



Proposed Expansion of Chicken Houses from Approximately 30 000 to 60 000 Chickens and the development of evaporation ponds, Bulhoek Farm, Near Swartruggens, North West Province

Plant Species, Terrestrial Biodiversity and Animal Species Compliance Statement

October 2021

Prepared for:



Prepared by:

Megan Smith

Megan.smith@enviroworks.co.za

021 527 7084

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DOCUMENT CONTROL

Quality and revision record

Quality approval

	Capacity	Name	Signature	Date
Author:	Environmental Specialist (MSc Biological Sciences, UCT 2019)	Megan Smith		29/10/2021
Reviewer:	Director of Blue Leaf Environmental, SACNASP Registered.	Roy de Kock		01/11/2021

This report has been prepared in accordance with Enviroworks Quality Management System.

Revision record

Revision Number	Objective	Change	Date

DISCLAIMER

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time, and budget. Discussions are to some extent made on reasonable and informed assumptions built on bona fide information sources, as well as deductive reasoning. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage during the impact assessment phase. The author does not accept responsibility for conclusions made in good faith based on own databases or on the information provided. Although the author exercised due care and diligence in rendering services and preparing documents, he accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, directly or indirectly by the authors and by the use of this document. This report should therefore be viewed and acted upon with these limitations in mind.

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1. PROJECT DESCRIPTION

Enviroworks (Pty) Ltd has been appointed by Quantum Foods (Pty) Ltd to conduct a Plant Species, Animal Species and Terrestrial Biodiversity Theme study for the proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens on Bulhoek Farm, Near Swartruggens, North West Province (Figure 1).

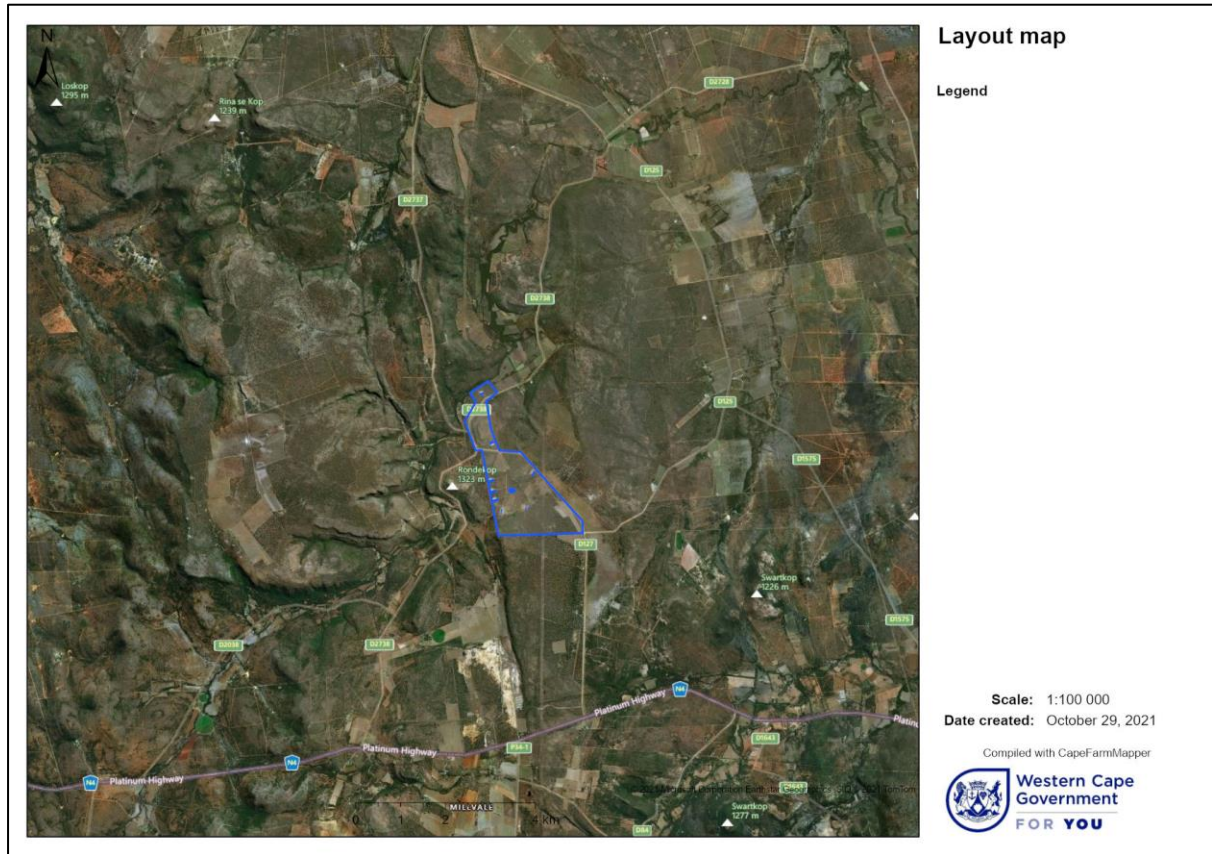


Figure 1: Locality map of the proposed expansion (Bulhoek Farm is demarcated by the blue polygon) (1:100 000)

The proposed expansion entails the development of eight (8) new chicken layer houses with a footprint of either 60 m x 13.5 m or 100 m x 12 m depending on the site (please kindly see Figure 2 for the layout map of the proposed development).

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Figure 2 Layout map of the proposed chicken house expansion and development of evaporation ponds

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Quantum Foods currently have twelve (12) operational chicken broiler houses on Bulhoek Farm. Quantum Foods propose to demolish these houses due to the presence of asbestos in the rooves (the asbestos will be removed by an approved and certified agent). Once these chicken houses are demolished, new chicken houses will be built on the same footprint. There is, however, a possibility that Quantum Foods will increase the number of chickens that can be housed in these new chicken houses.

In terms of waste removal, the chicken carcasses will be taken to the local zoo (after the quarantine period on the farm) and the remaining general waste will be disposed of at a registered landfill site. The chicken manure is collected by an external farmer to use as fertilizer.

Usable water (for basic sanitation, drinking, and washing chicken houses) will be sourced from the three (3) existing, unregistered boreholes present on site. A Water Use License will be applied for usage of the borehole water.

Sewage on site is currently kept in three (3) holding tanks until it is removed by a service provider. No additional holding tanks will be required for the expansion.

The chicken houses are currently being washed twice a year with cleaning agents. These chemicals are Peroxysan, Hyposan, Foamcleaner, Viroclear, Cleanclear and Triazolol. These chemicals are not hazardous, most of them do not present toxic characteristics, are not carcinogenic, has little to non-eco-toxicological effects, hazardous polymerization will not occur, and some are biodegradable. Therefore, the waste associated from washing the chicken houses are classified as non-hazardous.

It is predicted that only dirt (i.e., soil and windblown sand) and dried, non-infectious chicken manure are currently by products of the wash (besides the cleaning agents). Currently 13000 L of water in total for each house (annually) are being used to wash the chicken houses. This amount of water is expected to approximately double after expansion. Quantum Foods proposes the development of twenty (20) lined and impermeable evaporation ponds (each being 25m²) to treat the wash water. A Waste Management License will be required for the development and use of the evaporation ponds.

2. MINIMUM REQUIREMENTS

This Compliance Statement is compiled to follow the protocol for specialist assessment and minimum report content requirements for environmental impacts on plant species, animal species and terrestrial biodiversity as specified in Procedures for the Assessment and Minimum Criteria For Reporting On Identified Environmental Themes In Terms Of Sections 24(5)(A) And (H) And 44 Of The National Environmental Management Act, 1998, When Applying For Environmental Authorisation (GN No. 43110 of 20 March 2020 and GN 1150 of 30 October 2020). Please see Table 1, 2 and 3 for a content cross reference checklist.

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Table 1: Content cross-reference checklist for the protocol for the specialist assessment and minimum report content requirements for environmental impacts on plant species as per GN R 1150, with corresponding section names in the report.

Requirement	Section of this report
Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Section 10 and 11
A signed statement of independence by the specialist;	Section 10 and 11
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 3
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 3
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr	Section 6
A description of the assumptions made and any uncertainties or gaps in knowledge or data	Section 9
The mean density of observations/ number of samples sites per unit area	Section 3
Any conditions to which the compliance statement is subjected	Section 8

Table 2 Content cross-reference checklist for the protocol for the specialist assessment and minimum report content requirements for environmental impacts animal species as per GN R 1150, with corresponding section names in the report.

Requirement	Section of this report
Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Section 10 and 11
A signed statement of independence by the specialist;	Section 10 and 11
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 3
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 3
The mean density of observations/ number of samples sites per unit area	Section 6
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	Section 9
A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 3

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Requirement	Section of this report
Any conditions to which the compliance statement is subjected.	Section 8

Table 3 Content cross-reference checklist for the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity as per GN R 43110, with corresponding section names in the report.

Requirement	Section of this report
Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Section 10 and 11
A signed statement of independence by the specialist;	Section 10 and 11
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 3
A baseline profile description of biodiversity and ecosystems of the site	Section 5
The methodology used to verify the sensitivities of the terrestrial biodiversity features on the site, including equipment and modelling used, where relevant;	Section 3
In the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;	N/A
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	Section 6
A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 9
Any conditions to which the compliance statement is subjected.	Section 8

3. SITE SENSITIVITY VERIFICATION AND METHODOLOGY

Prior to commencing with the specialist assessment, the current use of the land and the environmental sensitivity identified by the national web based environmental screening tool (screening tool) of the site under consideration were determined using desktop analysis. The potential plant and animal species likely to occur within the site and surrounding area, the vegetation type and any potential sensitive areas were determined as part of the desktop site sensitivity investigation. The desktop analysis results were confirmed by a site visit. Note

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that avifaunal species have not been included in this assessment because there is a separate avifaunal assessment that was conducted for the proposed development¹.

- Environmental sensitivity was determined using the following desktop analysis tools:
 - The Department of Forestry, Fisheries, and Environment (DFFE) screening tool report for the development footprint
 - Satellite imagery (Google Earth, 2021)
 - Global Biodiversity Information Facility (GBIF)²
 - North West Biodiversity Sector Plan
 - International Union for Conservation of Nature (IUCN)³
 - iNaturalist⁴
 - Plants of southern Africa ⁵

A site sensitivity verification was undertaken using:

- an on -site inspection.
- desktop analysis using:
 - Red List of South African Plants⁶
 - North West Biodiversity Sector Plan
 - North West Biodiversity Management Act (No 4 of 2016)
 - iNaturalist⁷
 - Plants of southern Africa⁸
 - National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004): Critically Endangered, Endangered, Vulnerable, and Protected Species List (2007, as amended)
 - National Environmental Management: Biodiversity Act, 2004 (Act 10 Of 2004): Alien and Invasive Species Lists (2020)
 - Virtual databases to determine potential faunal species that may inhabit the site:
 - Atlas of African Lepidoptera⁹

¹ Feathers Environmental Services, "BULHOEK FARM CHICKEN HOUSE EXPANSION PROJECT SITE SENSITIVITY VERIFICATION & AVIFAUNAL COMPLIANCE STATEMENT," 2021.

² "Global Biodiversity Information Facility," n.d., <https://www.gbif.org/>.

³ "IUCN 2020," The IUCN Red List of Threatened Species. Version 2019-3., accessed July 29, 2020, <https://www.iucnredlist.org>.

⁴ "iNaturalist," n.d., <https://www.inaturalist.org>.

⁵ SANBI, "Plants of Southern Africa," n.d., <http://posa.sanbi.org/>.

⁶ N.A Nick and D Raimondo, "National Assessment: Red List of South African Plants Version 2020.1.," 2007.

⁷ "iNaturalist."

⁸ SANBI, "Plants of Southern Africa."

⁹ "Atlas of African Lepidoptera," n.d.,

http://vmus.adu.org.za/vm_search.php?database=sabca&prj_acronym=LepiMAP&db=sabca&URL=http://vmus.adu.org.za/?vm=LepiMAP&Logo=images/lepimap_logo.png&Headline=Atlas%20of%20African%20Lepidoptera&Use_main_filter=1&Use_er_id=&Full_name=&serve_sp_list=1&drop_down_list=Latin%20names&assessment=0.

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- Southern African Bird Atlas Project 2¹⁰
- Reptile Atlas of Africa¹¹
- Atlas of African Spiders¹²
- Atlas of African Scorpions¹³
- Frog Atlas of southern Africa¹⁴
- Virtual Museum of African Mammals¹⁵

The development footprint was investigated on foot on 12 August 2021. During the site inspection, photographs of the footprint and surroundings were taken for record purposes. A visual observation was made of the footprint and surrounding area, taking note of the land use, land cover and specifically the vegetation cover of the development footprint, and any evidence of plant and animal species of conservation concern (SCC) were recorded. The site sensitivity, as identified by the DFFE Screening Tool, was then confirmed, or disputed using the above information.

It should be noted that observations of species are contingent on the season that the survey took place in. The site was surveyed during mid-Autumn, thus some faunal species may have not been observed due to their seasonal patterns or life histories. To measure some level of confidence to exclude the likelihood that any sensitive species could have been missed within the footprint, the known distribution records and habitat preferences of the sensitive species (identified by the Screening Tool) have been used to determine whether the species is likely to be found on the footprint and immediate surrounds.

¹⁰ "Southern African Bird Atlas Project 2," n.d., <http://sabap2.birdmap.africa/>.

¹¹ "Reptile Atlas of Africa," n.d.,

http://vmus.adu.org.za/vm_search.php?database=sarca&prj_acronym=ReptileMAP&db=sarca&URL=http://sarca.adu.org.za&Logo=images/reptilemap_logo.png&Headline=Reptile%20Atlas%20of%20Africa&Use_main_filter=0&User_id=&Full_name=&serve_sp_list=1&drop_down_list=Latin%20names&assessment=0.

¹² "Atlas of African Spiders," n.d.,

http://vmus.adu.org.za/vm_search.php?database=spidermap&prj_acronym=SpiderMAP&db=spidermap&URL=&Logo=images/spidermap_logo.png&Headline=Atlas%20of%20African%20Spiders&Use_main_filter=0&User_id=&Full_name=&serve_sp_list=1&drop_down_list=Latin%20names&assessment=0.

¹³ "Atlas of African Scorpions," n.d.,

http://vmus.adu.org.za/vm_search.php?database=scorpionmap&prj_acronym=ScorpionMAP&db=scorpionmap&URL=&Logo=images/scorpionmap_logo.png&Headline=Atlas%20of%20African%20Scorpions&Use_main_filter=0&User_id=&Full_name=&serve_sp_list=1&drop_down_list=Latin%20names&assessment=0.

¹⁴ "Frog Atlas of Southern Africa," n.d.,

http://vmus.adu.org.za/vm_search.php?database=safap&prj_acronym=FrogMAP&db=safap&URL=http://adu.org.za/frog_atlas.php&Logo=images/frogmap_logo.png&Headline=Frog%20Atlas%20of%20Southern%20Africa&Use_main_filter=0&User_id=&Full_name=&serve_sp_list=1&drop_down_list=Latin%20names&assessment=0.

¹⁵ "Virtual Museum of African Mammals," n.d.,

http://vmus.adu.org.za/vm_search.php?database=vimma&prj_acronym=MammalMAP&db=vimma&URL=http://mammalmap.adu.org.za/&Logo=images/vimma_logo.png&Headline=Virtual%20Museum%20of%20African%20Mammals&Use_main_filter=0&User_id=&Full_name=&serve_sp_list=1&drop_down_list=Common%20Names&assessment=0.

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In terms of floral species, the likelihood of any sensitive species or SCC inhabiting the area is low. Therefore, an additional botanical survey has not been recommended.

4. OBJECTIVES

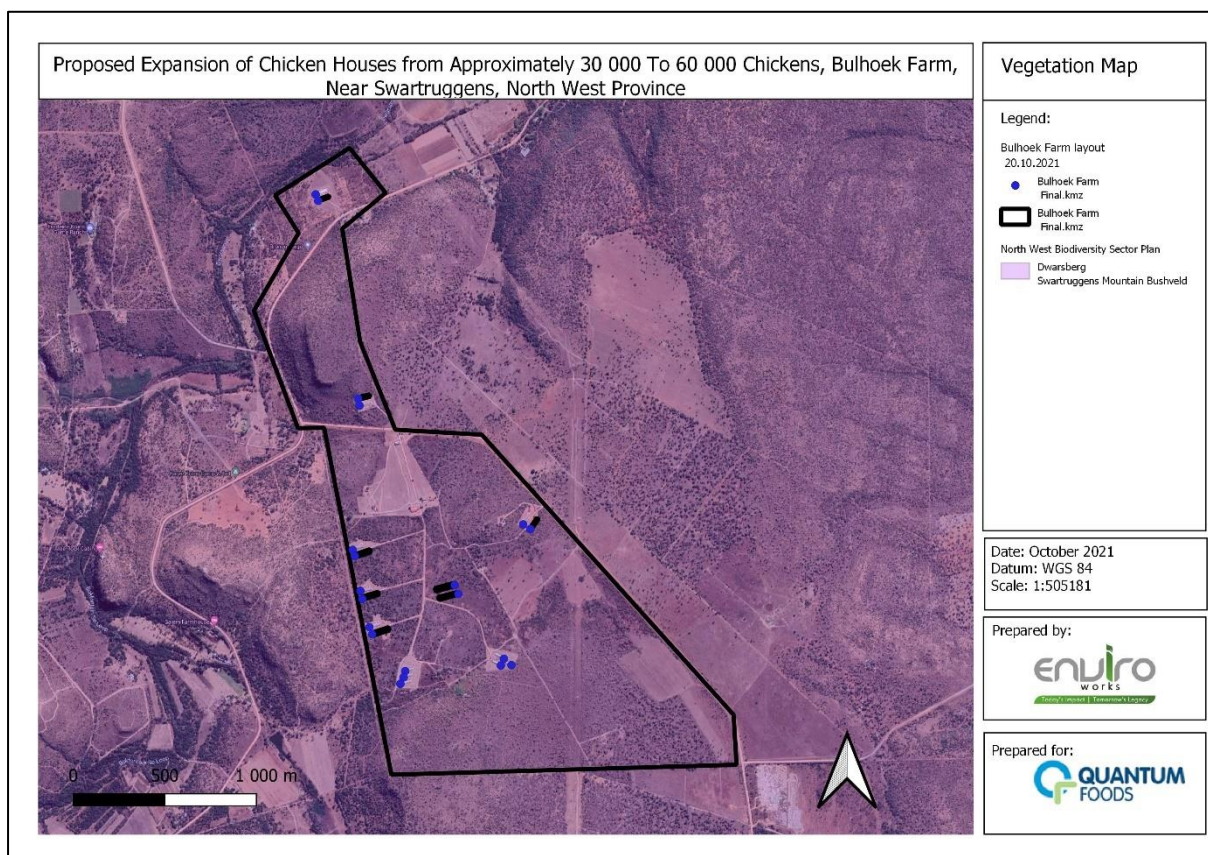
- To confirm or dispute the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure or the change in vegetation cover.
- Present additional sensitivities that might not have identified in the screening tool report or the desktop study.
- Motivate with evidence (e.g., photographs) the verification of the environmental sensitivity.

5. RESULTS

5.1. Baseline profile description of biodiversity and ecosystems of the site

5.1.1 General Vegetation description

The proposed development site consists of Dwarsberg-Swartruggens Mountain Bushveld (Figure 3)¹⁶.



¹⁶ "South African National Biodiversity Institute," The Final Vegetation Map of South Africa, Lesotho, Swaziland, 2018.

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Figure 3: Vegetation types within the proposed development sites (The black lines demarcate the proposed new chicken houses and the blue circles demarcate the proposed new evaporation ponds)

Dwarsberg-Swartruggens Mountain Bushveld is a vegetation type that forms part of the Savanna Biome. This vegetation type mainly consists of rocky low to medium height hills and ridges, with steep faces in certain areas. Variable vegetation structure is evident depending on slope, exposure, aspect and local habitat. Various combinations of tree and shrub layers and species occur, often also housing dense grass layers. Bush clumps also occur frequently. There are few biogeographical important taxa, including *Ethrophysa transvaalensis* and *Euphorbia perangusta*¹⁷.

Dwarsberg-Swartruggens Mountain Bushveld is endemic to South Africa and is classified as Least Concerned¹⁸. However, less than 2% of the vegetation type is statutorily conserved. Consequently, the vegetation type is vulnerable to transformation whereby 7% is already transformed into cultivated land.

5.1.2 Sensitive areas

Portions of the proposed development site is located within Ecological Support Areas (ESAs) as well as Critical Biodiverse Areas (CBAs)¹⁹(Figure 4). In particular, portions are located in a CBA Category 2 (Terrestrial) and ESA Category 2 (Terrestrial) areas (Figure 4). Portions of the proposed development site is also located in an Aquatic CBA Category 2 and Aquatic ESA Category 1 and 2 (see Figure 5). However, the proposed development footprints do not impinge on the aquatic sensitive areas.

¹⁷ L Mucina and M.C Rutherford, *The Vegetation of South Africa, Lesotho and Swaziland*, Strelizia 19 (Pretoria: South African National Biodiversity Institute, 2006).

¹⁸ South African National Biodiversity Institute (SANBI), *National Biodiversity Assessment 2018: The Status of South Africa's Ecosystems and Biodiversity, Synthesis Report* (Pretoria: South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, 2019).

¹⁹ North West: Rural, Environment and Agricultural Development, "North West Biodiversity Section Plan," 2015.

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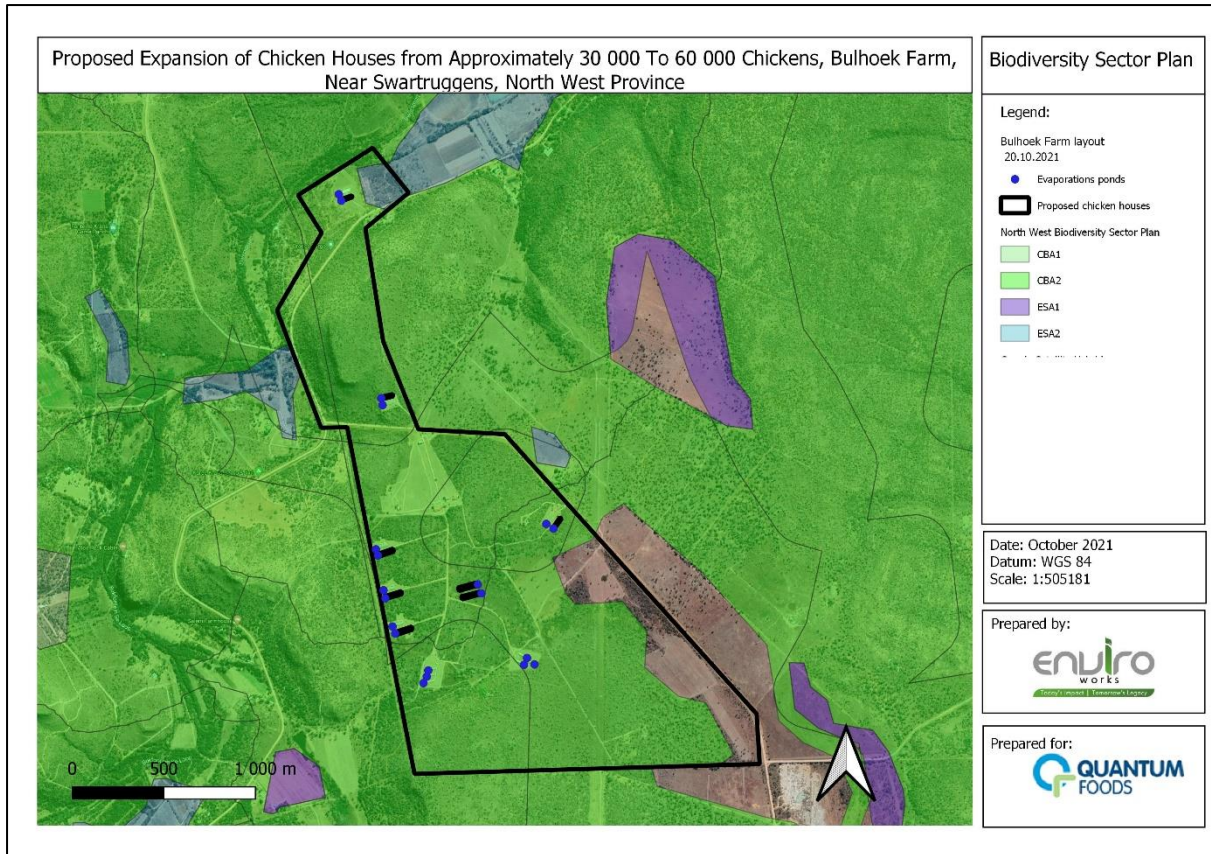


Figure 4: Terrestrial sensitivity of the proposed development footprint ²⁰

²⁰ North West: Rural, Environment and Agricultural Development.

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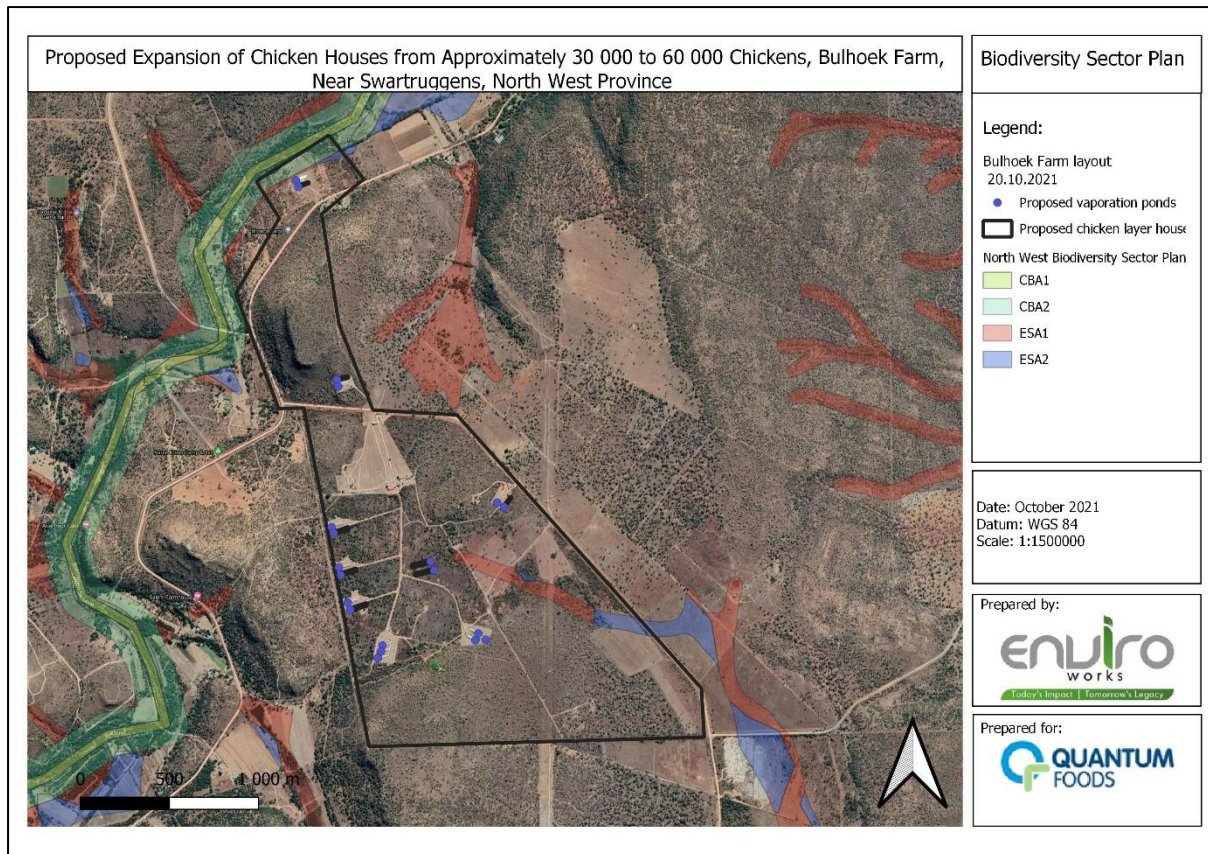


Figure 5 Aquatic sensitivity of the proposed development footprint²¹

CBAs are areas of high biodiversity and ecological value. These areas are required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure. CBAs that are likely to be in a natural condition are classified as Category 1 CBAs and those that are potentially degraded or represent secondary vegetation are classified as Category 2 CBAs. Particularly, as per the North West Biodiversity Sector Plan, areas classified as Category 1 CBA have high irreplaceability values, consist of vegetation types that are classified as Critically Endangered or have critical linkages in the provincial biodiversity corridor network²². Only low-impact, biodiversity-sensitive land uses are considered appropriate within CBAs²³.

ESAs are areas that, while not essential for meeting biodiversity targets, still play an important role in supporting the functioning of protected areas and/or CBAs and are key for providing ecosystem services²⁴. ESAs must be maintained in at least a functional and natural state, in order to maintain the purpose for which they were identified, but restricted habitat loss may be acceptable. ESAs that are still likely to be functional (or in a natural, near natural or moderately degraded state) are classified as Category 1 ESAs. ESAs that have been severely degraded or have no natural cover remaining and would require restoration are classified as Category 2 ESAs.

²¹ North West: Rural, Environment and Agricultural Development.

²² North West: Rural, Environment and Agricultural Development.

²³ South African National Biodiversity Institute (SANBI), *National Biodiversity Assessment 2018: The Status of South Africa's Ecosystems and Biodiversity, Synthesis Report*.

²⁴ South African National Biodiversity Institute (SANBI).

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Since the proposed development footprint is situated in sensitive areas identified by the North West Biodiversity Sector Plan, the footprint is considered to hold conservation importance within these sensitive areas. However, not all these areas are in a natural or near-natural state. The state of these areas is discussed in Section 5.3.

5.2. Results of the screening tool report

The Screening Tool Report identified the project footprint and surrounding area as having a Low sensitivity in terms of the Plant Species Theme (Figure 6 below), Medium sensitivity for the Animal Species Theme (Figure 7) and Very High Sensitivity for Terrestrial Biodiversity Theme (Figure 8).



Figure 6 Map of Plant Species Theme sensitivity, as taken from the Screening Tool Report compiled for the project.

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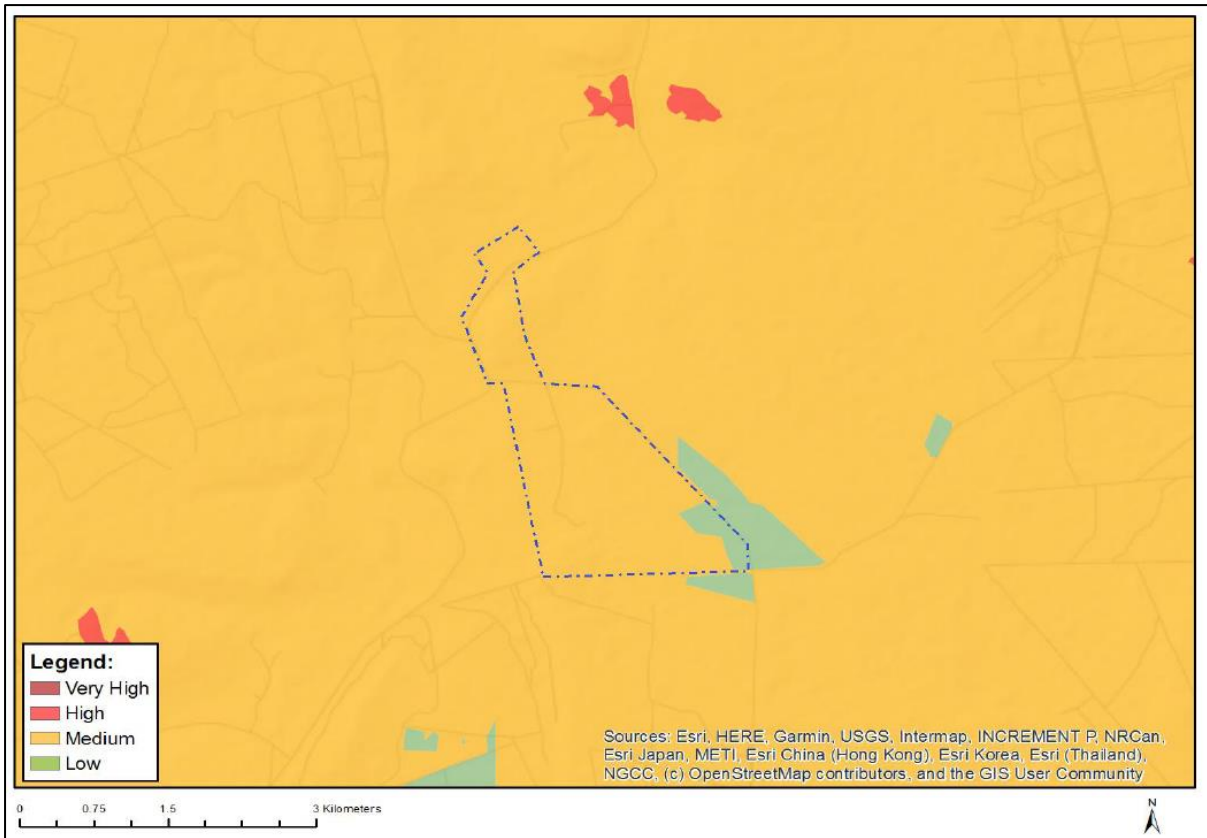


Figure 7 Map of Animal Species Theme sensitivity, as taken from the Screening Tool Report compiled for the project.

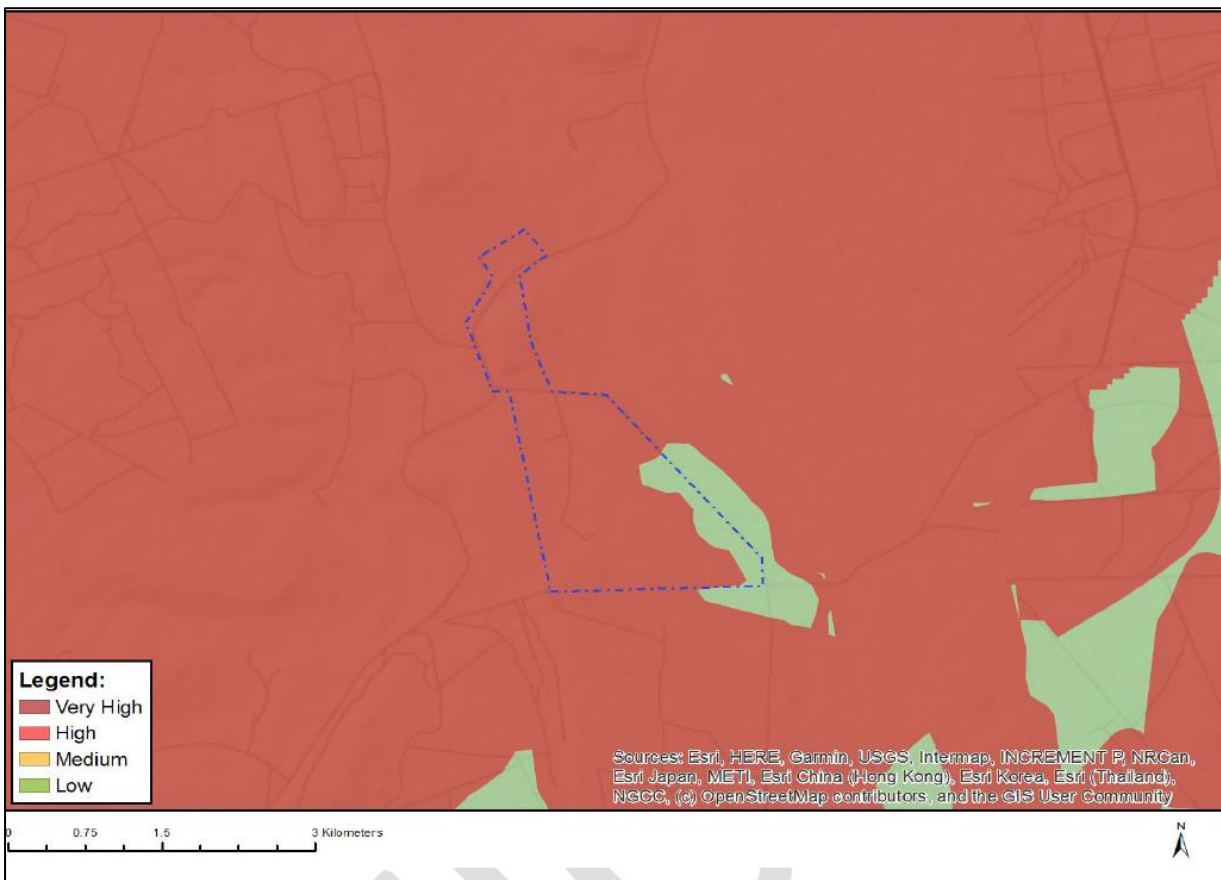


Figure 8 Map of Terrestrial Biodiversity Theme sensitivity, as taken from the Screening Tool Report compiled for the project.

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The Screening Tool Report further identifies what features were triggered as sensitive for the footprint and summarises the results in a table (see Table 3 below). No sensitive floral species were listed in the screening tool report therefore, Table 3 only lists the sensitive faunal species that may be found within the footprint. Avifaunal species have been excluded from this assessment because the impacts on avifauna have been assessed in an Avifaunal Compliance Statement ²⁵.

²⁵ Feathers Environmental Services, "BULHOEK FARM CHICKEN HOUSE EXPANSION PROJECT SITE SENSITIVITY VERIFICATION & AVIFAUNAL COMPLIANCE STATEMENT."

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Table 3 Sensitivity features, as identified by the Screening Tool Report generated for this project. Results from the desktop study was added for each sensitivity feature in additional columns.

Sensitivity Features	Feature(s) of sensitivity	Regional Red List Status	National Red List Status	TOPS listed	Protected in the North West Biodiversity Management Act (No 4 of 2016).	Habitat preference ²⁶	Previously identified on the footprint or direct surrounds
Medium	<i>Acinonyx jubatus</i>	Vulnerable ²⁷	Vulnerable ²⁸	Vulnerable	Yes	Currently occur only along the northern borders of South Africa and in several isolated protected areas	No
Medium	<i>Crocidura maquassiensis</i>	Vulnerable ²⁹	Vulnerable ³⁰	Not listed	Yes	Across South Africa in rocky or montane grassland and moist grasslands. Mostly recorded in protected areas.	No
Medium	<i>Dasymys robertsii</i>	Vulnerable ³¹	N/A	Not listed	Yes	Associated with rivers and wetlands within the northern and southern African savannas from Senegal in the west to Ethiopia in the east and south to the Western Cape Province of South Africa	No

²⁶ Nick and Raimondo, "National Assessment: Red List of South African Plants Version 2020.1."

²⁷ M.F Child et al., *The Red List of Mammals of South Africa, Swaziland and Lesotho* (South African National Biodiversity Institute and Endangered Wildlife Trust, 2016).

²⁸ Child et al.

²⁹ Child et al.

³⁰ Child et al.

³¹ Child et al.

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Sensitivity Features	Feature(s) of sensitivity	Regional Red List Status	National Red List Status	TOPS listed	Protected in the North West Biodiversity Management Act (No 4 of 2016).	Habitat preference ²⁶	Previously identified on the footprint or direct surrounds
Medium	<i>Sensitive species 12</i>	Vulnerable ³²	N/A	Not listed	Yes	Savanna species that inhabits rocky hillsides in habitats of mixed <i>Acacia</i> and <i>Combretum</i> woodland, tropical Bushveld and Thornveld where vegetation ranges from dense, short shrubland to open tree savanna. The species is sympatric with <i>Kinixys spekii</i> over most of its range ³³	No

³² R Boycott and M.D Hofmeyr, "Kinixys Lobatsiana," South African National Biodiversity Institute, 2017, <http://speciesstatus.sanbi.org/assessment/last-assessment/2446/>.

³³ Boycott and Hofmeyr.

5.3. Site verification

During the site visit, the development footprint was verified to be an operational chicken farm. The majority of the expansion footprint for the chicken houses and development footprint of the evaporation ponds consist of already developed or highly disturbed areas (see Figure 9 below). Within these areas, the vegetation is either regularly mowed or has been removed completely for the purposes of the chicken layer houses.



Figure 9 Example of already development or highly disturbed footprints.

In areas where proposed footprints have not yet been developed or mowed, the vegetation can be described as predominantly dense grassland interspersed with trees (Figure 10). Much of the footprints are homogenous and dominated by *Cynadon dactylon*, *Aloe greatheadii* and various trees including *Combretum zeyheri*, *Peltophorum africanum* and *Vachellia tortilis* ssp. *Heteracantha*. Dense patches of the weeds such as *Tagetes minuta* and alien invasive species such as *Verbena bonariensis* (Category 1b) are also present at all sites. The homogeneity of the vegetation and the high dominance of *C. dactylon* and *T. minuta* are indicative of disturbance most likely due to the ongoing agricultural activity on the farm.



Figure 10 Example of the vegetated corridors on the development footprints

The northern most section of Bulhoek Farm includes a section of the Dwarspruit River. The impacts of the development on the watercourse have been included in an Aquatic Biodiversity assessment³⁴ and thus, have been excluded from this report. From a botanical and faunal perspective, there is a strong likelihood that the watercourse will support a variety of faunal and floral species. In addition to this, the watercourse and immediate surroundings is classified as an Aquatic CBA and ESA. Consequently, the Dwarspruit River and direct surrounds do have conservation value. However, it is not expected that the development will impinge on the watercourse or buffer area, as suggested in the Aquatic Biodiversity Assessment. Consequently, impacts on the watercourse fauna and flora have been excluded from this study.

In terms of the areas of the footprints included in the Terrestrial Critical Biodiverse Area (CBA), these areas have either been lost via development of chicken layer houses or show signs of disturbance (refer to Figure 9 and 10). However, these areas may still support at least some ecological processes which is evident by the presence of indigenous plant species including, but not limited to, *Clematis brachiata*, *Combretum zeyheri*, *Pappea capensis*, *Englerophytum magalimontanum*, *A. greeheadii* and *Vachellia tortilis* ssp., *Heteracantha* spp, and the presence of some faunal species (see Table 4). Therefore, the area may have some conservation value albeit very small

³⁴ EcoFocus, "Aquatic Ecological Assessment Report: Proposed Expansion of Chicken Houses from Approximately 30 000 to 60 000 Chickens, Bulhoek Farm, near Swarttruggens, North West Province," 2021.

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

given the degraded state of the development footprints. Given that most of the area surrounding the footprints is classified as an CBA, the loss of the intact CBA in the footprint is not expected to have significant cumulative conservation consequences. Therefore, the loss in CBA within the footprint is acceptable from a terrestrial biodiversity and botanical view.

No species of special concern were recorded during the site visit and **no Protected Trees were recorded on the footprints**. Based on the habitat preferences of the species (Table 4), it is unlikely that any identified threatened species may occur within the development footprint itself due to its disturbed and degraded nature. However, there is a high likelihood that various snakes, scorpions, and spiders will be found on site. Although all of these may not be threatened, many are listed as protected as per National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004): Critically Endangered, Endangered, Vulnerable, and Protected Species List (2007, as amended) and North West Biodiversity Management Act (No 4 of 2016). Please kindly see the aforementioned legislation for a list of protected species that may occur in the area.

However, the nest of one faunal species in the Order Mantodea (Table 4) was recorded during the site visit. The species was not identified down to the lowest taxonomic level because the animal itself was not observed. The species in the Order Mantodea are often widespread, common throughout the wider area, and often not threatened with extinction. Should this species be displaced by the proposed development, it will likely be able to find refuge and other food sources within the surrounding area.

Table 4 Species that are not threatened with extinction that were recorded on the site.

Feature(s)	Common Name	Threatened Status
Order Mantodea	Praying Mantis	N/A

Because the development footprint is vegetated and some indigenous plant species are present within the development site, the footprint is likely to support other common mammal, bird, and insect species besides those that have already been observed in Table 3. However, should the development result in the loss of some individuals of plant species, faunal species associated with these species will likely be able to find refuge in the adjacent intact section of vegetation.

Based on the aforementioned, it is unlikely that the proposed development and expansion will have a significant impact on the Animal Species, Terrestrial Biodiversity and Plant Species theme. Therefore, the proposed footprints should be classified as **Low Sensitivity** for the Plant Species, Terrestrial Biodiversity and Animal Species Themes. Therefore, it is recommended that the proposed development can be developed and used for agricultural purposes given that the impact management outcomes are adhered to (see Section 6).

6. IMPACT MANAGEMENT OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR

- No open fires are allowed on site during the construction.
- Smoking must be restricted to designated smoking areas.

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

- No dumping of sewage, general- or hazardous waste into a terrestrial or aquatic ecosystem.
- All agricultural activities must remain within the designated footprint.
- The proposed development must remain outside of the delineated watercourses buffer as per the Aquatic Biodiversity Assessment³⁵.
- Development and access roads should be restricted to already disturbed areas as far as practically possible.
- It is recommended that an alien invasive species management plan be compiled for the operational phase of the development to ensure that all alien invasive plant species are removed, and their spread is controlled.
- Vehicles used during the construction, operational, and decommissioning phase must be restricted to designated roads.
- Should any threatened species be observed on the development footprint, the species must be relocated in consultation with a faunal specialist.
- All emergency numbers for human-wildlife conflict events must be located at the farm offices.
- At least one construction personnel must be a trained snake handler (for example, the Designated Environmental Officer).
- All personnel, during all phases of the construction and operation works, must be inducted to ensure that they are aware of the environmental sensitivities on the site.
- Areas disturbed outside of the footprint must be rehabilitated effectively.
- Monitor for snakes, scorpions, and spiders each morning during construction, for relocation, especially within trenches and holes dug into the ground.
- All management outcomes included in the Avifaunal Compliance Statement³⁶ must be adhered to.
- Topsoil must be retained and stockpiled for the purposes of rehabilitation.

7. CONCLUSION

It is anticipated that the proposed development will have negligible impact on the faunal, terrestrial biodiversity and botanical features identified by the screening tool because the development footprint is extensively disturbed and does not represent likely habitat for any plant or animal species that may be threatened with extinction, as listed by the Screening Tool.

No signs of the threatened animal species listed by the screening tool were observed on the footprint during the site visit. However, there was one common animal species recorded. The species is classified as Least Concern and is common to the wider area. Should this species or any other faunal species be displaced as a result of the development, they will be able to find refuge in the adjacent intact vegetation.

³⁵ EcoFocus.

³⁶ Feathers Environmental Services, "BULHOEK FARM CHICKEN HOUSE EXPANSION PROJECT SITE SENSITIVITY VERIFICATION & AVIFAUNAL COMPLIANCE STATEMENT."

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

Some of the development footprint may have some ecological and conservation value, albeit minimal, because it is located on a degraded Critical Biodiverse Area (CBA). However, given that the entire area surrounding the proposed footprints is located in a CBA, the cumulative conservation loss of developing in the CBA is not expected to be significant.

Taking into consideration the sensitivity of the development footprint, sensitive features identified by the screening tool, the results from the baseline biodiversity and ecosystem of the site, which was verified by a site visit, it can be concluded that both proposed expansion and development footprints are of **low** sensitivity for the Plant Species, Animal Species and Terrestrial Biodiversity Theme. Provided that all the management outcomes are adhered to, this compliance statement is considered sufficient to meet the requirements for authorisation under the Plant Species, Animal Species and Terrestrial Biodiversity Theme Minimum requirements.

8. CONDITIONS TO WHICH THIS STATEMENT IS SUBJECTED

- This signed copy of the compliance statement must be read as an appendix to the Basic Assessment Report (BAR) for this project.
- This compliance statement is subject to the condition that the information supplied to the specialist regarding the project scope, design, layout, location or any other project specifications will not be significantly deviated from.
- All mitigation measures and requirements as specified in this compliance statement, the BAR and EMPr will adhered to during all project phases.

9. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

- All information provided by the applicant, EAP and design team to the environmental specialist was correct and valid at the time that it was provided.
- The results of the botanical survey reflect a specific time of year. The botanical survey was conducted during late spring when some of the geophytic and annual species may not be visually present.
- The initial study was undertaken as a desktop assessment and as such, the information gathered must be considered with caution, as inaccuracies and data capturing errors are often present within these databases; and,
- Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur.

10. DETAILS OF THE SPECIALIST

Name	Megan Smith
Contact Details	076 965 8002
Qualification	M.Sc (Ecology) – University of Cape Town
EAPASA registration	2020/2855 (Cand. EAP)
Field of expertise	Botany & Ecology

10.1. Signed declaration of interest of the specialist

I Megan Smith, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another specialist (the “Review Specialist”) that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



Signature of the Specialist:

Date: 27/10/2021

10.2. Curriculum Vitae of specialist

RELEVANT QUALIFICATIONS AND TRAINING

- MSc Biological Sciences (UCT): Specialising in Plant Ecology
- BSc Hons Botany (NMU)
- BSc Environmental Sciences (NMU)
- Scientific writing training led by Dr Pippin Anderson (August 2019)
- Fynbos plant identification training (July 2019)
- CDM calibration training by Renew Technologies (August 2020)
- ISO 14001:2015 Lead auditor training by SACAS (March 2021)
- Hydroponology and wetland delineation course led by WETrust and digital Soils Africa (September 2021)

WORK EXPERIENCE

- March 2015 – September 2016: Research assistant determining sustainable cultivation practices of Honeybush (*Cyclopia* spp.) at NMU
- March 2019 – April 2020: Restoration Ecology and Conservation Planning intern at SANBI
- April 2020 – current: Environmental consultant and legal assistant at Enviroworks

Published popular Science article:

- Smith, M., Rebelo, A.G. 2020. The Amazing Nature Race. Veld and Flora 106: 16-21.
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Passive restoration of Critically Endangered Cape Flats Sand Fynbos at lower Tokai Park section of Table Mountain National Park, Cape Town. ReStory
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Saving Critically Endangered Peninsula Granite Fynbos from extinction at Tokai Park, Cape Town. ReStory.
- Smith, M., Rebelo, A.G. 2020. iNaturalist: your portal into nature and becoming a citizen scientist. African Wildlife and Environment 75.

BASIC ASSESSMENT

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province (in progress), Mineral Sands Resources

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods (in progress).
- Proposed development of a protea hotel within the Kruger National Park, Phalaborwa, Limpopo Province, South African National Parks (SANParks) (In progress).
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Basic assessment for the proposed construction of The Klein Mooimaak Rest Camp and upgrade of the Langebaan Entrance Gate, West Coast National Park, Western Cape, SANParks (in progress)

ENVIRONMENTAL MANAGEMENT PLANS

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province (in progress), Mineral Sands Resources
- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods (in progress).
- Proposed development of a protea hotel within the Kruger National Park, Phalaborwa, Limpopo Province, South African National Parks (SANParks) (In progress).
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Registration of the bulk diesel storage and update to the EMPr for the proposed expansion of the Samrand Data Centre, African Data Centres (in progress).

BOTANICAL AND FAUNAL IMPACT STUDIES

- Botanical Impact Assessment: Rezoning and the development of fifteen (15) resort units on Portion 12 of the Farm Riet Valley no. 452, Hessequa Local Municipality, Western Cape Province (Faunal Compliance Statement and Botanical Impact Assessment), Hessequa Municipality.
- Botanical survey for the proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

- Botanical and Faunal Compliance Statement; Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods (in progress)
- Botanical and Terrestrial Biodiversity Impact Assessment: Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Botanical Site Sensitivity Report and Species Identification: Almenkerk Mast (in progress)
- Protected tree and animal species survey, and compilation of an alien invasion management plan for Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry (in progress).

REHABILITATION PLANS

- Protocols for restoring Critically Endangered Cape Flats Sand Fynbos within lower Tokai Park, Cape Town, South African National Biodiversity Institute)
- Proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.
- Rehabilitation implementation plan and consultation services for Tormin Mine, Western Cape Province, Mineral Sands Resources (in progress)
- Rehabilitation Method Statement for 132 KW and 33 KW transmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.
- Rehabilitation progress report :132 kv and 33 kv tranmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.

ENVIRONMENTAL CONTROL OFFICER (ECO) AND AUDITING

- Environmental Control Officer: The proposed development of a backup energy centre including diesel storage and generators, on Erf 142504, Diep River, Cape Town, Western Cape Province, African Data Centres.
- Environmental Control Officer: The proposed construction of new and rehabilitation of existing non-motorised transport facilities in the Cape Town CBD, Western Cape Province, BVi Consulting Engineers Western Cape.
- Environmental Compliance Audit for Franki Africa Stock Yard, Durban, KwaZulu Natal Province, Franki Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa
- Environmental Control Officer: The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Musuem.

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

MAINTENANCE MANAGEMENT PLANS

- The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Museum.

ENVIRONMENTAL SCREENING

- Proposed upgrading of the Durbanville Public Transport Interchange, Western Cape, BVi Consulting Engineers Western Cape.
- Proposed the upgrade on national road R40 section from Hazyview (km 0.0) to Maviljan (km 32.1), BVi Consulting Engineers Western Cape.

ALIEN INVASIVE SPECIES MANAGEMENT PLANS

- Invasive species monitoring, control and eradication plan, Garden Route District Municipality, Western Cape Province, Garden Route District Municipality.
- Rehabilitation implementation plan and consultation services for Tormin Mine, Western Cape Province, Mineral Sands Resources (in progress)
- Protected tree and animal species survey, and compilation of an alien invasion management plan for Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry (in progress).

CLEAN DEVELOPMENT MECHANISM

- Calibration and advisory services for the CDM Methane Burning Plant at the Coastal Park and Bellville South Landfill Sites, Promethium Carbon (in progress)

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

11. DETAILS OF THE REVIEW SPECIALIST

Name	Roy de Kock
Contact Details	076 281 9660
Qualification	M.Sc (Botany) – Nelson Mandela University
Registrations	SACNASP 100074/12
Field of expertise	Ecology/Soil Science

11.1. Signed declaration of interest of the review specialist

I Roy de Kock, as the appointed Review Specialist hereby declare/affirm that:

- I have reviewed all the work produced by the Specialist(s);
- I have reviewed the correctness of the specialist information provided as part of this Report;
- I meet all of the general requirements of specialists as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.



02 November 2021

Signature of the Review Specialist:

Date:

11.2. Curriculum Vitae of review specialist

Curriculum Vitae

I worked as an environmental consultant for the past 14 years and since December 2019 have been self-employed as a botanical, agricultural and soil specialist. I have a BSc Hons in Geology, an MSc in Botany and is currently completing a PhD in Botany/Soil science. I have experience in project management and have led numerous EIAs in the Eastern Cape, Northern Cape, Gauteng, Mpumalanga, and North West Provinces. My projects include SANRAL road projects, renewable energy developments, mining applications (quarries and BPs), mixed-use developments and numerous smaller infrastructure EIAs. My largest project was a multi-million Rand Special Economic Zone (SEZ) development in Upington, Northern Cape. Before studying I worked as a financial advisor for ABSA Bank for 9 years and have 3 years high school mathematics and science teaching experience.

Personal Details

Name	Roy de Kock
Identification number	7606 2205 3202 082
Current address	31 Aster Avenue, Sunridge Park, Port Elizabeth, Eastern Cape, South Africa
Email	roy@blueleafenviro.co.za
Contact number	+27 76 281 9660
Driver's license	Code 08 (EB)
Language competencies	English (excellent verbal and writing) Afrikaans (excellent verbal and writing)

Education

Qualification	Institution	Year
PhD Botany and Soil Science	Nelson Mandela University	Current
MSc Botany	Nelson Mandela University	2010
BSc (Hons.) Geology	Nelson Mandela University	2008
BSc Botany & Geology	Nelson Mandela University	2007
Diploma in Marketing	University of Witwatersrand	2003

Skill Highlights

Project Management and Environmental Consulting	<ul style="list-style-type: none">- Extensive experience in project management and have led numerous projects of various scales throughout South Africa.- Managed over 200 projects over an 11-year period.- Managed up to 15 projects at a single time.
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PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

	<ul style="list-style-type: none"> - My projects included SANRAL road projects, renewable energy developments, mining applications (quarries and BPs), mixed-use developments and numerous smaller infrastructure EIAs. - My largest project was a multi-million Rand Special Economic Zone development in Upington, Northern Cape. - Experience in conservation management and have developed various management plans for protected areas within the Eastern Cape and Gauteng.
Environmental Legislation	<p>I have extensive experience in interpreting and applying the following International, National, Provincial legislation:</p> <p><u>International:</u></p> <ul style="list-style-type: none"> - IFC Performance Standards - Equator Principles <p><u>National:</u></p> <ul style="list-style-type: none"> - National Environmental Management Act - National Environmental Management Act (EIA Regulations) - National Environmental Management Waste Act - National Environmental Management Air Quality Act - National Environmental Management Biodiversity Act - National Environmental Management Protected Areas Act - National Water Act - National Forestry Act - Conservation of Agricultural Resources Act <p><u>Provincial</u></p> <p>I am well versed in provincial environmental legislation and regulations in the following provinces:</p> <ul style="list-style-type: none"> - Gauteng - Western Cape - Eastern Cape - Northern Cape - North West - Mpumalanga
Specialist consulting	<ul style="list-style-type: none"> - Worked as a specialist for the last 11 years while managing projects. - Self-employed as a botanical and soil specialist since January 2020. - SACNASP registered as a Professional Natural Scientist. - Written over 50 botanical, ecological and biodiversity assessments.

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

	<ul style="list-style-type: none"> - Done over 25 agricultural and soil assessments for numerous mining (and other) EIAs throughout SA and Mozambique and even have experience drafting rehabilitation and closure plans for large mines (graphite, REEs, Iron). - In the last 2-3 years I have started drafting wetland and river assessments - Drafted a few visual assessments throughout the years. - Done numerous Water Use Licences for a variety of clients including farmers, contractors and developers
Finance	<ul style="list-style-type: none"> - 9 years working experience as a financial advisor for ABSA Bank. - Consulted commercial clients to assist in cash flow issues - Done retail consulting for small businesses and private individuals
Teaching	<ul style="list-style-type: none"> - 3 years' experience in teaching Mathematics, Science, Biology and Geography to High School grades. - 1-year experience in teaching advance mathematics as an online course to Secondary School grades.
Environmental Auditing	<ul style="list-style-type: none"> - Drafted over 100 environmental and safety protocols for various developers throughout South Africa - Implemented and audited numerous environmental and safety protocols during all phases of development (Planning, construction, operations, decommissioning and closure) - Drafted numerous Environmental and Social Management Systems (ESMS) for international clients - Audited various ESMS's throughout South Africa

Work Experience

Environmental and Soil Consultant

BlueLeaf Environmental (Pty) Ltd – 12/2019 to current

- Conducting specialist studies for various projects in South Africa including:
 - Ecological assessments
 - Biodiversity studies
 - Agricultural and Soil assessments
 - Aquatic assessments
 - Visual assessments
- Water Use Licensing (abstraction, borehole, bridges & culverts)

PLANT SPECIES, ANIMAL SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT:
BULHOEK FARM

- Plant and animal relocation permits (National and Provincial)
- Plant and animal Search and Rescue.
- Environmental Risk Assessments
- Mine Rehabilitation and Closure Plans

Principal Environmental Consultant

Employer: CES Environmental and Social Advisory Services, East London, Eastern Cape - 04/2010 to 12/2019

- Managed numerous projects of various sizes including budget management, client liaison, timeframe targets, managing junior consultants and sub-consultants.
- Prepared environmental impact assessment (EIA) reports in terms of relevant EIA legislation and regulations for development proposals including: Infrastructure projects: bulk water and waste water, roads, electrical, mining, ports, aquaculture, renewable energy (solar and wind), industrial processes, housing developments, golf estates and resorts, etc.
- Projects have also included preparation of applications in in terms of other statutory requirements, such as water-use and mining license /permit applications.

Feasibility assessments

- Managed projects to develop pre-feasibility and feasibility assessments for various projects, including various tourism developments, infrastructure projects, etc.

Specialist studies

- Conducting specialist studies for various projects in both South Africa and the rest of Africa (Mozambique, Madagascar, Zambia, Malawi) including:
 - Ecological assessments
 - Agricultural and Soil assessments
 - Aquatic assessments
 - Water Use Licensing (abstraction, borehole, bridges & culverts)
 - Plant and animal relocation permits (National and Provincial), and
 - Plant and animal Search and Rescue.

Laboratory technician

Nelson Mandela University (Faculties of Botany, Zoology and Biochemistry, Port Elizabeth, Eastern Cape – 02/2009 to 03/2010

Assisting students and postgraduates in receiving, labeling, and analyzing samples, design, set-up and conducting of experiments. Designing and executing laboratory testing according standard procedures. General laboratory maintenance of equipment including calibrations, glassware, and chemicals.

School Teacher

Hananja Private School, Jeffreys Bay, Eastern Cape – 01/2007 to 12/2009
Private online tutor East London, Eastern Cape – 01/2020 to current

Teaching Grades 8 to 12 Mathematics, Geography, Biology and Science.
Online teaching Advanced Mathematics and Science Grades 4-7 (2019-current)
Financial Advisor
ABSA Bank Florida, Gauteng – 02/1995 to 12/2003

Assisting clients to determine their expenses, income, insurance coverage, financial objectives, tax status, risk tolerance, or other information needed to develop a financial plan. Answering client questions about financial plans and strategies and giving financial advice. Also worked as:

- Bankteller
- Enquiries clerk
- Administrative assistant
- Treasurer
- Retail sales consultant

Professional Registrations

- SACNASP – Registered as a professional natural scientist (Ref 400216/16)
- IAIASa – Registered as an environmental practitioner
- SAAB – South African Association of Botanists
- LaRSSA – Land Rehabilitation Society of South Africa