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BCR COAL VLAKFONTEIN MINE
AVIFAUNAL SCOPING REPORT

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PROFESSIONAL EXPERIENCE

Ms. Megan Diamond completed a Bachelor of Science degree in Environmental Management from the University of South Africa and has been involved in conservation for 20 years. She has 16 years' worth of experience in the field of bird interactions with electrical infrastructure and during this time has completed impact assessments for over 140 projects. During her tenure at the Endangered Wildlife Trust's Wildlife & Energy Programme and the Programme's primary project (i.e. the Eskom-EWT Strategic Partnership) from 2006 to 2013, Megan was responsible for assisting the energy industry and the national utility in minimising the negative impacts, associated with the construction and operation of electrical infrastructure, on wildlife through the provision of strategic guidance, risk and impact assessments, training and research. Megan (SACNASP Environmental Science Registration number 300022/14) currently owns and manages *Feathers Environmental Services* and is tasked with providing guidance to industry through the development of best practice procedures and avifaunal specialist studies for various developments including renewable energy facilities, power lines, power stations and substation infrastructure in addition to railway infrastructure and residential properties within South Africa and elsewhere within Africa. Megan has attended and presented at several conferences and facilitated workshops, as a subject expert, since 2007. Megan has authored and co-authored several academic papers, research reports and energy industry related guidelines, including the *BirdLife South Africa/ Endangered Wildlife Trust best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa* and the *Avian Wind Farm Sensitivity Map for South Africa* (2015), and played an instrumental role in facilitating the endorsement of these two products by the South African Wind Energy Association (SAWEA), IAIAsa (International Association for Impact Assessment South Africa) and Eskom. She chaired the Birds and Wind Energy Specialist Group in South Africa (2011/2012) and the IUCN/SSC Crane Specialist Group's Crane and Power line Network (2013-2015), a working group comprised of subject matter experts from across the world, working in partnership to share lessons, develop capacity, pool resources, and accelerate collective learning towards finding innovative solutions to mitigate this impact on threatened crane populations. She is currently a member of the IUCN Stork, Ibis and Spoonbill Specialist Group and the Eskom-EWT Strategic Partnership Ludwig's Bustard Working Group.

DECLARATION OF INDEPENDENCE

I, Megan Diamond, in my capacity as a specialist consultant, hereby declare that I:

- * Act as an independent specialist to Environmental Management Assistance (Pty) Ltd for this project.
- * 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 Amendment to Environmental Impact Assessment Regulations, 2017.
- * Will not be affected by the outcome of the environmental process, of which this report forms part of.
- * Do not have any influence over the decisions made by the governing authorities.
- * 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.
- * 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 Amendment to Environmental Impact Assessment Regulations, 2017.

INDEMNITY

- * This avifaunal impact assessment report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- * This report is based on a desktop investigation using the available information and data related to the site to be affected. No in-field site verification, long-term investigation or monitoring has been conducted.
- * The Precautionary Principle has been applied throughout this investigation.
- * The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information at the time of study.
- * 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 modify 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.



31 July 2022

EXECUTIVE SUMMARY

BCR Coal (Pty) Ltd (hereinafter referred to as *BCA*) intends to establish an open pit coal mine and its associated ancillary infrastructure. The excavated and processed coal will be used to supply the local thermal market i.e. utilised by local Eskom coal-fired power stations, that are currently experiencing a shortage of coal supply from their current suppliers. The proposed BCR Coal Vlakfontein Mine is situated on portions 2, 11 and 21 of farm Vlakfontein 108 IT and portions 1, 7, 14, and 12 of farm Welgelegen 107 107 IT, approximately 5km south-east of Breyten within the Msukaligwa Municipality, Mpumalanga Province. The project site that has been earmarked for the proposed BCR Coal Vlakfontein Mine is approximately 1300ha in extent, with a development footprint of 422ha (i.e. 397ha required for the mine and an additional 25ha for its associated infrastructure).

A total of 190 bird species have been recorded within the relevant pentads during the South African Bird Atlas Project 2 atlassing period to date. The presence of these species in the broader area provides an indication of the diversity of species that could potentially occur within the areas earmarked for the proposed development area, particularly where pockets of natural vegetation/habitats persist. Of the 190 species, 11 of these are considered to be of regional conservation concern.

Vegetation is one of the primary factors determining bird species distribution and abundance in an area. It is widely accepted within ornithological circles that vegetation structure is more important in determining which bird species will occur there. Whilst much of the distribution and abundance of bird species can be attributed to the broad vegetation types present in an area, it is the smaller spatial scale habitats (micro habitats) that support the requirements of a particular bird species that need to be examined in greater detail. Micro habitats are shaped by factors other than vegetation, such as topography, land use, food availability, and various anthropogenic factors all of which will either attract or deter birds and are critically important in mapping the site in terms of avifaunal sensitivity and ultimately informing mitigation requirements. This desktop investigation of the proposed *BCR Coal Vlakfontein Mine* Project Area of Influence (PAOI) revealed at least ten broadly described avifaunal micro habitats i.e. grassland, rivers, wetlands, pans, waterbodies, woodland, cultivated lands, fallow lands, exotic/alien tree stands and urban/industrial areas.

In accordance with the minimum report requirements listed in the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (Government Gazette No 43855, 30 October 2020), a screening report for the proposed study area was generated on 10 June 2022. Parts of the proposed study area are considered to have a HIGH and MEDIUM Animal Species Theme Sensitivity, as a result of the presence of Southern Bald Ibis *Geronticus calvus*, African Grass Owl *Tyto capensis*, Denham's Bustard *Neotis denhamii*, White-bellied Korhaan *Eupodotis senegalensis* and Caspian Tern *Hydroprogne caspia*. Based on the low number (n=2) of Southern Bald Ibis recorded in the PAOI, this preliminary assessment assigns a MEDIUM rating to the PAOI. In addition, it is unlikely that African

Grass Owl will occur within the PAOI, based on previous surveys conducted in the area (pers comms. Christelle Trutter, African Grass Owl Study Group Manager) and White-bellied Korhaan and Caspian Tern have not been recorded in the PAOI to date. Notable Species of Conservation Concern (SCC) that have been recorded, albeit in low numbers, include Secretarybird *Sagittarius serpentarius*, Deham's Bustard, Grey Crowned Crane *Balearica regulorum*, Black Harrier *Circus maurus*, African Marsh Harrier *Circus ranivorus*, Lanner Falcon *Falco biarmicus*, Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *Phoeniconaias minor* in addition to the availability of suitable habitat, thereby confirming the MEDIUM sensitivity rating. This rating will be verified further during the EIA phase of the project, following a site verification survey to the proposed development area and broader PAOI.

TABLE 6: Summary of desktop verification outcome

SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
AVIFAUNAL SCOPING ASSESSMENT			
High	Medium	EIA Phase – Site Survey and Avifaunal Impact Assessment	Section 7 & 8
Medium	Medium	EIA Phase – Site Survey and Avifaunal Impact Assessment	Section 7 & 8

The effects of any development on birds are highly variable and depend on a wide range of factors including the specification of the development, the topography of the surrounding land, the habitats affected and the number and diversity of species present. The principal areas of concern for SCC and non-SCC priority species related to the proposed development are listed below:

- * Displacement due to habitat loss in the physical *BCR Coal Vlakfontein Mine* and ancillary infrastructure footprint;
- * Displacement due to disturbance associated with establishment, construction, operation/maintenance and decommissioning of the proposed *BCR Coal Vlakfontein Mine* and its ancillary infrastructure;
- * Mortality due to collision with the power lines;
- * Mortality due to electrocution on the power line poles/towers; and
- * Mortality due to collision with motor vehicles.

The aforementioned impacts will be described and assessed in detail, following the site survey to the proposed *BCR Coal Vlakfontein Mine* development area and PAOI during the EIA phase of the project process.

In conclusion, this high-level assessment has identified at least ten avifaunal habitats of varying sensitivities within the proposed development area and PAOI. Despite anthropogenic impacts, mostly in the form of agricultural practices that have largely transformed the landscape, potentially sensitive habitat persists within the study area. The establishment and operation of the proposed *BCR Coal Vlakfontein Mine* and its ancillary

infrastructure will likely result in impacts of medium to high significance, which may be reduced through the application of stringent mitigation measures. In order to ensure the sustainable development of the proposed *BCR Coal Vlakfontein Mine* further, specialist avifaunal impact assessment studies must be conducted as part of the EIA process in order to:

- * Confirm avifaunal microhabitats within the proposed development area and assess these for their suitability to support SCC and non-SCC priority species, in terms of breeding, roosting and foraging;
- * Describe the avifaunal communities (both SCC and non-SCC priority species) most likely to be impacted, based on data collected as part of a systematic and quantified data collection process:

a. Sample counts of small terrestrial species

Small terrestrial birds are an important component of this programme. Given the spatial scale of the development, these smaller species may be particularly vulnerable to displacement and habitat level effects. Sampling these species is aimed at establishing indices of abundance for small terrestrial birds in the study area. These counts should be done when conditions are optimal. In this case this means the times when birds are most active and vocal, i.e. early mornings. A minimum of 12 point count survey points will be established across the PAOI.

b. Counts of large terrestrial species and raptors

This is a very similar data collection technique to that above, the aim being to establish indices of abundance for large terrestrial species and raptors. These species are relatively easily detected from a vehicle, hence vehicle-based counts are conducted in order to determine the presence and number of birds of relevant species in the study area. Detection of these large species is less dependent on their activity levels and calls, so these counts can be done later in the day. A minimum of one driven transect route will be established and conducted during the site survey.

c. Focal site surveys and monitoring

Any particularly sensitive sites such as wetlands, dams and breeding sites will be identified and monitored during the site survey.

d. Incidental observations

All other incidental sightings of SCC and non-SCC priority species (and particularly those suggestive of breeding or important feeding or roosting sites) within the PAOI will be georeferenced and documented.

- * Provide a detailed description of the impacts associated with the construction, operation and decommissioning of the proposed *BCR Coal Vlakfontein Mine* and its ancillary infrastructure;

- * Assess the significance (rated according to a pre-determined set of criteria, as supplied by the primary consultant) of the identified direct, indirect and cumulative impacts, during the construction, operation and decommissioning phases of the proposed development based on data collected in-field;
- * Consider layout plans and advise possible changes to the layout (alternatives);
- * Recommend practical mitigation measures for the management of the identified impacts, at each stage of the development process, for inclusion in the draft Environmental Management Programme (EMPr);
- * Propose a monitoring programme for the sensitive areas, species or receptors (if necessary); and
- * Describe the gaps in baseline data will be provided. An indication of the confidence levels will be given. The best available data sources will be used to predict the impacts, and extensive use will be made of local knowledge if available.

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1. INTRODUCTION

1.1 Background

BCR Coal (Pty) Ltd (hereinafter referred to as *BCA*) intends to establish an open pit coal mine and its associated ancillary infrastructure (hereinafter referred to as the *BCR Coal Vlakfontein Mine*). The excavated and processed coal will be used to supply the local thermal market i.e. utilised by local Eskom coal-fired power stations, that are currently experiencing a shortage of coal supply from their current suppliers.

The National Environmental Management Act (NEMA) (Act 107 of 1998) requires that an impact assessment be conducted for any development which could have a significant effect on the environment, with the objective to identify, predict and evaluate the actual and potential impacts of these activities on ecological systems; identify alternatives; and provide recommendations for mitigation to minimize the negative impacts. In order to meet the Scoping and Environmental Impact Reporting (S&EIR) requirements as outlined in the 2014 National Environmental Management Act (No 107 of 1998) Regulations GNR 983, GNR 984 and GNR 985, as amended in 2017, *BCR* require detailed specialist studies that will document any potential fatal flaws, the impacts of the project and recommend measures to manage (maximise positive and minimise negative) and monitor those impacts. *BCR* has appointed Environmental Management Assistance (Pty) Ltd (hereinafter referred to as *EMA*) as independent environmental assessment practitioners to manage the Environmental Impact Assessment (EIA) process for the proposed *BCR Coal Vlakfontein Mine*. Feathers Environmental Services CC was appointed to compile the avifaunal component for this first (scoping) phase of the EIA process.

1.2 Project Location

The proposed BCR Coal Vlakfontein Mine is situated on portions 2, 11 and 21 of farm Vlakfontein 108 IT and portions 1, 7, 14, and 12 of farm Welgelegen 107 107 IT, approximately 5km south-east of Breyten within the Msukaligwa Municipality, Mpumalanga Province (FIGURE 1).

1.3 Project Description

The project site that has been earmarked for the proposed BCR Coal Vlakfontein Mine is approximately 1300ha in extent, with a development footprint of 422ha (i.e. 397ha required for the mine and an additional 25ha for its associated infrastructure).

The key infrastructure components associated with the proposed BCR Coal Vlakfontein Mine project consists of the following:

- * open pit mine, with portals to enable the remainder of the ore to be extracted using underground mining methods;
- * access & haul roads, including the upgrading of the access point to mining area;

- * contractor's yard;
- * offices;
- * weighbridge, workshop and stores;
- * septic/chemical ablution facilities;
- * diesel facilities and hardstand;
- * electricity and water supply;
- * stockpiles (topsoil, overburden (waste), subsoil/softs, ROM);
- * crushing and screening facility;
- * surface water management measures (stormwater diversion berms and trenches; pollution control dams etc);
- * medical station; and
- * diesel generator.

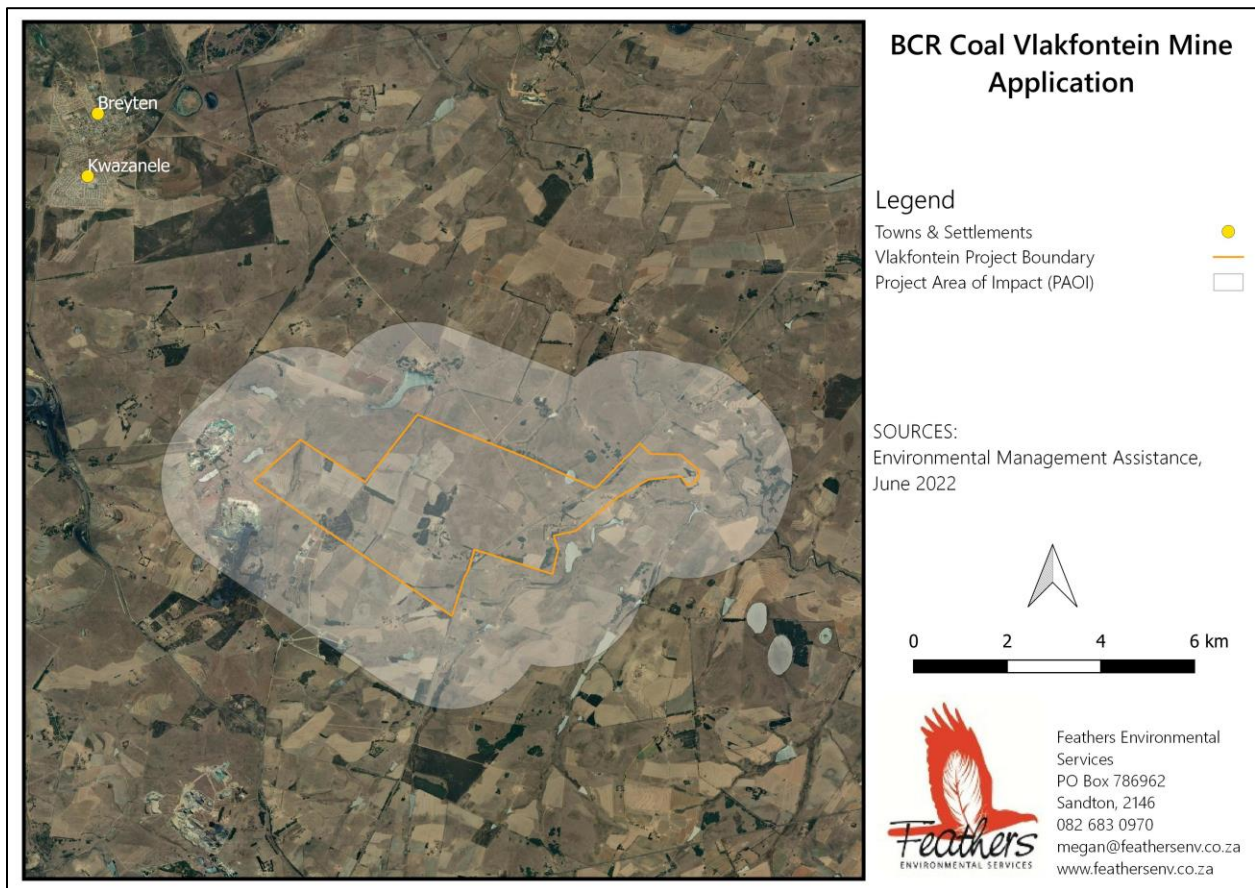


FIGURE 1: Regional map detailing the location of the proposed *BCR Coal Vlakfontein Mine* located within the Msukaligwa Municipality, Mpumalanga Province

2. LEGISLATIVE CONTEXT

2.1 Agreements and Conventions

South Africa is party to various agreements and conventions (TABLE 1) which are relevant to the conservation of avifauna (BirdLife International, 2022) .

TABLE 1: Agreements and conventions which South Africa is party to and which is relevant to the conservation of avifauna.

Convention name	Description	Geographic scope
African-Eurasian Waterbird Agreement (AEWA)	<p>The Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA) is an intergovernmental treaty dedicated to the conservation of migratory waterbirds and their habitats across Africa, Europe, the Middle East, Central Asia, Greenland and the Canadian Archipelago.</p> <p>The AEWA covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle, including many species of divers, grebes, pelicans, cormorants, herons, storks, rails, ibises, spoonbills, flamingos, ducks, swans, geese, cranes, waders, gulls, terns, tropic birds, auks, frigate birds and even the South African penguin.</p> <p>The core activities carried out under AEWA are described in its Action Plan, which is legally binding for all countries that have joined the Agreement. The AEWA Action Plan details the various measures to be undertaken by Contracting Parties to guarantee the conservation of migratory waterbirds within their national boundaries. These include species and habitat protection, and the management of human activities, as well as legal and emergency measures.</p>	Regional
Convention on Biological Diversity (CBD), Nairobi, 1992	<p>The CBD represents a commitment to sustainable development. The Convention has three main objectives: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources.</p> <p>The convention makes provision (in a general policy guideline) for keeping and restoring biodiversity. In addition to this the CBD is an ardent supporter of thorough assessment procedures (Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs) and requires that Parties apply these processes when planning activities that will have a biodiversity impact. An important principle encompassed by the CBD is the precautionary principle which essentially states that where serious threats to the environment exist, lack of full scientific certainty should not be used as a reason for delaying management of these risks. The burden of proof that the impact will <i>not</i> occur lies with the proponent of the activity posing the threat.</p> <p>In addition, the Aichi Biodiversity Targets (CBD 2011) address several priority issues i.e. the loss of biodiversity and its causes; reducing direct pressure on biodiversity; safeguarding ecosystems, species and genetic diversity and participatory planning to enhance implementation of biodiversity conservation. Each of these is relevant to a project of this nature and bird conservation through all project phases from planning to the implementation of mitigation measures for all developments.</p>	Global

<p>Convention on the Conservation of Migratory Species of Wild Animals, (CMS), Bonn, 1979</p>	<p>The most appropriate instrument to deal with the conservation of terrestrial, aquatic and avian migratory species. The convention includes policy and guidelines with regards to the impacts associated with man-made infrastructure. CMS requires that Parties take measures to avoid migratory species from becoming endangered (Art II, par. 1 and 2) and to make every effort to prevent the adverse effects of activities and obstacles that seriously impede or prevent the migration of migratory species (Art III, par. 4b and 4c).</p> <p>At CMS/CoP7 (2002) Res. 7.2 on Impact Assessment and Migratory Species was accepted, requesting Parties to apply appropriate SEA and EIA procedures for all proposed developments. An agreement developed in the framework of CMS, in force since November 1999, brings the 119 Range States of the Africa Eurasian Waterbird Agreement (AEWA) region together in a common policy to protect migratory waterbirds that use the flyway from the Arctic to southern Africa. The agreement contains a number of obligations that are relevant to migratory waterbirds and infrastructure development.</p>	<p>Global</p>
<p>Convention on the International Trade in Endangered Species of Wild Flora and Fauna, (CITES), Washington DC, 1973</p>	<p>CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.</p>	<p>Global</p>
<p>Ramsar Convention on Wetlands of International Importance, Ramsar, 1971</p>	<p>The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.</p>	<p>Global</p>
<p>Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia</p>	<p>The Signatories will aim to take coordinated measures to achieve and maintain the favourable conservation status of birds of prey throughout their range and to reverse their decline when and where appropriate.</p>	<p>Regional</p>

2.2 National Legislation

The following pieces of national legislation are applicable to this assessment:

2.2.1 The National Environmental Management Act 107 of 1998 (NEMA)

The National Environmental Management Act 107 of 1998 (NEMA) creates the legislative framework for environmental protection in South Africa and is aimed at giving effect to the environmental right in the Constitution. It sets out a number of guiding principles that apply to the actions of all organs of state that may significantly affect the environment. Sustainable development (socially, environmentally and economically) is one of the key principles, and internationally accepted principles of environmental management, such as the precautionary principle and the polluter pays principle, are also incorporated. NEMA also provides that a wide variety of listed developmental activities, which may significantly affect the environment, may be performed only after an environmental impact assessment has been done and authorization has been obtained from the relevant authority. Many of these listed activities can potentially have negative impacts on bird populations in a variety of ways. The clearance of natural vegetation, for instance, can lead to a loss of habitat and may

depress prey populations, while erecting structures needed for generating and distributing energy, communication, and so forth can cause mortalities by collision or electrocution.

2.2.2 The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) and the Threatened or Protected Species Regulations, February 2007 (TOPS Regulations)

The National Environmental Management: Biodiversity Act (No. 10 of 2004), (NEMBA) regulations on Threatened and Protected Species (TOPS) provides for the consolidation of biodiversity legislation through establishing national norms and standards for the management of biodiversity across all sectors and by different management authorities. The national Act provides for among other things, the management and conservation of South Africa's biodiversity; protection of species and ecosystems that necessitate national protection and the sustainable use of indigenous biological resources.

2.2.3 The National Environmental Management: Protected Areas Act 57 of 2003

The National Environmental Management: Protected Areas Act (No. 57 of 2003), as amended in 2014, provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. The Act also provides for the establishment of a national register of all national, provincial and local protected areas that are managed in accordance with national norms and standards; and to endure intergovernmental co-operation and public consultation in matters concerning protected areas. Protected areas are declared in order to regulate the area as a buffer zone for protection of a special nature reserve, world heritage site or nature reserve; to enable owners of land to take collective action to conserve biodiversity on their land and to seek legal recognition therefor; to protect the area if the area is sensitive to development due to its- (i) biological diversity; (ii) natural characteristics; (iii) scientific, cultural, historical, archaeological or geological value; (iv) scenic and landscape value; or (v) provision of environmental goods and services; to protect a specific ecosystem outside of a special nature reserve, world heritage site or nature reserve; to ensure that the use of natural resources in the area is sustainable. This Act explicitly states that no development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority.

2.2.4 The National Environmental Management Act 107 of 1998 (NEMA) Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal and or Avifaunal Species

This protocol provides the criteria for the specialist assessment and minimum report content requirements for impacts on terrestrial animal and/or avifaunal species for activities requiring environmental authorisation. This protocol replaces the requirements of Appendix 6 of the Environmental Impact Assessment Regulations. The assessment and reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool) for terrestrial animal species.

The relevant terrestrial animal species data in the screening tool has been provided by the South African National Biodiversity Institute (SANBI).

2.3 Provincial Legislation

2.3.1 *Mpumalanga Nature Conservation Act No.10 of 1998*

This Act makes provision with respect to nature conservation the Mpumalanga province. It provides for, among other things, protection of wildlife, hunting, fisheries, protection of endangered fauna and flora as listed in the Convention on international Trade in Endangered Species of Wild Fauna and Flora, the control of harmful animals, freshwater pollution and enforcement. This piece of provincial legislation is administered by the Mpumalanga Tourism and Parks Agency (MTPA). The agency provides for the sustainable management and promotion of tourism and nature conservation in the province, and ensures the sustainable utilisation of natural resources.

2.3.2 *Mpumalanga Biodiversity Sector Plan (MBSP) 2014*

Mpumalanga's terrestrial ecosystems are characterised by high levels of both plant and animal diversity and a significant number of unique species that are not known to occur anywhere else. Although approximately 60% of Mpumalanga's landscapes are still in a 'natural' state, ecologically these areas are relatively poor owing to a variety of land-use pressures and consumptive practices that have resulted in the degradation and loss of important habitat. Agriculture, plantation forestry and mining (with its associated energy-generation industry) are the cornerstones of the provincial economy, and it is vitally important that these production sectors are strengthened and sustainable. The Mpumalanga Biodiversity Sector Plan (MBSP) is a key element of a landscape approach to biodiversity conservation, to manage a mosaic of land-uses that includes protection, restoration, production and subsistence use in order to deliver ecological, economic and social benefits. It provides reliable and up-to-date spatial biodiversity information and land-use guidelines that ensure biodiversity is sufficiently considered when assessing proposed changes in land-use (reactive decision-making), proactive environmental planning, proactive conservation and restoration activities.

2.4 Standards & Guidelines

2.4.1 *International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability*

The International Finance Corporation's (IFC) Sustainability Framework details the Corporation's strategic commitment to sustainable development, and is an integral part of IFC's approach to risk management. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way. Performance Standard 1 establishes the importance of (i) integrated assessment to identify the environmental and social impacts, risks, and

opportunities of projects; (ii) effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and (iii) the client's management of environmental and social performance throughout the life of the project

2.4.2 *Species Environmental Assessment Guideline: Guidelines for the implementation of the Terrestrial Flora (3c) & Terrestrial Fauna (3d) Species Protocols for environmental impact assessments in South Africa.* The *Species Environmental Assessment Guideline* provides background and context to the assessment and minimum reporting criteria contained within the Terrestrial Animal and Plant Species Protocols; as well as to provide guidance on sampling and data collection methodologies for the different taxonomic groups that are represented in the respective protocols. This guideline is intended for specialist studies undertaken for activities that have triggered a listed and specified activity in terms of the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA), as identified by the EIA Regulations, 2014 (as amended) and Listing Notices 1-3.

3. PROJECT SCOPE

3.1 Scope of Work

The avifaunal specialist has conducted this scoping assessment according to the following terms of reference:

- * Identify avifaunal microhabitats within the proposed *BCR Coal Vlakfontein Mine* development area most likely to support avifaunal communities, in terms of breeding, roosting and foraging;
- * Describe the avifaunal communities most likely to be impacted on by the proposed *BCR Coal Vlakfontein Mine* development;
- * Provide a desktop verification of the site sensitivity assigned to the proposed development area by the Department of Forestry, Fisheries and the Environment (DFFE) National Screening Tool;
- * Identify potentially significant (avifaunal) impacts associated with the establishment, operation and decommissioning of the proposed *BCR Coal Vlakfontein Mine*;
- * Identify areas of avifaunal sensitivity where development must be avoided;
- * Detail the methodology to be adopted during the EIA phase that will enable the collection of primary avifaunal and habitat data to assess the significance of the impacts associated with the *BCR Coal Vlakfontein Mine* development.

3.2 Structure of this report

In terms of the NEMA 2014 EIA Regulations contained in GN R982 of 04 December 2014 (as amended) all specialist studies must comply with Appendix 6 of the NEMA 2014 EIA Regulations GN R982 of 04 December 2014 (TABLE 2 and TABLE 3).

TABLE 2: Information to be included in specialist reports

Legal Requirement		Relevant Section in Specialist study
(1)	A specialist report prepared in terms of these Regulations must contain-	
	details of-	
(a)	(i) the specialist who prepared the report; and	Professional Experience and Appendix 2
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Professional Experience and Appendix 2
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Declaration of Independence
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 3
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 4
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Not Applicable
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 6,7,8 and 10
(g)	an identification of any areas to be avoided, including buffers;	Section 7 and 10
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 10
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 5
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7,8 and 10
(k)	any mitigation measures for inclusion in the EMPr;	Not Applicable
(l)	any conditions for inclusion in the environmental authorisation;	Not Applicable
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Not Applicable
(n)	a reasoned opinion	Section 11

Legal Requirement		Relevant Section in Specialist study
	whether the proposed activity, activities or portions thereof should be authorised;	Not Applicable
	regarding the acceptability of the proposed activity or activities; and	Section 11
	if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Not Applicable
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Not Applicable
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not Applicable
(q)	any other information requested by the competent authority.	Not Applicable
(2)	Where a government notice <i>gazetted</i> by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Not Applicable

TABLE 3: Minimum report requirements listed in the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species (Government Gazette No 43855, 30 October 2020)

HIGH SENSITIVITY RATING FOR TERRESTRIAL ANIMAL SPECIES	
SITE SENSITIVITY VERIFICATION	
The site sensitivity verification must be undertaken by an environmental assessment practitioner or specialist.	Section 8
The site sensitivity verification must be undertaken through the use of: (a) a desk top analysis, using satellite imagery; (b) a preliminary on-site inspection; and (c) any other available and relevant information.	Section 8
The outcome of the site sensitivity verification must be recorded in the form of a report that: (a) confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.; (b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and (c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations	Section 8

SPECIALIST ASSESSMENT & MINIMUM REPORT CONTENT REQUIREMENTS	
Contact details and relevant experience as well as the SACNASP Registration number of the specialist preparing the assessment including a curriculum vitae;	Professional Experience and Appendix 2
A signed statement of independence by the specialist;	Declaration of Independence
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Not Applicable
A description of the methodology used to undertake the site sensitivity verification, impact assessment and site inspection, including equipment and modelling used where relevant;	Section 3
A description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 7
A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 5
details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Section 7
the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the PAOI;	Not Applicable
The location of areas not suitable for development and to be avoided during construction where relevant;	Section 10
a discussion on the cumulative impacts;	Not Applicable
Impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Not Applicable
A reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Section 11
A motivation must be provided if there were any development footprints identified as per paragraph 2.2.12 above that were identified as having "low" or "medium" terrestrial animal species sensitivity and were not considered. appropriate.	N/A

4. METHODOLOGY & DATA SOURCES USED

The following methods were employed for this desktop scoping assessment:

- * The focus of this scoping assessment is primarily on the potential impacts of the proposed *BCR Coal Vlakfontein Mine* on priority species. Priority species are defined as those species which could potentially be impacted by displacement through habitat transformation and/or disturbance as well as those impacts associated with the ancillary infrastructure i.e. power lines based on specific morphological and/or behavioural characteristics. These include both Species of Conservation Concern (SCC) as defined by the *Species Environmental Assessment Guideline: Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa (2020)* i.e. those species listed on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered, Vulnerable, Near Threatened and Data Deficient, as well as certain other impact susceptible species.
- * By virtue of their mobility, the identification of bird presence and abundance cannot be confined to the proposed *BCR Coal Vlakfontein Mine* development area, therefore the Project Area of Impact (PAOI) is defined as a 2km zone around the proposed development area. Avifaunal sensitivity has been defined for this PAOI.
- * The proposed *BCR Coal Vlakfontein Mine* is located largely within a single South African Bird Atlas Project 2 (SABAP2) pentad grid cell (2620_3000), however a larger area is necessary to obtain a dataset that is large enough (encompassing nine pentad grid cells) to ensure that reasonable conclusions about species diversity and densities, in a particular habitat type, can be drawn. A total of 45 full protocol lists and 98 ad hoc protocol lists have been completed. The SABAP2 data is regarded as a reliable reflection of the avifauna which could potentially occur in the PAOI. The relevant pentads within the study area include: 2615_2955; 2615_3000; 2615_3005; 2620_2955; 2620_3000; 2620_3005; 2625_2955; 2625_3000 and 2625_3005 (FIGURE 2)

The following data sources (features) were considered in varying levels of detail for this scoping assessment. Details pertaining to each data source are presented in Tables 4 and 5:

- * Screening Report for an Environmental Authorisation or for an Environmental Authorisation as required by the 2014 EIA Regulations - Proposed Site Environmental Sensitivity: BCR Coal Vlakfontein Mining Right compiled by Environmental Management Assistance (Pty) Ltd, 10 June 2022;
- * Bird distribution data of the South African Bird Atlas 2 (SABAP 2) (Animal Demography Unit, 29 July 2022);
- * Mpumalanga Tourism and Parks Agency species data for QDS 2630AC (5 July 2022);
- * The Important Bird Areas (IBAs) report (Marnewick et al. 2015). The Chrissie Pans (SA019) and Amersfoort-Bethal-Carolina (SA018) IBAs have relevance to this study;

- * Co-ordinated Waterbird Count Database (CWAC – Taylor et al. 1999). Ten CWAC sites i.e., Breyten Pan, Mooiplaats Pan, Simonsdal Pan, Lake Chrissie, Tweelingspan (East & West), Driefontein Pan, Cloete Pan and Rietpan have relevance to this study;
- * Coordinated Avifaunal Roadcount project database (CAR – Young et al, 2003). CAR route (MC02) intersects the PAOI and has relevance to this study;
- * The global and regional conservation status and endemism information of all bird species (Taylor et al. 2015) and the latest (2022-1) IUCN Red List of Threatened Species (<http://www.iucnredlist.org>);
- * Vulture movement, colony and roost data for the PAOI (VulPro, 2020);
- * Vulture restaurant location data for the PAOI (VulPro, 2020);
- * White-backed Vulture nest locations (VulPro, 2020);
- * Crane breeding data (Endangered Wildlife Trust, 2020);
- * Crane sightings data (Endangered Wildlife Trust, 2020);
- * African Grass Owl breeding data (Endangered Wildlife Trust, 2020);
- * Vulture colony data (Endangered Wildlife Trust, 7 February 2020);
- * Vulture tracking data (Endangered Wildlife Trust, 7 February 2020);
- * The latest vegetation classification described in the Vegetation Map of South Africa (South African National Biodiversity Institute, 2012 and Mucina & Rutherford, 2006);
- * High-resolution Google Earth ©2022 imagery was used to examine the microhabitats within the proposed study area;
- * KMZ. shapefile detailing the location of proposed *BCR Coal Vlakfontein Mine*, provided by Environmental Management Assistance (Pty) Ltd on 23 July 2021;

5. LIMITATIONS & ASSUMPTIONS

The author assumed that the sources of information used are reliable. However, it must be noted that there are limiting factors, and these may potentially detract from the accuracy of the predicted results.

- * This scoping report is the result of a desktop review of the available information. Therefore, the precautionary principle was applied throughout this scoping assessment. This scoping report relies on secondary data sources with regards to bird occurrence and abundance such as the SABAP2, IBA projects and various species breeding data. These comprehensive datasets provide a valuable baseline against which any changes in species presence, abundance, and distribution can be monitored.
- * This desktop scoping assessment and the resultant preliminary sensitivity map provides guidance in terms of areas that are potentially developable and those areas that are not suitable for development. It does not replace thorough and robust Environmental Impact Assessment, which must include a site verification survey and peak season survey to obtain primary species and habitat data.

* Predictions in this study are based on experience of these and similar species in different parts of South Africa, through the authors' experience working in the avifaunal specialist field since 2006. However, bird behaviour cannot be reduced to formulas that will hold true under all circumstances. It must also be noted that, it is often not possible to entirely eliminate the risk of the disturbance and displacement impacts associated with the construction and operational activities. Our best possible efforts can probably not ensure zero impact on birds. Assessments such as this attempt to minimise the risk as far as possible, and although the impacts associated with the proposed development will be unavoidable, they are likely to be temporary.

The above limitations need to be stated as part of this assessment so that the reader fully understands the complexities. However, they do not detract from the confidence that this author has in the findings of this scoping report and recommendations for subsequent phases of this project.

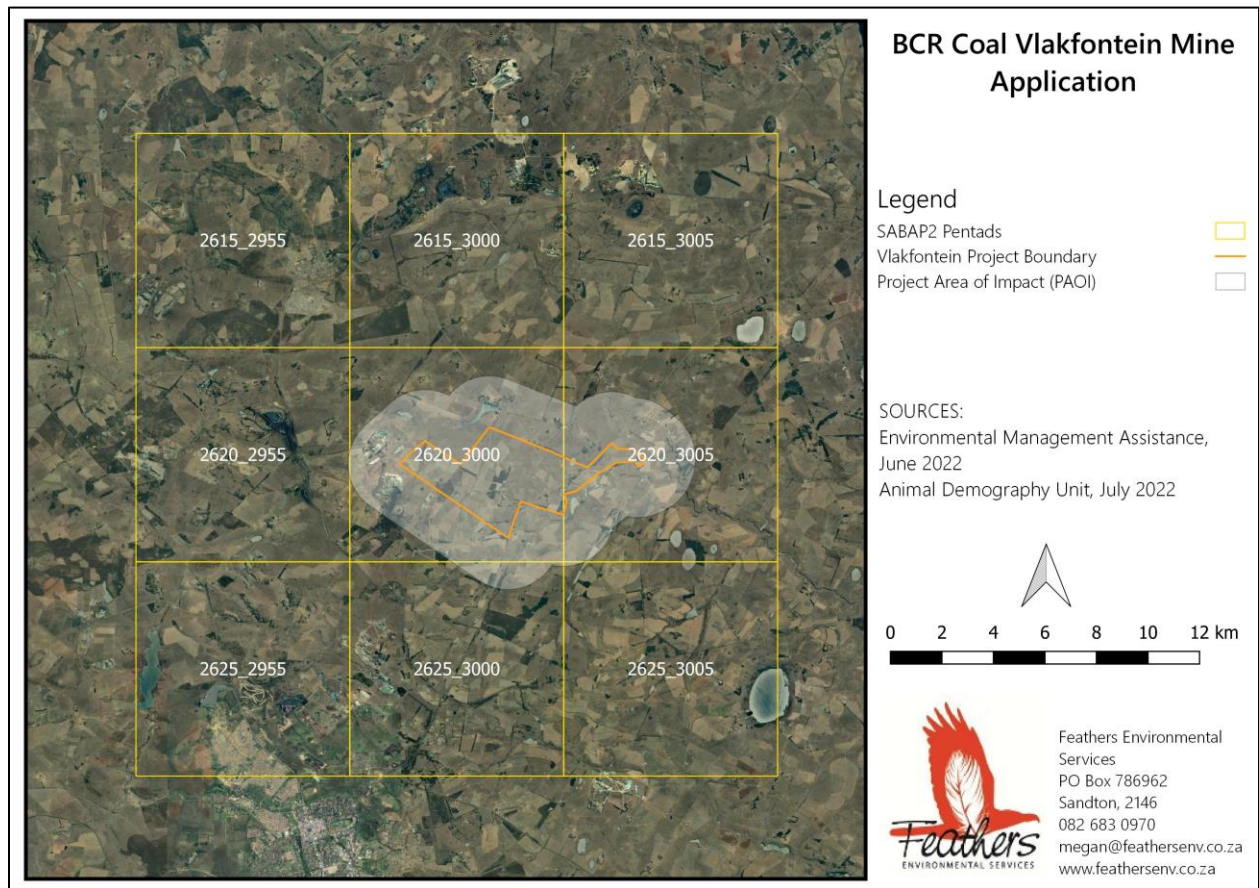


FIGURE 2: Location of the nine South African Bird Atlas Project 2 (SABAP2) pentad grid cells that were considered for the proposed BCR Coal Vlakfontein Mine development.

6. SENSITIVITY CLASSIFICATION

Five sensitivity categories, ranging from LOW to HIGH, were assigned to the respective avifaunal features and habitat classes found within the PAOI, based on the most recent bird species occurrence and breeding data and the importance of the specific habitat type from a priority species perspective. TABLE 4 and TABLE 5 list the avifaunal and habitat features and their assigned sensitivity ratings. Avifaunal and habitat sensitivity are classified based on the following criteria and determining factors:

HIGH SENSITIVITY ZONE:

These areas are globally important for the conservation of bird populations, contain breeding areas, avifaunal habitats that provide corridors for movement (flyways) and avifaunal habitats that provide suitable breeding and foraging habitats for species that have specific habitat requirements. These habitats and the avifaunal species they support are highly susceptible to anthropogenic disturbances associated with this development. Relevant to this scoping assessment, protected and conservation areas, IBAs, breeding locations (and their respective buffers), rivers and wetland habitats (and their respective buffers) are classified in the high sensitivity category. Development in these areas is **NOT PREFERRED**.

MEDIUM-HIGH SENSITIVITY ZONES:

These areas contain avifaunal habitats that provide suitable breeding and foraging habitats for priority species. Habitat types that are likely to support a high diversity of species are also included in this classification. Low levels of transformation and habitat fragmentation are characteristic of this sensitivity zone. Typically, the avifaunal species that utilise these areas support, are susceptible to anthropogenic disturbances associated with this development. Relevant to this scoping assessment, CWAC sites, grassland habitat, permanent and seasonal waterbodies (i.e. dams and pans) and natural rock surfaces are classified in this medium-high sensitivity category. Development in these areas is **ACCEPTABLE**, with appropriate monitoring, assessment and mitigation. Areas that contain high species diversity, abundances and high utilisation may be subject to additional seasonal monitoring.

MEDIUM SENSITIVITY ZONES:

Areas within this sensitivity zone are comprised of indigenous natural habitat, characterised by moderate levels of fragmentation. Priority species that are tolerant of or accustomed to disturbance may utilise these areas for foraging. Relevant to this scoping assessment, dense indigenous forest and woodland, open or sparse woodland, cultivated lands and fallow lands have been classified in this category. Development in these areas is **ACCEPTABLE**, with appropriate and thorough monitoring, assessment and mitigation.

MEDIUM-LOW SENSITIVITY ZONES:

All areas where the natural habitat has been transformed to a large extent but may still provide foraging and roosting habitat for priority species. Relevant to this scoping assessment plantation forests and artificial

waterbodies have been classified in this category. Development in these areas is **ACCPETABLE**, with appropriate monitoring, assessment and mitigation.

LOW SENSITIVITY ZONES:

Areas classified in this category are wholly transformed and do not contain any natural habitat. The likelihood of priority species inhabiting these areas is negligible. Relevant to this scoping assessment, industrial areas, mines, urban, villages, residential, small holdings, infrastructure and transformed or degraded areas (i.e. landfills and bare areas) have been classified in this category. Development in these areas is **PREFERRED**, since these areas contain minimal biodiversity constraints.

7. DESCRIPTION OF THE AFFECTED ENVIRONMENT

7.1 Relevant Bird Populations

The following bird population datasets (TABLE 4 and FIGURE 3) were considered for this scoping assessment. The table provides a description of each avifaunal feature; the location of the feature either within the proposed development site or the broader PAOI; the assigned sensitivity according to the national screening tool; required buffers; priority species complements; the scoping assessment sensitivity rating and the assigned development category.

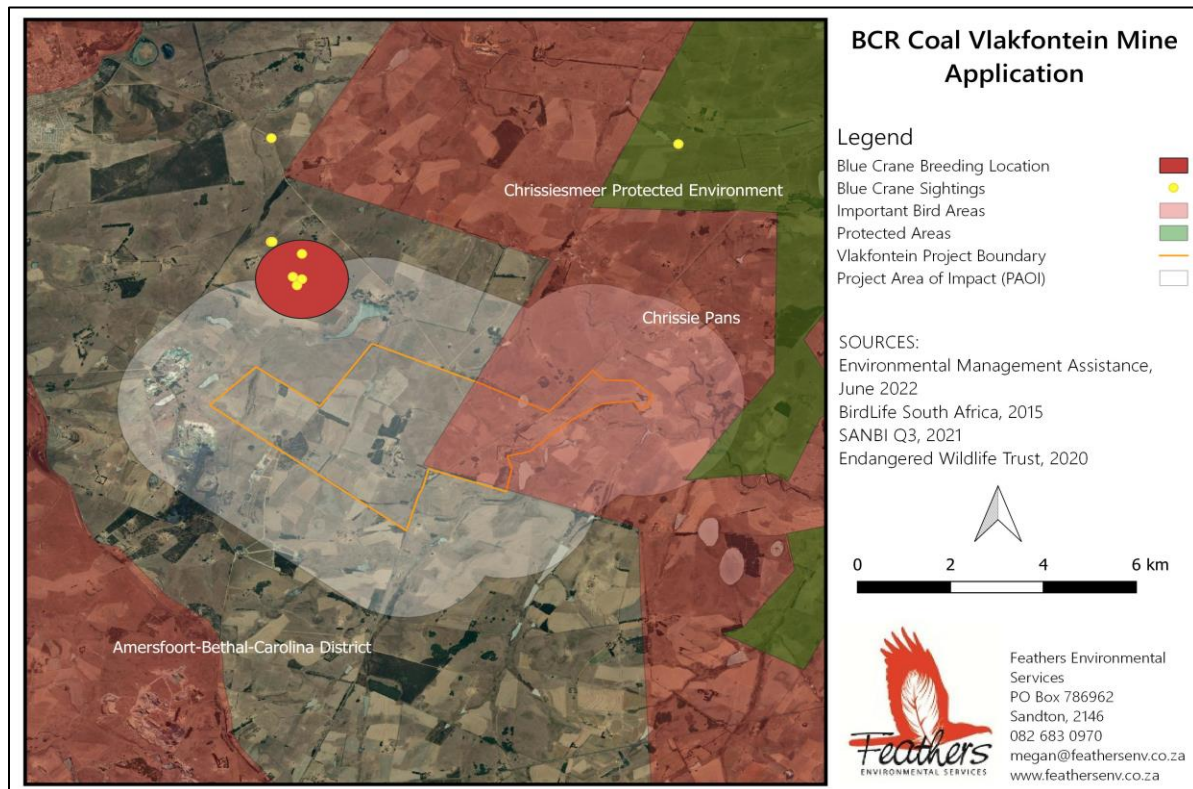


FIGURE 3: Regional map detailing the location of Crane Breeding Sites, Crane Sightings, Important Bird Areas and Protected Areas relevant to this project

TABLE 4: Avifaunal features considered for the identification of sensitive areas within the identified development area

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Important Bird Areas (IBA)	BirdLife South Africa Marnewick, 2015	Areas that are globally important for the conservation of bird populations based on species abundance and the complements they hold. These areas provide an indication of the species that are likely to occur in similar habitat types within the identified area.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to wind energy development	None	Amersfoort-Bethal-Carolina District (SA018) Chrissie Pans (SA019)	Wattled Crane Blue Crane Grey Crowned Crane Southern Bald Ibis Blue Korhaan Denham's Bustard White-bellied Korhaan Secretarybird Greater Flamingo Lesser Flamingo African Grass Owl African Marsh Harrier Lesser Kestrel Lanner Falcon Black-winged Lapwing Botha's Lark Black-winged Pratincole Chestnut-banded Plover	HIGH	NON-PREFERRED Areas where development is discouraged i.e. no-go areas NOTE: Development within IBAs will be subject to intense scrutiny by environmental NGOs and I&APs and are likely to require seasonal monitoring to inform the avifaunal impact assessment report
Birds	Co-ordinated Waterbird Count Sites (CWAC)	Animal Demography Unit of the University of Cape Town, accessed 29 July 2022 Harrison et al, 2004	Any body of water which supports a significant number (approx. 500 individuals) of birds which use the site for foraging, breeding and roosting. These areas provide an indication of the waterbird species that are likely to occur in various waterbody/wetland habitats within the identified area.	High - Confirmed occurrences of rare and threatened species. Habitat likely to be of importance to priority bird species sensitive to wind energy developments.	None	Breyten Pan Mooiplaats Pan Simonsdal Pan Lake Chrissie Lake Chrissie 92IT Tweelingspan Pan (East) Tweelingspan Pan (West) Driefontein Pan Cloete Pan Rietpan NOTE: These sites occur within a 20km radius of the proposed mine. Several more occur within a 100km radius Bird movement is likely to occur between these.	Grey Crowned Crane Southern Bald Ibis Greater Flamingo Lesser Flamingo Yellow-billed Stork African Marsh-Harrier African Fish-Eagle <i>Other more common waterfowl families, also occur at these sites and may be present in similar surface water habitats within the identified area, these include: coots, cormorants, ducks, teals, herons, egrets, ibis, geese, lapwing, ruffs, and stints.</i>	MEDIUM-HIGH	ACCEPTABLE: Areas surrounding the CWAC sites are developable but with appropriate monitoring, assessment and mitigation.

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
						<i>Similar surface water habitats present within the identified area, may support similar waterbirds</i>			
Birds	Co-ordinated Avifaunal Roadcount Routes (CAR)	Animal Demography Unit of the University of Cape Town, accessed 29 July 2022 Young et al, 2003	Cranes, bustards, storks and other large terrestrial birds spend most of their time on the ground, need open spaces & are not restricted to protected areas. This project monitors 36 species of large terrestrial birds, gamebirds, raptors and corvids in agricultural habitats which are used extensively for feeding, roosting and breeding.	High - Confirmed occurrences of rare and threatened species. Habitat likely to be of importance to priority bird species sensitive to wind energy developments.	None	MC02	Blue Korhaan Northern Black Korhaan Denham's Bustard Black Harrier Grey Crowned Crane Blue Crane White Stork Secretarybird Southern Bald Ibis Grey-winged Francolin	MEDIUM-HIGH	ACCEPTABLE: Areas surrounding the CAR routes are developable but with appropriate monitoring, assessment and mitigation.

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Southern African Bird Atlas Project 2 APPENDIX 1	Animal Demography Unit of the University of Cape Town, accessed 29 July 2022	The Southern African Bird Atlas Project 2 maps the distribution of birds, based on records of bird species observed during >2hour surveys within a geographical pentad (approx. 8 x 7.6 km in size).	High - Confirmed occurrences of rare and threatened species.	None	Nine pentad grid cells are relevant to this scoping assessment. Between 2007 and 2022, a total of 45 full protocol lists and 98 ad hoc protocol lists (bird surveys) have been completed for identified area.	190 species in total 9 Global Red List Species (SCC) 11 Regional Red List Species (SCC) 6 South African Endemics 7 South African Near Endemics APPENDIX 1	The diversity and abundance of priority species recorded within the identified area were considered when assessing the sensitivity of the habitats that support these species.	The diversity and abundance of priority species recorded within the identified area were considered when assigning the development category.
Birds	MTPA Species Data for QDS 2629BD and 2630AC	Mpumalanga Tourism and Parks Agency, 5 July 2022	Red List species data collected and curated by the Mpumalanga Tourism and Parks Agency	High - Confirmed occurrences of rare and threatened species.	None	The Vlakfontein and Welgelegen properties occur within the QDS 2630AC.	Secretarybird African Grass Owl Southern Bald Ibis Blue Korhaan Greater Flamingo Lesser Flamingo	The diversity and abundance of priority species recorded within the identified area were considered when assessing the sensitivity of the habitats that support these species	The diversity and abundance of priority species recorded within the identified area were considered when assigning the development category.
Birds	Crane Breeding Data	Endangered Wildlife Trust, 2020	Confirmed breeding sites of Blue, Wattled and Grey Crowned Cranes in South Africa from 2000-2013	High - Confirmed occurrences of rare and threatened species.	1km	1 x Blue Crane nest location	Blue Crane	HIGH	NON-PREFERRED Areas where development is discouraged i.e. no-go areas

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Crane Sightings Data	Endangered Wildlife Trust, 2020	Ad hoc sightings of Blue, Wattled and Grey Crowned Cranes in the study area, from 1991-2014	High - Confirmed occurrences of rare and threatened species.	None	6 x Blue Crane sightings occur just outside of the POAI (associated with the Blue Crane nest location)	Blue Crane	MEDIUM-HIGH	ACCEPTABLE: Areas surrounding high utilisation areas developable but with appropriate monitoring, assessment and mitigation. NOTE: Development within areas that are frequently utilised by cranes are likely to require seasonal monitoring to inform the avifaunal impact assessment report
Birds	African Grass Owl Breeding Data	Endangered Wildlife Trust, 2020	Confirmed breeding locations of African Grass Owl from 2009 to 2014.	High - Confirmed occurrences of rare and threatened species.	1km	None	None	N/A - There are no documented African Grass Owl breeding sites within the PAOI	N/A - There are no documented African Grass Owl breeding sites within the PAOI
Birds	Vulture Colony	Endangered Wildlife Trust, 2020	Colonies of several hundred birds on high cliffs. This data set is comprised of 18 Cape Vulture colonies.	Very High - These areas are potentially unsuitable for development due to the presence of critical habitat and the confirmed presence of priority species vulnerable to development	50km	None	None	N/A - There are no documented Cape Vulture colonies (or their associated 50km buffers occur within or intersect the PAOI	N/A - There are no documented Cape Vulture colonies (or their associated 50km buffers occur within or intersect the PAOI

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Vulture Tracking Data	Endangered Wildlife Trust, 2020	Tracking locations of five tagged Cape Vulture individuals from 2013-2017	High - Confirmed occurrences of rare and threatened species. Habitat likely to be of importance to priority bird species sensitive to developments	None	None	None	N/A - There are no documented vulture sightings within the PAOI	N/A - There are no documented vulture sightings within the PAOI
Birds	White-backed Vulture Nests	VulPro, 2020	Nesting in loose colonies of 2 to 13 birds, situated in the crown or fork of a large tree.	High - Confirmed occurrences of rare and threatened species.	50km	None	None	N/A - There are no documented vulture nests within 50km of the development area	N/A - There are no documented vulture nests within 50km of the development area
Birds	Cape Vulture Colonies	VulPro, 2020	Colonies of several hundred birds on high cliffs.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to wind energy development	50km	None	None	N/A - There are no documented Cape Vulture colonies (or their associated 50km buffers occur within or intersect the PAOI	N/A - There are no documented Cape Vulture colonies (or their associated 50km buffers occur within or intersect the PAOI

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Cape Vulture Roosts	VulPro, 2020	Areas where Cape Vultures will rest overnight. This can be on cliffs or on electricity poles/towers.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to wind energy development	50km	None	None	N/A - There are no documented vulture roosts within 50km of the PAOI	N/A - There are no documented vulture roosts within 50km of the PAOI
Birds	Vulture Restaurants	VulPro, 2020	To promote the survival of vultures, the practice of supplemental feeding in so called vulture restaurants, was initiated and today there are 236 documented vulture restaurants scattered throughout South Africa.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to wind energy development	10km	None	None	N/A - There are no documented active vulture restaurants within 10km of the PAOI	N/A - There are no documented active vulture restaurants within 10km of the PAOI

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Birds	Vulture Tracking Data	VulPro, 2020	Tracking locations of 18 tagged Cape Vulture, African White Backed Vulture and Lappet-faced Vulture individuals from 2018-2020	High - Confirmed occurrences of rare and threatened species. Habitat likely to be of importance to priority bird species sensitive to wind energy developments	None	None	None	N/A - There are no documented vulture flight paths within or across the PAOI	N/A - There are no documented vulture flight paths within or across the PAOI
Protected Areas	Nature Reserve	South Africa Protected and Conservation Areas Database 3rd Quarter, 2020	Protected and conservation areas include national parks, public nature reserves and private nature reserves and are intended for the conservation of flora and fauna.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to wind energy development	0-3km	Chrissiesmeer Protected Environment	Blue Crane Grey Crowned Crane Wattled Crane African Grass Owl Southern Bald Ibis Blue Korhaan Denham's Bustard White-bellied Korhaan Secretarybird Greater Flamingo Lesser Flamingo African Marsh Harrier Lesser Kestrel Lanner Falcon Black-winged Lapwing Black-winged Pratincole Chestnut-banded Plover	HIGH	NON-PREFERRED Areas where development is discouraged i.e. non-go areas

7.2 Bird Habitat Classes (Microhabitats)

Vegetation is one of the primary factors determining bird species distribution and abundance in an area. It is widely accepted within ornithological circles that vegetation structure is more important in determining which bird species will occur there. The classification of vegetation types is from Mucina & Rutherford (2006 and 2012), while from an avifaunal perspective, the Atlas of southern African Birds (SABAP1) recognises six primary vegetation divisions or biomes within South Africa, namely (1) Fynbos (2) Succulent Karoo (3) Nama Karoo (4) Grassland (5) Savanna and (6) Forest (Harrison et al. 1997). Whilst much of the distribution and abundance of bird species can be attributed to the broad vegetation types present in an area, it is the smaller spatial scale habitats (micro habitats) that support the requirements of a particular bird species that need to be examined in greater detail. Micro habitats are shaped by factors other than vegetation, such as topography, land use, food availability, and various anthropogenic factors all of which will either attract or deter birds and are critically important in mapping the site in terms of avifaunal sensitivity and ultimately informing mitigation requirements. A desktop investigation of the proposed *BCR Coal Vlakfontein Mine* PAOI revealed at least ten broadly described avifaunal micro habitats (TABLE 5) i.e. grassland, rivers, wetlands, pans, waterbodies, woodland, cultivated lands, fallow lands, exotic/alien tree stands and urban/industrial areas.

TABLE 5: Habitat features considered for the identification of sensitive areas within the identified development area and PAOI

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Habitat	Rivers	DEA National Landcover Dataset 2020 NFEPA Rivers 2014	Rivers provide important corridors of microhabitat for waterbirds that will utilise rivers as a source of drinking water, food, bathing and shelter for skulking species.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to WEF development	0-1km (500m)	Vaal	African Fish Eagle Hamerkop Maccoa Duck Greater Pained Snipe Coots, cormorants, ducks, teals, herons, egrets, ibis, geese, lapwing, ruffs, and stints	HIGH	NON-PREFERRED Areas where development is discouraged i.e. non-go areas
Habitat	Wetlands	DEA National Landcover Dataset 2020 NFEPA Wetlands 2014	Wetlands are characterized by slow flowing seasonal water (or permanently wet) and tall emergent vegetation (rooted or floating) and provide habitat for many water birds.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) and the confirmed presence of priority species vulnerable to WEF development	0-1km (500m)	Various	Grey Crowned Crane Black Harrier African Marsh-Harrier White Stork Marsh Owl	HIGH	NON-PREFERRED Areas where development is discouraged i.e. non-go areas

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Habitat	Waterbodies	DEA National Landcover Dataset 2020	Pans are endorheic wetlands with closed drainage systems. Water depth is shallow with ephemeral flooding. When these pans hold water, they attract waterbirds, while large raptors could use them for bathing and drinking. Although man-made, dams are very important for a variety of species.	Very High - These areas are potentially unsuitable for development owing to the presence of critical habitat (utilised for breeding, roosting and foraging) & the confirmed presence of priority species vulnerable to WEF development	0-1km	Dams Pans	Grey Crowned Crane Maccoa Duck Greater Flamingo Lesser Flamingo African Fish-Eagle Coots, cormorants, ducks, teals, herons, egrets, ibis, geese, lapwing, ruffs, and stints	MEDIUM-HIGH	ACCEPTABLE: Areas are developable but with mitigation
Habitat	Grassland	DEA National Landcover Dataset 2020	350 bird species occur in the Grassland biome. This includes 29 species of conservation concern, ten endemics, and as many as 40 specialist species that are exclusively dependent on grassland habitat for foraging and breeding.	High - Areas that contain habitat likely to be of importance to priority bird species sensitive to WEF developments	-	Natural grassland	Grey Crowned Crane Denham's Bustard Blue Korhaan White Stork Southern Bald Ibis Secretarybird Lanner Falcon Amur Falcon Grey-winged Francolin African Marsh-Harrier Short-tailed Pipit Black-winged Pratincole	MEDIUM-HIGH	ACCEPTABLE: Areas are developable but with mitigation

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Habitat	Woodland	DEA National Landcover Dataset 2020	The Woodland biome contains a large variety of bird species, but very few bird species are restricted to this biome. It is also relatively well conserved compared to the Grassland biome.	High - Areas that contain habitat likely to be of importance to priority bird species sensitive to WEF developments	-	Woodland	Long-crested Eagle Lanner Falcon Amur Falcon Jackal Buzzard Common Buzzard	MEDIUM	ACCEPTABLE: Areas are developable but with mitigation
Habitat	Artificial Waterbodies	DEA National Landcover Dataset 2020	Although artificial in nature, these waterbodies can be very important for a variety of species.	Low - These areas possibly do not support priority populations of threatened species that are susceptible to impacts from WEFs.	-	Mine Pits	Coots, cormorants, ducks, teals, herons, egrets, ibis, geese, lapwing, ruffs, and stints	MEDIUM-LOW	ACCEPTABLE: Areas are developable but with mitigation
Habitat	Commercial Agriculture	DEA National Landcover Dataset 2020	Cultivated land represents a feeding area for many bird species. Land preparation makes insects, seeds, bulbs and other food sources accessible.	High - Areas that contain habitat likely to be of importance to priority bird species sensitive to WEF developments	-	Cultivated Lands	Grey Crowned Crane Secretarybird White Stork Southern Bald Ibis Black-winged Pratincole	MEDIUM	ACCEPTABLE: Areas are developable but with mitigation

CRITERIA	FEATURE	SOURCE	DESCRIPTION	SENSITIVITY: NATIONAL SCREENING TOOL	BUFFER	FEATURE ID	PRIORITY SPECIES	SCOPING ASSESSMENT SENSITIVITY RATING	DEVELOPMENT CATEGORY
Habitat	Fallow Lands	DEA National Landcover Dataset 2020	Fallow land is the cultivated land that is not seeded for one or more growing seasons. Land remaining fallow for lengthy periods may result in a grassland type habitat attracting large terrestrial species.	Medium - These areas have limited potential for supporting priority populations of threatened species that are susceptible to impacts from wind energy facilities.	-	Fallow Land Old Fields	Grey Crowned Crane Denham's Bustard White Stork Southern Bald Ibis Secretarybird	MEDIUM	ACCEPTABLE: Areas are developable but with mitigation
Habitat	Exotic Tree Plantations	DEA National Landcover Dataset 2020	Although tree plantations are strictly speaking exotic species, they have become important refuges for certain species of raptors.	Low - These areas possibly do not support priority populations of threatened species that are susceptible to impacts from WEFs	-	Exotic Tree Plantations	African Fish Eagle Lanner Falcon Amur Falcon Black-shouldered Kite Jackal Buzzard Common Buzzard Black Sparrowhawk African Harrier-Hawk	MEDIUM-LOW	ACCEPTABLE: Areas are developable but with mitigation
Habitat	Built-Up Areas	DEA National Landcover Dataset 2020	Built-up areas are of little value to sensitive SCC due habitat degradation & disturbance. They do play an important role in providing safe refuge and foraging opportunities for small passerine species.	Low - These areas possibly do not support priority populations of threatened species that are susceptible to impacts from wind energy facilities.	-	Urban Residential Villages Small Holdings Mines Industrial Roads	Lanner Falcon Black-shouldered Kite	LOW	PREFERRED: Areas that contain minimal constraints

8. SITE SENSITIVITY VERIFICATION

A screening report for the proposed study area was generated on 10 June 2022. Parts of the proposed study area are considered to have a HIGH and MEDIUM Animal Species Theme Sensitivity, as a result of the presence of Southern Bald Ibis *Geronticus calvus*, African Grass Owl *Tyto capensis*, Denham's Bustard *Neotis denhamii*, White-bellied Korhaan *Eupodotis senegalensis* and Caspian Tern *Hydroprogne caspia*. Based on the low number (n=2) of Southern Bald Ibis recorded in the PAOI, this preliminary assessment assigns a MEDIUM rating to the PAOI. In addition, it is unlikely that African Grass Owl will occur within the PAOI, based on previous surveys conducted in the area (pers comms. Christelle Trutter, African Grass Owl Study Group Manager) and White-bellied Korhaan and Caspian Tern have not been recorded in the PAOI to date. Notable SCC that have been recorded, albeit in low numbers, include Secretarybird *Sagittarius serpentarius*, Deham's Bustard, Grey Crowned Crane *Balearica regulorum*, Black Harrier *Circus maurus*, African Marsh Harrier *Circus ranivorus*, Lanner Falcon *Falco biarmicus*, Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *Phoeniconaias minor* in addition to the availability of suitable habitat, thereby confirming the MEDIUM sensitivity rating. This rating will be verified further during the EIA phase of the project, following a site verification survey to the proposed development area and broader PAOI.

TABLE 6: Summary of desktop verification outcome

SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
AVIFAUNAL SCOPING ASSESSMENT			
High	Medium	EIA Phase – Site Survey and Avifaunal Impact Assessment	Section 7 & 8
Medium	Medium	EIA Phase – Site Survey and Avifaunal Impact Assessment	Section 7 & 8

9. GENERAL DESCRIPTION OF THE POTENTIAL IMPACTS

The effects of any development on birds are highly variable and depend on a wide range of factors including the specification of the development, the topography of the surrounding land, the habitats affected and the number and diversity of species present. The principal areas of concern for SCC and non-SCC priority species related to the proposed development are listed below:

- * Displacement due to habitat loss in the physical *BCR Coal Vlakfontein Mine* and ancillary infrastructure footprint;
- * Displacement due to disturbance associated with establishment, construction, operation/maintenance and decommissioning of the proposed *BCR Coal Vlakfontein Mine* and its ancillary infrastructure;
- * Mortality due to collision with the power lines;

- * Mortality due to electrocution on the power line poles/towers; and
- * Mortality due to collision with motor vehicles.

The aforementioned impacts will be described and assessed in detail, following the site survey to the proposed *BCR Coal Vlakfontein Mine* development area and PAOI during the EIA phase of the project process.

10. PRELIMINARY AVIFAUNAL SENSITIVITY MAP

Several land portions are being considered for the proposed *BCR Coal Vlakfontein Mine*. A preferred layout for the establishment of the proposed *BCR Coal Vlakfontein Mine* (based on the avoidance of avifaunal sensitivities delineated in FIGURE 4) will be identified, following a detailed assessment of the primary data collected during a site survey of the proposed *BCR Coal Vlakfontein Mine* development envelope during the EIA phase of the project.

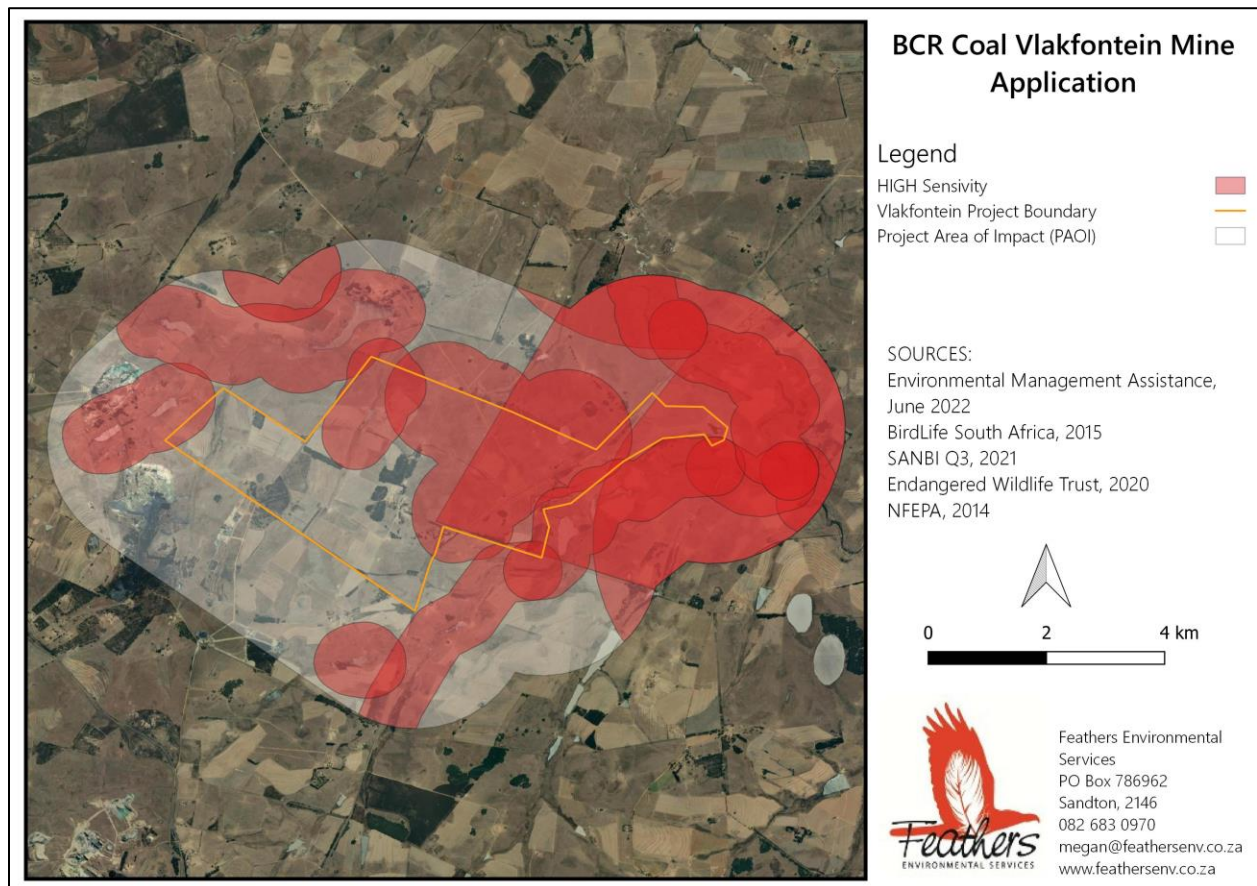


FIGURE 4: High sensitivity non-preferred development areas based on the presence of Protected Areas, the Chrissie Pans IBA, crane breeding sites, river systems, and various wetland areas

11. CONCLUSION & EIA PLAN OF STUDY

11.1 Reasoned Opinion on the acceptability of the proposed activity

In conclusion, this high-level assessment has identified at least ten avifaunal habitats of varying sensitivities within the proposed development area and PAOI. Despite anthropogenic impacts, mostly in the form of agricultural practices that have largely transformed the landscape, sensitive habitat persists within the study area (FIGURE 4). The establishment and operation of the proposed *BCR Coal Vlakfontein Mine* and its ancillary infrastructure will likely result in impacts of medium to high significance, which may be reduced through the application of stringent mitigation measures.

11.2 Plan of Study (EIA Phase)

In order to ensure the sustainable development of the proposed *BCR Coal Vlakfontein Mine* further, specialist avifaunal impact assessment studies must be conducted as part of the EIA process in order to:

- * Confirm avifaunal microhabitats within the proposed development area and assess these for their suitability to support SCC and non-SCC priority species, in terms of breeding, roosting and foraging;
- * Describe the avifaunal communities (both SCC and non-SCC priority species) most likely to be impacted, based on data collected as part of a systematic and quantified data collection process:

a. Sample counts of small terrestrial species

Small terrestrial birds are an important component of this programme. Given the spatial scale of the development, these smaller species may be particularly vulnerable to displacement and habitat level effects. Sampling these species is aimed at establishing indices of abundance for small terrestrial birds in the study area. These counts should be done when conditions are optimal. In this case this means the times when birds are most active and vocal, i.e. early mornings. A minimum of 12 point count survey points will be established across the PAOI.

b. Counts of large terrestrial species and raptors

This is a very similar data collection technique to that above, the aim being to establish indices of abundance for large terrestrial species and raptors. These species are relatively easily detected from a vehicle, hence vehicle-based counts are conducted in order to determine the presence and number of birds of relevant species in the study area. Detection of these large species is less dependent on their activity levels and calls, so these counts can be done later in the day. A minimum of one driven transect route will be established and conducted during the site survey.

c. Focal site surveys and monitoring

Any particularly sensitive sites such as wetlands, dams and breeding sites will be identified and monitored during the site survey.

d. Incidental observations

All other incidental sightings of SCC and non-SCC priority species (and particularly those suggestive of breeding or important feeding or roosting sites) within the PAOI will be georeferenced and documented.

- * Provide a detailed description of the impacts associated with the construction, operation and decommissioning of the proposed *BCR Coal Vlakfontein Mine* and its ancillary infrastructure;
- * Assess the significance (rated according to a pre-determined set of criteria, as supplied by the primary consultant) of the identified direct, indirect and cumulative impacts, during the construction, operation and decommissioning phases of the proposed development based on data collected in-field;
- * Consider layout plans and advise possible changes to the layout;
- * Recommend practical mitigation measures for the management of the identified impacts, at each stage of the development process, for inclusion in the draft Environmental Management Programme (EMPr);
- * Propose a monitoring programme for the sensitive areas, species or receptors (if necessary); and
- * Describe the gaps in baseline data will be provided. An indication of the confidence levels will be given. The best available data sources will be used to predict the impacts, and extensive use will be made of local knowledge if available.

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APPENDIX 1: SOUTH AFRICAN BIRD ATLAS PROJECT DATA (SABAP2) FOR THE PROPOSED PROJECT

Species name	Scientific name	Full protocol	Ad hoc protocol	Red List Global	Red List Regional	Endemic (SA)	Endemic (SA) - Description
Acacia Pied Barbet	<i>Tricholaema leucomelas</i>	0,00	1,02	-	-		
African Black Duck	<i>Anas sparsa</i>	6,67	0,00	-	-		
African Black Swift	<i>Apus barbatus</i>	2,22	0,00	-	-		
African Darter	<i>Anhinga rufa</i>	13,33	2,04	-	-		
African Fish Eagle	<i>Haliaeetus vocifer</i>	11,11	0,00	-	-		
African Harrier-Hawk	<i>Polyboroides typus</i>	2,22	1,02	-	-		
African Hoopoe	<i>Upupa africana</i>	8,89	2,04	-	-		
African Jacana	<i>Actophilornis africanus</i>	2,22	1,02	-	-		
African Marsh Harrier	<i>Circus ranivorus</i>	2,22	1,02	-	EN		
African Palm Swift	<i>Cypsiurus parvus</i>	6,67	0,00	-	-		
African Pipit	<i>Anthus cinnamomeus</i>	62,22	0,00	-	-		
African Rail	<i>Rallus caerulescens</i>	6,67	0,00	-	-		
African Reed Warbler	<i>Acrocephalus baeticatus</i>	2,22	0,00	-	-		
African Sacred Ibis	<i>Threskiornis aethiopicus</i>	37,78	5,10	-	-		
African Snipe	<i>Gallinago nigripennis</i>	24,44	0,00	-	-		
African Spoonbill	<i>Platalea alba</i>	22,22	3,06	-	-		
African Stonechat	<i>Saxicola torquatus</i>	93,33	12,24	-	-		
African Swampphen	<i>Porphyrio madagascariensis</i>	17,78	3,06	-	-		
African Wattled Lapwing	<i>Vanellus senegallus</i>	17,78	0,00	-	-		
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	4,44	0,00	-	-		
Amur Falcon	<i>Falco amurensis</i>	13,33	2,04	-	-		
Ant-eating Chat	<i>Myrmecocichla formicivora</i>	84,44	11,22	-	-		
Banded Martin	<i>Riparia cincta</i>	22,22	1,02	-	-		
Barn Swallow	<i>Hirundo rustica</i>	44,44	3,06	-	-		
Black Crane	<i>Zapornia flavirostra</i>	11,11	0,00	-	-		
Black Harrier	<i>Circus maurus</i>	2,22	0,00	EN	EN	x	Near endemic
Black Sparrowhawk	<i>Accipiter melanoleucus</i>	2,22	0,00	-	-		
Black-chested Prinia	<i>Prinia flavicans</i>	15,56	0,00	-	-		
Black-collared Barbet	<i>Lybius torquatus</i>	17,78	0,00	-	-		
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	4,44	0,00	-	-		
Black-headed Heron	<i>Ardea melanocephala</i>	28,89	3,06	-	-		
Black-headed Oriole	<i>Oriolus larvatus</i>	6,67	0,00	-	-		
Blacksmith Lapwing	<i>Vanellus armatus</i>	68,89	8,16	-	-		
Black-throated Canary	<i>Crithagra atrogularis</i>	40,00	2,04	-	-		
Black-winged Kite	<i>Elanus caeruleus</i>	71,11	16,33	-	-		
Black-winged Stilt	<i>Himantopus himantopus</i>	24,44	3,06	-	-		
Blue Korhaan	<i>Eupodotis caerulescens</i>	4,44	0,00	NT	LC	x	Endemic (SA, Lesotho, Swaziland)
Blue-billed Teal	<i>Spatula hottentota</i>	8,89	3,06	-	-		

Species name	Scientific name	Full protocol	Ad hoc protocol	Red List Global	Red List Regional	Endemic (SA)	Endemic (SA) - Description
Bokmakierie	Telophorus zeylonus	51,11	0,00	-	-		
Bronze-winged Courser	Rhinoptilus chalcopterus	2,22	0,00	-	-		
Brown-throated Martin	Riparia paludicola	40,00	5,10	-	-		
Cape Bunting	Emberiza capensis	2,22	0,00	-	-		
Cape Canary	Serinus canicollis	42,22	3,06	-	-		
Cape Crow	Corvus capensis	2,22	0,00	-	-		
Cape Longclaw	Macronyx capensis	88,89	8,16	-	-		
Cape Robin-Chat	Cossypha caffra	51,11	1,02	-	-		
Cape Shoveler	Spatula smithii	22,22	6,12	-	-		
Cape Sparrow	Passer melanurus	71,11	2,04	-	-		
Cape Starling	Lamprotonis nitens	0,00	1,02	-	-		
Cape Teal	Anas capensis	4,44	2,04	-	-		
Cape Turtle Dove	Streptopelia capicola	91,11	10,20	-	-		
Cape Wagtail	Motacilla capensis	64,44	5,10	-	-		
Cape Weaver	Ploceus capensis	11,11	0,00	-	-	x	Near endemic
Cape White-eye	Zosterops virens	22,22	0,00	-	-	x	Near endemic
Capped Wheatear	Oenanthe pileata	4,44	2,04	-	-		
Cloud Cisticola	Cisticola textrix	11,11	0,00	-	-	x	Near endemic
Common Buttonquail	Turnix sylvaticus	2,22	0,00	-	-		
Common Buzzard	Buteo buteo	22,22	7,14	-	-		
Common Greenshank	Tringa nebularia	8,89	1,02	-	-		
Common Moorhen	Gallinula chloropus	40,00	5,10	-	-		
Common Myna	Acridotheres tristis	28,89	4,08	-	-		
Common Ostrich	Struthio camelus	13,33	8,16	-	-		
Common Quail	Coturnix coturnix	6,67	0,00	-	-		
Common Ringed Plover	Charadrius hiaticula	2,22	0,00	-	-		
Common Sandpiper	Actitis hypoleucos	6,67	0,00	-	-		
Common Waxbill	Estrilda astrild	26,67	1,02	-	-		
Crested Barbet	Trachyphonus vaillantii	6,67	0,00	-	-		
Crowned Lapwing	Vanellus coronatus	57,78	3,06	-	-		
Curlew Sandpiper	Calidris ferruginea	4,44	0,00	NT	LC		
Dark-capped Bulbul	Pycnonotus tricolor	24,44	1,02	-	-		
Denham's Bustard	Neotis denhami	2,22	0,00	NT	VU		
Diederik Cuckoo	Chrysococcyx caprius	31,11	2,04	-	-		
Drakensberg Prinia	Prinia hypoxantha	2,22	0,00	-	-	x	Endemic (SA, Lesotho, Swaziland)
Eastern Clapper Lark	Mirafra fasciolata	11,11	0,00	-	-		
Egyptian Goose	Alopochen aegyptiaca	86,67	9,18	-	-		
Fan-tailed Widowbird	Euplectes axillaris	15,56	2,04	-	-		
Fiscal Flycatcher	Melaenornis silens	17,78	1,02	-	-	x	Near endemic

Species name	Scientific name	Full protocol	Ad hoc protocol	Red List Global	Red List Regional	Endemic (SA)	Endemic (SA) - Description
Fork-tailed Drongo	Dicrurus adsimilis	2,22	0,00	-	-		
Giant Kingfisher	Megaceryle maxima	4,44	0,00	-	-		
Glossy Ibis	Plegadis falcinellus	20,00	5,10	-	-		
Goliath Heron	Ardea goliath	4,44	0,00	-	-		
Great Crested Grebe	Podiceps cristatus	4,44	3,06	-	-		
Great Egret	Ardea alba	13,33	4,08	-	-		
Greater Flamingo	Phoenicopterus roseus	15,56	7,14	-	NT		
Greater Honeyguide	Indicator indicator	2,22	0,00	-	-		
Greater Painted-snipe	Rostratula benghalensis	2,22	0,00	-	NT		
Greater Striped Swallow	Cecropis cucullata	51,11	3,06	-	-		
Green Wood Hoopoe	Phoeniculus purpureus	2,22	0,00	-	-		
Grey Crowned Crane	Balearica regulorum	8,89	3,06	EN	EN		
Grey Heron	Ardea cinerea	37,78	4,08	-	-		
Grey-headed Gull	Chroicocephalus cirrocephalus	24,44	5,10	-	-		
Grey-winged Francolin	Scleroptila afra	11,11	0,00	-	-	x	Endemic (SA, Lesotho, Swaziland)
Groundscraper Thrush	Turdus litsitsirupa	2,22	0,00	-	-		
Hadada Ibis	Bostrychia hagedash	73,33	4,08	-	-		
Hamerkop	Scopus umbretta	8,89	0,00	-	-		
Helmeted Guineafowl	Numida meleagris	33,33	0,00	-	-		
House Sparrow	Passer domesticus	15,56	3,06	-	-		
Intermediate Egret	Ardea intermedia	17,78	1,02	-	-		
Jackal Buzzard	Buteo rufofuscus	2,22	1,02	-	-	x	Near endemic
Karoo Thrush	Turdus smithi	6,67	0,00	-	-	x	Near endemic
Kittlitz's Plover	Charadrius pecuarius	8,89	0,00	-	-		
Kurrichane Thrush	Turdus libonyana	2,22	0,00	-	-		
Lanner Falcon	Falco biarmicus	2,22	0,00	-	VU		
Laughing Dove	Spilopelia senegalensis	64,44	3,06	-	-		
Lesser Flamingo	Phoeniconaias minor	2,22	1,02	NT	NT		
Lesser Swamp Warbler	Acrocephalus gracilirostris	24,44	0,00	-	-		
Levaillant's Cisticola	Cisticola tinniens	55,56	3,06	-	-		
Little Bittern	Ixobrychus minutus	2,22	0,00	-	-		
Little Egret	Egretta garzetta	22,22	4,08	-	-		
Little Grebe	Tachybaptus ruficollis	46,67	8,16	-	-		
Little Rush Warbler	Bradypterus baboecala	13,33	1,02	-	-		
Little Stint	Calidris minuta	15,56	0,00	-	-		
Little Swift	Apus affinis	17,78	1,02	-	-		
Long-crested Eagle	Lophaetus occipitalis	0,00	2,04	-	-		
Long-tailed Widowbird	Euplectes progne	77,78	15,31	-	-		
Maccoa Duck	Oxyura maccoa	0,00	1,02	VU	NT		

Species name	Scientific name	Full protocol	Ad hoc protocol	Red List Global	Red List Regional	Endemic (SA)	Endemic (SA) - Description
Malachite Sunbird	<i>Nectarinia famosa</i>	4,44	0,00	-	-		
Marsh Owl	<i>Asio capensis</i>	6,67	1,02	-	-		
Marsh Sandpiper	<i>Tringa stagnatilis</i>	11,11	0,00	-	-		
Mocking Cliff Chat	<i>Thamnolaea cinnamomeiventris</i>	11,11	0,00	-	-		
Mountain Wheatear	<i>Myrmecocichla monticola</i>	13,33	0,00	-	-		
Neddicky	<i>Cisticola fulvicapilla</i>	20,00	1,02	-	-		
Orange-breasted Waxbill	<i>Amandava subflava</i>	4,44	0,00	-	-		
Pale-crowned Cisticola	<i>Cisticola cinnamomeus</i>	4,44	0,00	-	-		
Pied Avocet	<i>Recurvirostra avosetta</i>	6,67	0,00	-	-		
Pied Crow	<i>Corvus albus</i>	6,67	1,02	-	-		
Pied Kingfisher	<i>Ceryle rudis</i>	8,89	1,02	-	-		
Pied Starling	<i>Lamprolornis bicolor</i>	66,67	16,33	-	-	x	Endemic (SA, Lesotho, Swaziland)
Pink-billed Lark	<i>Spizocorys conirostris</i>	2,22	0,00	-	-		
Pin-tailed Whydah	<i>Vidua macroura</i>	28,89	1,02	-	-		
Purple Heron	<i>Ardea purpurea</i>	11,11	3,06	-	-		
Quailfinch	<i>Ortygospiza atricollis</i>	24,44	0,00	-	-		
Red-billed Quelea	<i>Quelea quelea</i>	24,44	2,04	-	-		
Red-billed Teal	<i>Anas erythrorhyncha</i>	35,56	4,08	-	-		
Red-capped Lark	<i>Calandrella cinerea</i>	31,11	0,00	-	-		
Red-chested Cuckoo	<i>Cuculus solitarius</i>	15,56	1,02	-	-		
Red-collared Widowbird	<i>Euplectes ardens</i>	8,89	2,04	-	-		
Red-eyed Dove	<i>Streptopelia semitorquata</i>	51,11	5,10	-	-		
Red-faced Mousebird	<i>Urocolius indicus</i>	6,67	0,00	-	-		
Red-knobbed Coot	<i>Fulica cristata</i>	75,56	17,35	-	-		
Red-throated Wryneck	<i>Jynx ruficollis</i>	26,67	0,00	-	-		
Red-winged Francolin	<i>Scleroptila leuillantii</i>	13,33	0,00	-	-		
Red-winged Starling	<i>Onychognathus morio</i>	2,22	0,00	-	-		
Reed Cormorant	<i>Microcarbo africanus</i>	60,00	9,18	-	-		
Rock Dove	<i>Columba livia</i>	6,67	4,08	-	-		
Rock Martin	<i>Ptyonoprogne fuligula</i>	11,11	0,00	-	-		
Ruff	<i>Calidris pugnax</i>	11,11	2,04	-	-		
Rufous-naped Lark	<i>Mirafraga africana</i>	6,67	0,00	-	-		
Secretarybird	<i>Sagittarius serpentarius</i>	4,44	3,06	EN	VU		
South African Cliff Swallow	<i>Petrochelidon spilodera</i>	17,78	3,06	-	-	x	Endemic (SA, Lesotho, Swaziland) Breeding
South African Shelduck	<i>Tadorna cana</i>	15,56	1,02	-	-		
Southern Bald Ibis	<i>Geronticus calvus</i>	28,89	9,18	VU	VU	x	Endemic (SA, Lesotho, Swaziland)
Southern Fiscal	<i>Lanius collaris</i>	93,33	15,31	-	-		
Southern Grey-headed Sparrow	<i>Passer diffusus</i>	22,22	0,00	-	-		

Species name	Scientific name	Full protocol	Ad hoc protocol	Red List Global	Red List Regional	Endemic (SA)	Endemic (SA) - Description
Southern Masked Weaver	<i>Ploceus velatus</i>	84,44	8,16	-	-		
Southern Pochard	<i>Netta erythrophthalma</i>	22,22	2,04	-	-		
Southern Red Bishop	<i>Euplectes orix</i>	86,67	13,27	-	-		
Speckled Mousebird	<i>Colius striatus</i>	15,56	0,00	-	-		
Speckled Pigeon	<i>Columba guinea</i>	42,22	3,06	-	-		
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	28,89	0,00	-	-		
Spotted Eagle-Owl	<i>Bubo africanus</i>	2,22	0,00	-	-		
Spur-winged Goose	<i>Plectropterus gambensis</i>	46,67	4,08	-	-		
Squacco Heron	<i>Ardeola ralloides</i>	6,67	1,02	-	-		
Streaky-headed Seedeater	<i>Crithagra gularis</i>	4,44	0,00	-	-		
Striated Heron	<i>Butorides striata</i>	2,22	0,00	-	-		
Swainson's Spurfowl	<i>Pternistis swainsonii</i>	46,67	0,00	-	-		
Tawny-flanked Prinia	<i>Prinia subflava</i>	4,44	0,00	-	-		
Thick-billed Weaver	<i>Amblyospiza albifrons</i>	2,22	0,00	-	-		
Three-banded Plover	<i>Charadrius tricollaris</i>	35,56	2,04	-	-		
Village Weaver	<i>Ploceus cucullatus</i>	2,22	0,00	-	-		
Wailing Cisticola	<i>Cisticola lais</i>	2,22	0,00	-	-		
Western Barn Owl	<i>Tyto alba</i>	2,22	0,00	-	-		
Western Cattle Egret	<i>Bubulcus ibis</i>	62,22	11,22	-	-		
Whiskered Tern	<i>Chlidonias hybrida</i>	37,78	7,14	-	-		
White Stork	<i>Ciconia ciconia</i>	0,00	2,04	-	-		
White-backed Duck	<i>Thalassornis leuconotus</i>	6,67	4,08	-	-		
White-breasted Cormorant	<i>Phalacrocorax lucidus</i>	22,22	0,00	-	-		
White-faced Whistling Duck	<i>Dendrocygna viduata</i>	2,22	0,00	-	-		
White-necked Raven	<i>Corvus albicollis</i>	2,22	0,00	-	-		
White-rumped Swift	<i>Apus caffer</i>	22,22	2,04	-	-		
White-throated Swallow	<i>Hirundo albigularis</i>	35,56	3,06	-	-		
White-winged Tern	<i>Chlidonias leucopterus</i>	0,00	2,04	-	-		
White-winged Widowbird	<i>Euplectes albonotatus</i>	2,22	0,00	-	-		
Wing-snapping Cisticola	<i>Cisticola ayresii</i>	40,00	0,00	-	-		
Wood Sandpiper	<i>Tringa glareola</i>	15,56	3,06	-	-		
Yellow Canary	<i>Crithagra flaviventris</i>	11,11	0,00	-	-		
Yellow-billed Duck	<i>Anas undulata</i>	73,33	10,20	-	-		
Yellow-crowned Bishop	<i>Euplectes afer</i>	35,56	12,24	-	-		
Yellow-fronted Canary	<i>Crithagra mozambica</i>	4,44	1,02	-	-		
Zitting Cisticola	<i>Cisticola juncidis</i>	46,67	2,04	-	-		

APPENDIX 2: CURRICULUM VITAE

MEGAN DIAMOND

PERSONAL DETAILS

Date of Birth | *7 December 1978*
Driver's License | *Code A and B*
Home Language | *English*
Other Languages | *Afrikaans*

EDUCATION

BSc Environmental Management | *University of South Africa (UNISA) 2002 – 2009*

ACCREDITATION

South African Council for Natural Scientific Professions | *Environmental Science*
Registration Number: 300022/14

EXPERIENCE

Owner & Avifaunal Specialist | *Feathers Environmental Services*
July 2013 – Present

- * Perform specialist avifaunal assessment studies to minimise the impact of industrial infrastructure on birds and their habitats;
- * Provide strategic guidance to industry through the development of best practice procedures and guidelines;
- * Review and comment on methodologies, specialist studies and EIA reports for Renewable Energy projects;
- * Provide input into renewable energy and power line developments elsewhere in Africa and across the globe;
- * Manage the collection and collation of relevant and complete desktop and/or field datasets;
- * Manage pre- and post-construction avifaunal monitoring data collected at wind and solar energy facilities;
- * Site assessments, either as part of the project team or independently;
- * Preparation of reports according to project deadlines, including the use of Geographic Information Systems (GIS) to portray data;
- * Attendance of specialist integration meetings; and
- * Liaison with stakeholders where necessary.

October 2006 – June 2013

Programme management

- * Annually review the programme's conservation and research strategic objectives and update in accordance with the EWT's and programme's vision and mission including work plans for staff etc.;
- * Ensure timeous, professional delivery on all aspects of Wildlife & Energy Programme activities;
- * Formulate, prioritise and approve relevant research and conservation projects;
- * Ensure acceptable quality of all research projects and their outputs;
- * Participate in international network liaison as and when required;
- * Produce regular popular articles & media releases on the Wildlife & Energy Programme projects and outputs & contribute to the EWT publications;
- * Establish & maintain a network with relevant national & international stakeholders;
- * Deliver presentations at relevant meetings, functions, workshops & conferences on behalf of the programme;
- * Assist with compilation of newsletters, updating of webpage, compilation of press articles, any advocacy issues;
- * Identify & establish partnerships to achieve Wildlife & Energy Programme conservation goals.

Eskom –EWT Strategic Partnership

- * Ensure that this partnership is managed effectively and sustainably against its goals. Manage staff in this division;
- * Develop and maintain relationships with Eskom;
- * Negotiate the terms of reference for the annual service level agreements between EWT and Eskom, to ensure the sustainability of the relationship;
- * Compile annual report to Eskom Corporate Environment and Sustainability;
- * Produce monthly reports to Eskom's regional grids on the status of incident follow-up;
- * Attend applicable forums to interact with Eskom stakeholders;
- * Participate in international network liaison as and when required;
- * Maintain a network with all relevant local and regional level stakeholders (meetings, forums, workshops, etc.);
- * Identify research needs relating to the management of wildlife interaction with power lines;
- * Conduct research projects on wildlife and power line interaction and present the results at national and international conferences and workshops;
- * Development and implementation of training for Eskom field services staff (at various levels) in the management of wildlife interactions; and
- * Conduct special investigations on power lines relating to wildlife induced faulting.

Environmental Impact Assessment Division

- * Ensure that this division operates effectively and efficiently at all times and manage staff in this division; and

- * Conduct specialist avifaunal studies for new power lines developments including: tendering/quoting for the projects, conducting field work, preparing reports, presenting results & negotiating the acceptance of recommendations, final “walk through” as part of Environmental Management Plans; general project management, all liaison with clients, Eskom, authorities, Interested and Affected Parties etc.

Management and administration

- * Ensure all programme staff have relevant terms of reference;
- * Ensure that all programme staff are performance appraised against their terms of reference;
- * Compile and manage programme budgets, monthly reports, work plans and strategy;
- * Monitor expenditure and take corrective action if necessary; and
- * Ensure timely delivery on all projects to all stakeholders.

CONFERENCE ATTENDANCE

- * *Society for Conservation Biology 21st Annual Meeting (1-5 July 2007)*
- * *The 6th TAWIRI Scientific Conference (3 – 6 December 2007) Presented a paper titled “Co-operative management of wildlife and power line conflicts: an African solution”*
- * *Pan-African Ornithological Congress (7-12 September 2008)*
- * *International Conference on Overhead Lines, Design, Construction, Inspection & Maintenance, Fort Collins Colorado USA. (29 March – 1 April 2010) Presented a paper titled “Bird’s eye view: how birds see is key to avoiding power line collision”*
- * *Windaba 2011 – Implementing South African Wind Energy (27-29 September 2011)*
- * *Pan African Vulture Summit (16-20 April 2012) Presented a paper titled “Electrification in Africa – Are our vultures being strung along”*
- * *4th Wind Power Africa Conference & Renewable Energy Exhibition (28-30 May 2012) Presented a paper titled “Wind Energy in Africa – what does this really mean for our continent’s birds”*
- * *13th Pan-African Ornithological Congress (14-21 October 2012) Presented a paper titled “Stringing South Africa’s Terrestrial Birds Along - Monitoring of Bird Interactions with Power Line and Experimental Testing of Bird Collision Mitigation at the Karoo Long Term Monitoring Site”*
- * *AEWA Single Species Action-Planning Workshop for the Conservation of the Grey Crowned Crane (10-13 September 2013) Presented and participated in the workshop as a subject expert (energy and bird interactions)*

AUTHORED & CO-AUTHORED PAPERS

Jenkins, A.R., Smallie, J. & Diamond, M. 2009. Balls, flashers, flappers and coils: South African perspectives on a global search for ways to prevent avian collisions with overhead lines. In: Harebottle, D.M., Craig, A.J.F.K., Anderson, M.D., Rakatomonana, H. & Muchai, M. (eds). Proceedings of the 12th Pan-African Ornithological Congress, 2008. Cape Town, Animal Demography Unit.

Smallie, J., Diamond, M. & Jenkins, A. 2009. Lighting up the African continent – what does it mean for our birds? pp. 38–43. In: Harebottle, D.M., Craig, A.J.F.K., Anderson, M.D., Rakotomanana, H. & Muchai. (eds). *Proceedings of the 12th Pan-African Ornithological Congress, 2008*. Cape Town, Animal Demography Unit.

Jenkins, A. R., Smallie, J.J and Diamond, M. 2010 Avian collisions with power lines: a global review of causes and mitigation with a South African perspective. Bird Conservation International, page1 of16.

Retief, E.F., Diamond, M., Anderson, M.D., Smit, H.A., Jenkins, A.R., Brooks, M. 2011. Avian Wind Farm Sensitivity Map for South Africa.

Jenkins, A.R., Van Rooyen, C.S., Smallie, J.J., Harrison, J.A., Diamond, M. And Smit, H.A. 2012. BirdLife South Africa / Endangered Wildlife Trust best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa.

Jenkins, A.R., De Goede, K.H., Sebele, L. and Diamond, M. 2013. Brokering a settlement between eagles and industry: sustainable management of large raptors nesting on power infrastructure. Bird Conservation International (2013) 23:232 – 246.

Diamond, M., Harris, J., Mirande, C. and Austin, J. 2014. People of a feather flock together: A global initiative to address crane and power line interactions. 13th North American Crane Workshop Summary. Lafayette, Louisiana.

Page-Nicholson, S., Tate, G., Hoogstad, C., Murison, M., Diamond, M., Blofield, A., Pretorius, M., Michael, M.D. 2018. Mitigating the Impact of Large Mammals on Wooden Electrical Distribution Poles in the Kruger National Park, South Africa. African Journal of Wildlife Research.

Diamond, M. and Hoogstad, C. (in press) Collisions and habitat loss associated with utility lines and wind turbines. IUCN SSC Crane Specialist Group – Crane Conservation Strategy.