferus</i>	1	1	NT		LC
Stork, Saddle-billed	<i>Ephippiorhynchus senegalensis</i>	1	1	EN	E	LC
Stork, White	<i>Ciconia ciconia</i>	1	1			
Stork, Woolly-necked	<i>Ciconia episcopus</i>	1	1			
Stork, Yellow-billed	<i>Mycteria ibis</i>	1	1	EN		LC
Sugarbird, Gurney's	<i>Promerops gurneyi</i>	1	1			
Sunbird, Amethyst	<i>Chalcomitra amethystina</i>	1	1			
Sunbird, Collared	<i>Hedydipna collaris</i>	1	1			
Sunbird, Greater Double-collared	<i>Cinnyris afer</i>	1	1			1
Sunbird, Malachite	<i>Nectarinia famosa</i>	1	1			
Sunbird, Marico	<i>Cinnyris mariquensis</i>	1	1			
Sunbird, Purple-banded	<i>Cinnyris bifasciatus</i>					1
Sunbird, Scarlet-chested	<i>Chalcomitra senegalensis</i>	1	1			

Sunbird, Southern Double-collared	<i>Cinnyris chalybeus</i>	1	1				1
Sunbird, White-bellied	<i>Cinnyris talatala</i>	1	1				
Swallow, Barn	<i>Hirundo rustica</i>	1	1				
Swallow, Blue	<i>Hirundo atrocaerulea</i>	1		CR	CE	VU	
Swallow, Greater Striped	<i>Hirundo cucullata</i>	1	1				
Swallow, Grey-rumped	<i>Pseudhirundo griseopyga</i>	1	1				
Swallow, Lesser Striped	<i>Hirundo abyssinica</i>	1	1				
Swallow, Mosque	<i>Hirundo senegalensis</i>	1	1				
Swallow, Pearl-breasted	<i>Hirundo dimidiata</i>	1	1				
Swallow, Red-breasted	<i>Hirundo semirufa</i>	1	1				
Swallow, White-throated	<i>Hirundo albigularis</i>	1	1				
Swallow, Wire-tailed	<i>Hirundo smithii</i>	1	1				
Swampphen, African Purple	<i>Porphyrio madagascariensis</i>	1	1				
Swamp-warbler, Lesser	<i>Acrocephalus gracilirostris</i>	1	1				
Swift, African Black	<i>Apus barbatus</i>	1	1				
Swift, Alpine	<i>Tachymarptis melba</i>	1	1				
Swift, Common	<i>Apus apus</i>	1	1				
Swift, Horus	<i>Apus horus</i>	1	1				
Swift, Little	<i>Apus affinis</i>	1	1				
Swift, White-rumped	<i>Apus caffer</i>	1	1				
Tchagra, Black-crowned	<i>Tchagra senegalus</i>	1	1				
Tchagra, Brown-crowned	<i>Tchagra australis</i>	1	1				
Tchagra, Southern	<i>Tchagra tchagra</i>	1	1				1
Teal, Cape	<i>Anas capensis</i>	1	1				
Teal, Hottentot	<i>Anas hottentota</i>	1	1				
Teal, Red-billed	<i>Anas erythrorhyncha</i>	1	1				
Tern, Whiskered	<i>Chlidonias hybrida</i>	1	1				
Tern, White-winged	<i>Chlidonias leucopterus</i>	1	1				
Thick-knee, Spotted	<i>Burhinus capensis</i>	1	1				
Thick-knee, Water	<i>Burhinus vermiculatus</i>	1	1				
Thrush, Groundscraper	<i>Psophocichla litsipsirupa</i>	1	1				1
Thrush, Karoo	<i>Turdus smithi</i>	1	1				
Thrush, Kurrichane	<i>Turdus libonyanus</i>	1	1				
Thrush, Olive	<i>Turdus olivaceus</i>	1	1				
Thrush, Olive	<i>Turdus olivaceus</i>	1					
Tinkerbird, Yellow-fronted	<i>Pogoniulus chrysoconus</i>	1	1				
Tinkerbird, Yellow-rumped	<i>Pogoniulus bilineatus</i>		1				
Tit, Ashy	<i>Parus cinerascens</i>	1	1				
Tit, Southern Black	<i>Parus niger</i>	1	1				
Tit-babbler, Chestnut-vented	<i>Parisoma subcaeruleum</i>	1	1				
Tit-flycatcher, Grey	<i>Myioparus plumbeus</i>	1	1				
Trogon, Narina	<i>Apaloderma narina</i>	1	1				
Turaco, Knysna	<i>Tauraco corythaix</i>	1	1				
Turaco, Livingstone's	<i>Tauraco livingstonii</i>	1					
Turaco, Purple-crested	<i>Gallirex porphyreolophus</i>	1	1				

Turaco, Schalow's	<i>Tauraco schalowi</i>	1					
Turtle-dove, Cape	<i>Streptopelia capicola</i>	1	1				
Twinspot, Green	<i>Mandingoa nitidula</i>	1	1				
Vulture, Cape	<i>Gyps coprotheres</i>	1	1	EN	E	VU	1
Vulture, Hooded	<i>Necrosyrtes monachus</i>	1	1	EN	E	EN	
Vulture, Lappet-faced	<i>Torgos tracheliotus</i>	1	1	EN	VU	EN	
Vulture, White-backed	<i>Gyps africanus</i>	1	1	EN	E	EN	
Vulture, White-headed	<i>Trigonoceps occipitalis</i>	1	1	EN	VU	VU	
Wagtail, African Pied	<i>Motacilla aguimp</i>	1	1				
Wagtail, Cape	<i>Motacilla capensis</i>	1	1				
Wagtail, Grey	<i>Motacilla cinerea</i>	1					
Wagtail, Mountain	<i>Motacilla clara</i>	1	1				
Warbler, Barratt's	<i>Bradypterus barratti</i>	1	1				
Warbler, Broad-tailed	<i>Schoenicola brevirostris</i>	1	1				
Warbler, Dark-capped Yellow	<i>Chloropeta natalensis</i>	1	1				
Warbler, Garden	<i>Sylvia borin</i>	1	1				
Warbler, Icterine	<i>Hippolais icterina</i>	1	1				
Warbler, Marsh	<i>Acrocephalus palustris</i>	1	1				
Warbler, Olive-tree	<i>Hippolais olivetorum</i>		1				
Warbler, Sedge	<i>Acrocephalus schoenobaenus</i>	1	1				
Warbler, Willow	<i>Phylloscopus trochilus</i>	1	1				
Waxbill, Black-faced	<i>Estrilda erythronotos</i>	1	1				
Waxbill, Blue	<i>Uraeginthus angolensis</i>	1	1				
Waxbill, Common	<i>Estrilda astrild</i>	1	1				
Waxbill, Grey	<i>Estrilda perreini</i>	1					
Waxbill, Orange-breasted	<i>Amandava subflava</i>	1	1				
Waxbill, Swee	<i>Coccyzygia melanotis</i>	1	1				
Waxbill, Violet-eared	<i>Granatina granatina</i>	1	1				
Weaver, Cape	<i>Ploceus capensis</i>	1	1				1
Weaver, Golden	<i>Ploceus xanthops</i>	1	1				
Weaver, Red-headed	<i>Anaplectes rubriceps</i>	1	1				
Weaver, Spectacled	<i>Ploceus ocularis</i>	1	1				
Weaver, Thick-billed	<i>Amblyospiza albifrons</i>	1	1				
Weaver, Village	<i>Ploceus cucullatus</i>	1	1				
Wheatear, Capped	<i>Oenanthe pileata</i>	1	1				
Wheatear, Mountain	<i>Oenanthe monticola</i>	1					
White-eye, Cape	<i>Zosterops pallidus</i>	1					
White-eye, Cape	<i>Zosterops virens</i>	1	1				1
White-eye, Orange River	<i>Zosterops pallidus</i>	1					
Whitethroat, Common	<i>Sylvia communis</i>		1				
Whydah, Pin-tailed	<i>Vidua macroura</i>	1	1				
Whydah, Shaft-tailed	<i>Vidua regia</i>	1	1				
Widowbird, Fan-tailed	<i>Euplectes axillaris</i>	1	1				
Widowbird, Long-tailed	<i>Euplectes progne</i>	1	1				
Widowbird, Red-collared	<i>Euplectes ardens</i>	1	1				

Widowbird, White-winged	<i>Euplectes albonotatus</i>	1	1
Wood-dove, Blue-spotted	<i>Turtur afer</i>	1	1
Wood-dove, Emerald-spotted	<i>Turtur chalcospilos</i>	1	1
Wood-hoopoe, Green	<i>Phoeniculus purpureus</i>	1	1
Woodland-warbler, Yellow-throated	<i>Phylloscopus ruficapilla</i>	1	1
Wood-owl, African	<i>Strix woodfordii</i>	1	1
Woodpecker, Bearded	<i>Dendropicos namaquus</i>	1	1
Woodpecker, Bennett's	<i>Campethera bennettii</i>	1	1
Woodpecker, Cardinal	<i>Dendropicos fuscescens</i>	1	1
Woodpecker, Golden-tailed	<i>Campethera abingoni</i>	1	1
Woodpecker, Ground	<i>Geocolaptes olivaceus</i>	1	1
Woodpecker, Olive	<i>Dendropicos griseocephalus</i>	1	1
Wren-warbler, Stierling's	<i>Calamonastes stierlingi</i>	1	1
Wryneck, Red-throated	<i>Jynx ruficollis</i>	1	1