SITE SENSITIVITY VERIFICATION REPORT FOR THE PROPOSED SCAFELL SOLAR PV FACILITY, FREE STATE PROVINCE

Prepared for: South Africa Mainstream Developments (Pty) Ltd

DFFE Reference:

To be Confirmed

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CONTENTS

1. INTRODUCTION 1

2. PURPOSE OF THE REPORT 4

3. DESKTOP ANALYSIS 4

4. SITE ASSESSMENT 9

5. RATIONALE FOR REQUIRED SPECIALIST STUDIES 11

5.1 AGRICULTURAL IMPACT ASSESSMENT 11

5.2 LANDSCAPE / ViSUAL IMPACT ASSESSMENT 11

5.3 ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENt 12

5.4 PALAEONTOLOGY IMPACT ASSESSMENT 12

5.5 AQUATIC BIODIVERSITY IMPACT ASSESSMENT 12

5.6 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT 12

5.7 AVIAN IMPACT ASSESSMENT 12

5.8 CIVIL AVIATION ASSESSMENT 13

5.9 DEFENCE ASSESSMENT 13

5.10 RFI ASSESSMENT 13

5.11 GEOTECHNICAL ASSESSMENT 13

5.12 SOCIO-ECONOMIC ASSESSMENT 13

5.13 PLANT SPECIES ASSESSMENT 13

5.14 ANIMAL SPECIES 13

6. CONCLUSION 14

APPENDICES

Appendix 1: Agriculture Site Sensitivity Specialist Correspondence

Appendix 2: Landscape/Visual Site Sensitivity Specialist Correspondence

Appendix 3: Archaeological and Cultural Heritage And Palaeontology Site Sensitivity Specialist Correspondence

Appendix 4: Aquatic Biodiversity Site Sensitivity Specialist Correspondence

Appendix 5: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Specialist Correspondence

Appendix 6: Avifaunal Site Sensitivity Specialist Correspondence

LIST OF TABLES

Table 1-1: Details for each of the projects included in the Scafell Cluster 1

Table 4-1: Specialist Assessments/themes and Sensitivity Ratings identified by DFFE's Web-based Screening Tool 9

LIST OF FIGURES

Figure 1-1: Regional Setting Map of the proposed Scafell Cluster Project 2

Figure 1-2: Locality Map of the proposed Scafell Solar PV Facility 3

Figure 3-1: Location of the project site in relation to the remaining extent of the Savannah Highveld Grassland 5

Figure 3-2: Location of CBA 1, ESA 1, and ESA 2 areas within the project site 6

Figure 3-3: Conservation and Protected Areas within the vicinity of the project site 7

Figure 3-4: Freshwater Resources present within the project site 8

ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
CBA	Critical Biodiversity Area
DMRE	Department of Mineral Resource and Energy
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
NEMA	National Environmental Management Act, 1998 (No. 107 of 1998)
MW	Megawatt
kV	Kilovolt
SLR	SLR Consulting (South Africa) (Pty) Ltd
SSVR	Site Sensitivity verification Report
WMA	Water Management Area

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd ('Mainstream') is proposing to develop, construct and operate four solar PV facilities, including Battery Energy Storage Systems (BESS) and associated infrastructure on a site located 19 km west of the town Sasolburg in the Free State Province (see Figure 1-1). The four projects are collectively referred to as the **Scafell Cluster**. The total generation capacity of the proposed four solar PV facilities would be up to 525 MW_{ac}. The details of the four PV plants, BESS and associated infrastructure is summarised in Table 1-1 below. The location of the four PV plants is illustrated in Figure 1-1. Each solar PV facility will be subject to a separate Environmental Authorisation process and separate application, Scoping and Environmental Impact Assessment Report will be compiled for each facility. **This Site Sensitivity Verification Report is compiled for the Scafell Solar PV Facility.** Figure 1-2 presents the location of the Scafell Solar PV Facility.

Table 1-1: Details for each of the projects included in the Scafell Cluster

Applicant	Project Name	Capacity (MW)	Affected Property
South Africa Mainstream Renewable Power Developments (Pty) Ltd	Scafell Solar PV Facility	150 MW_{ac}	Portion 3 of the Farm Willow Grange 246
	Damlaagte Solar PV Facility	150 MW_{ac}	Remaining Extent of the Farm Damlaagte 229
	Vlakfontein Solar PV Facility	150 MW_{ac}	Portion 6 of the Farm Vlakfontein 161
	Ilikwa Solar PV Facility	75 MW_{ac}	Portion 5 of the Farm Proceederfontein 100

In order to connect the each of the solar PV facilities to the grid, grid connection infrastructure comprising a transmission line and a collector substation will be required for each of the projects. Each transmission line will have a capacity of up to 132 kV and the collector substation up to 33 / 132 kV. The grid connection infrastructure will connect the proposed projects to the Eskom Scafell Main Transmission Substation (MTS), located 2 km south-east of the project site. The grid connection infrastructure will be assessed separately.

Key infrastructure components associated with the proposed Scafell Solar PV Facility include:

- A PV panel array
- Mounting structures
- Inverters
- Substation
- Battery Energy Storage
- Access roads
- Operations and Maintenance Buildings

The proposed project will have a 12 – 18-month construction phase and will be operational for 7 days a week for a period of 20 years.

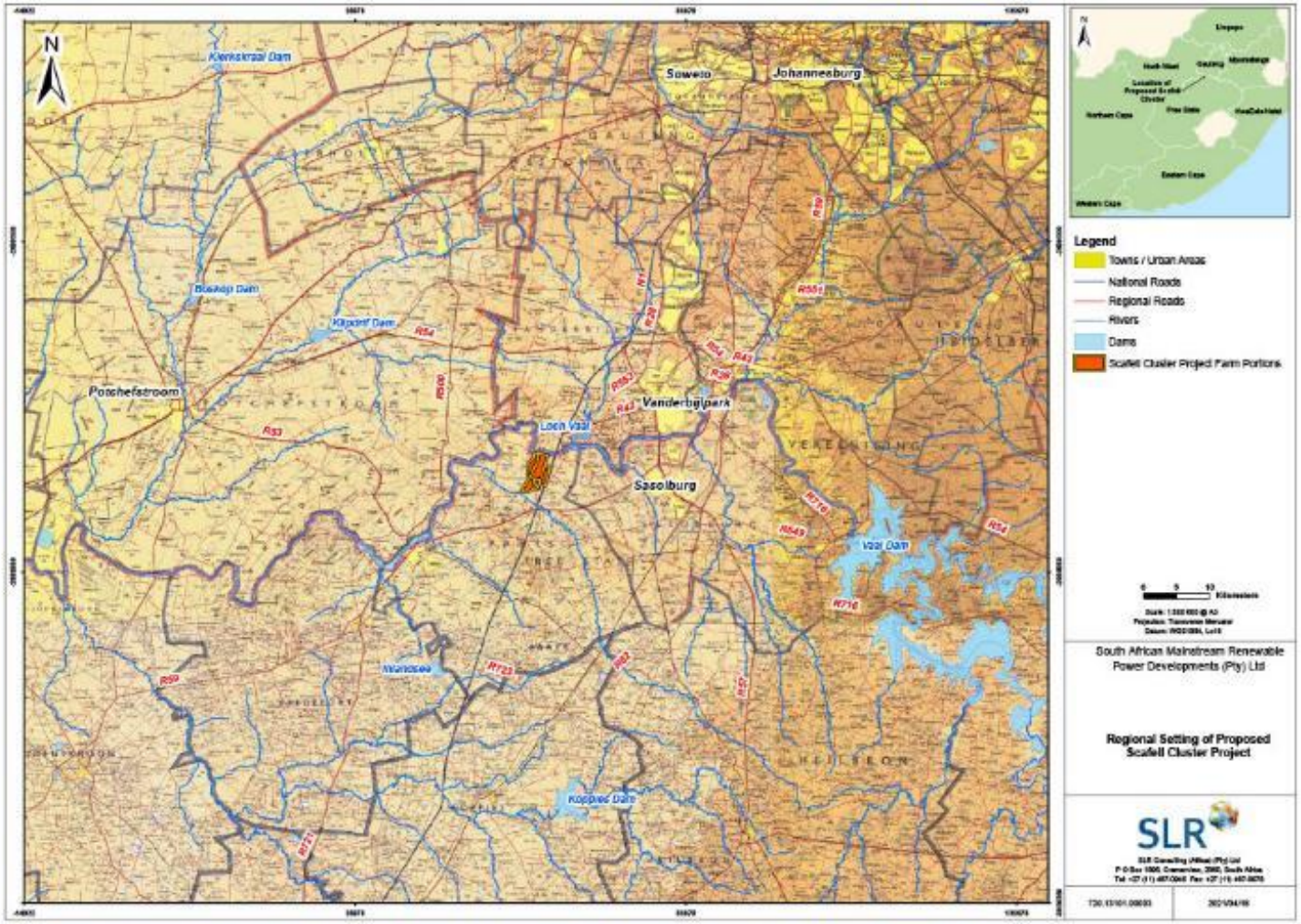

Figure 1-1: Regional Setting Map of the proposed Scafell Cluster Project

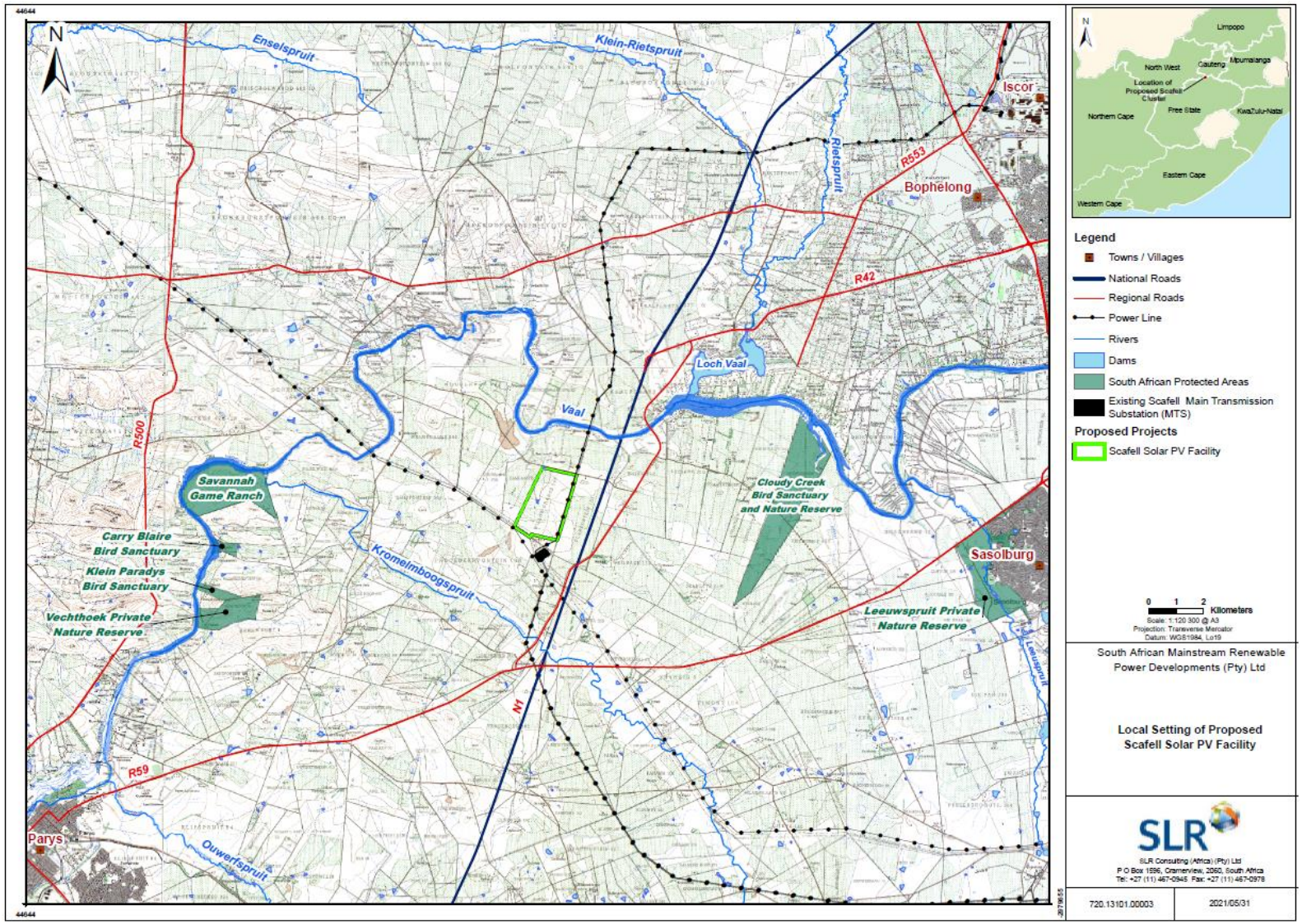

Figure 1-2: Locality Map of the proposed Scafell Solar PV Facility

2. PURPOSE OF THE REPORT

SLR Consulting (South Africa) (Pty) Ltd ('SLR') has been appointed by Mainstream to undertake the required Environmental Authorisation (EA) application process in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated under the National Environmental Management Act, 1998 (No. 107 of 1998; NEMA), for the proposed Scafell Cluster Projects.

A Screening Tool Report for the proposed Scafell Solar PV Facility was generated as part of the EA application process. According to the Screening Tool Report, the following specialist assessments were identified and recommended to be undertaken as part of the environmental process:

- Agricultural Impact Assessment;
- Animal Species Assessment;
- Archaeological and Cultural Impact Assessment;
- Aquatic Biodiversity Impact Assessment;
- Avian Impact Assessment;
- Civil Aviation Assessment;
- Defense Assessment;
- Geotechnical Assessment;
- Landscape / Visual Assessment;
- Palaeontology Impact Assessment;
- Plant Species Assessment;
- RFI Assessment;
- Socio-Economic Assessment; and
- Terrestrial Biodiversity Impact Assessment.

In accordance with the 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 NEMA, this Site Sensitivity Verification Report (SSRVR) has essentially been compiled to provide a rationale for the specialist studies undertaken as part of the environmental process.

3. DESKTOP ANALYSIS

The Scafell Cluster project area is associated with summer rainfall and a cool – temperate climate. The site is located approximately 1 420 – 1 760 m above sea level and the geology of the area is associated with shale, sandstone, and mudstone lithologies. According to Mucina and Rutherford (2006), and the 2018 Final Vegetation Map of South Africa, portions of the project area include the Soweto Highveld Grassland Vegetation Type (see Figure 3-1). This Vegetation Type is listed as "Vulnerable" in terms of the 'National List of Ecosystems that are Threatened and in Need of Protection' (GN R.1002 of 9 December 2011). According to the Free State Biodiversity Plan (2018), the project site falls within a CBA 2, ESA 2, and ESA 1 areas (see Figure 3-2). From a conservation and protected areas perspective, the project site is located 10 km away from conservation and protected areas identified in terms of the South African Protected Area Database (SAPAD, 2020_Q2) and protected areas within the vicinity of the project site include, the Carry Blaire Bird Sanctuary and Nature Reserve, Cloudy Creek Bird Sanctuary and Nature Reserve, Klein Paradys Sanctuary, and the Savannah Game Ranch (see Figure 3-3). In terms of freshwater, the project site falls within the Vaal Catchment and the Upper Vaal WMA. According to the NFEPA database (see Figure 3-4), there is one artificial channelled valley bottom wetland (located to the south-west of the cluster), two artificial channelled valley bottom wetlands (located to the west and north of the cluster) and one depression wetland (located to the south of the cluster).

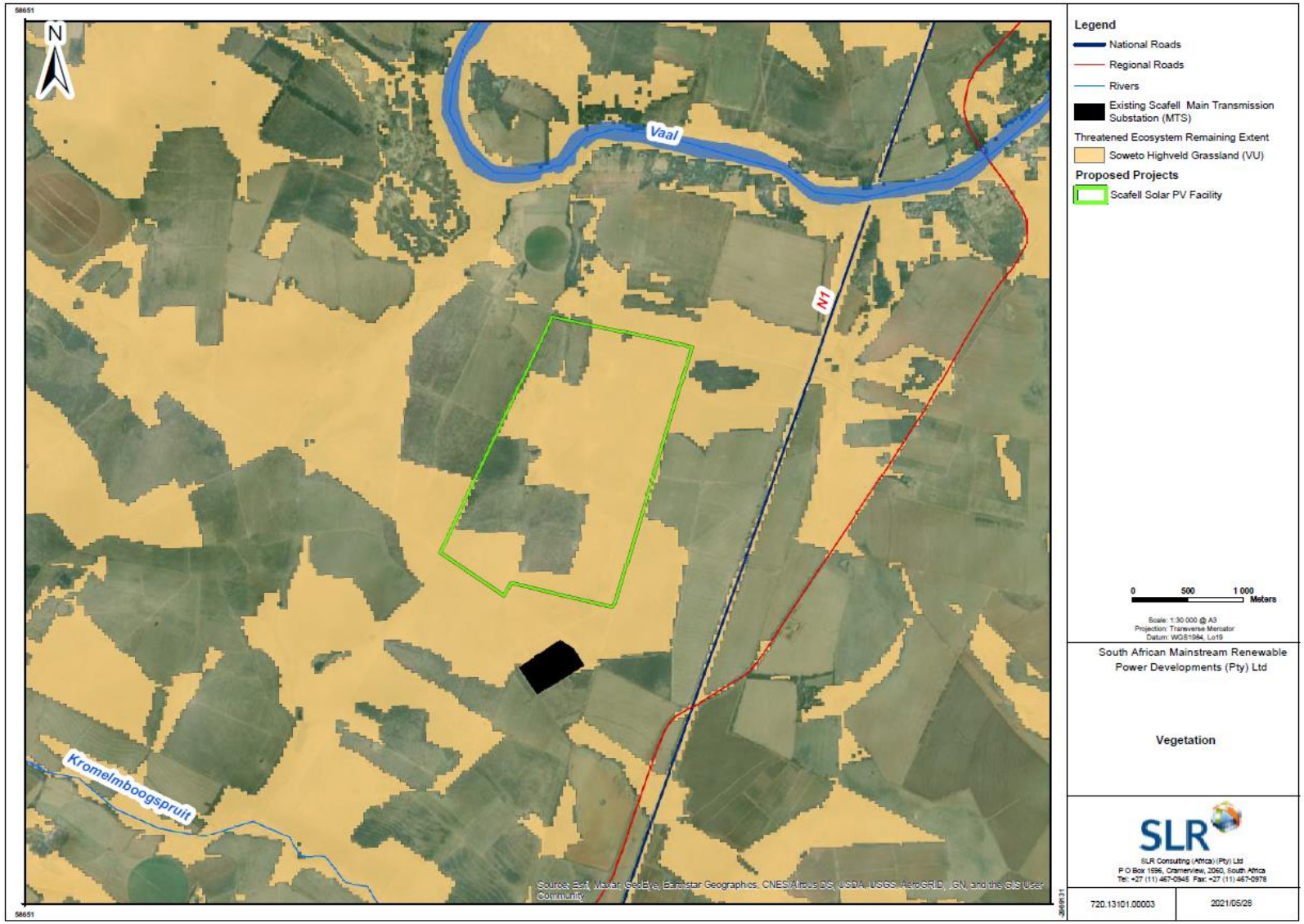

Figure 3-1: Location of the project site in relation to the remaining extent of the Savannah Highveld Grassland

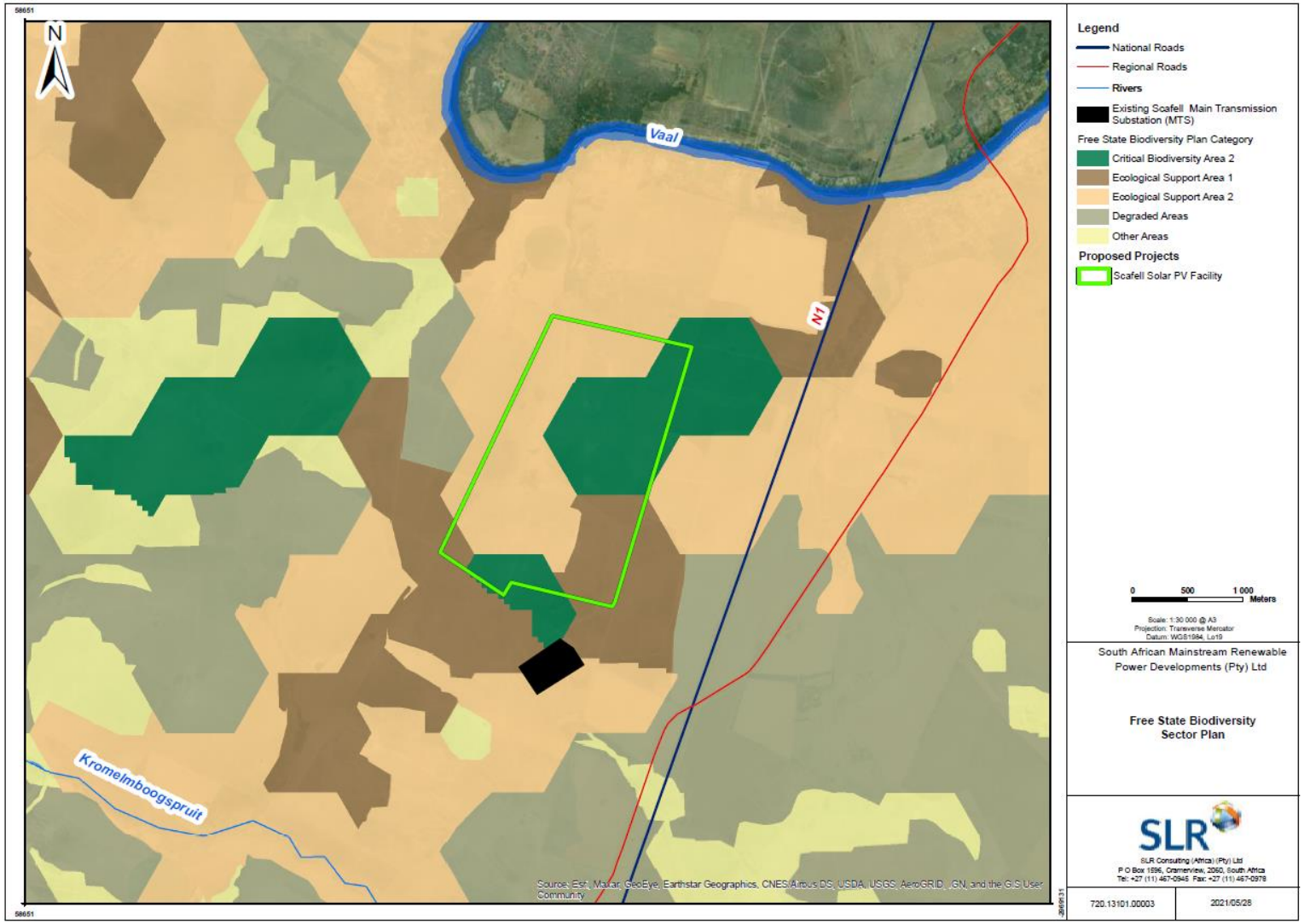

Figure 3-2: Location of CBA 1, ESA 1, and ESA 2 areas within the project site

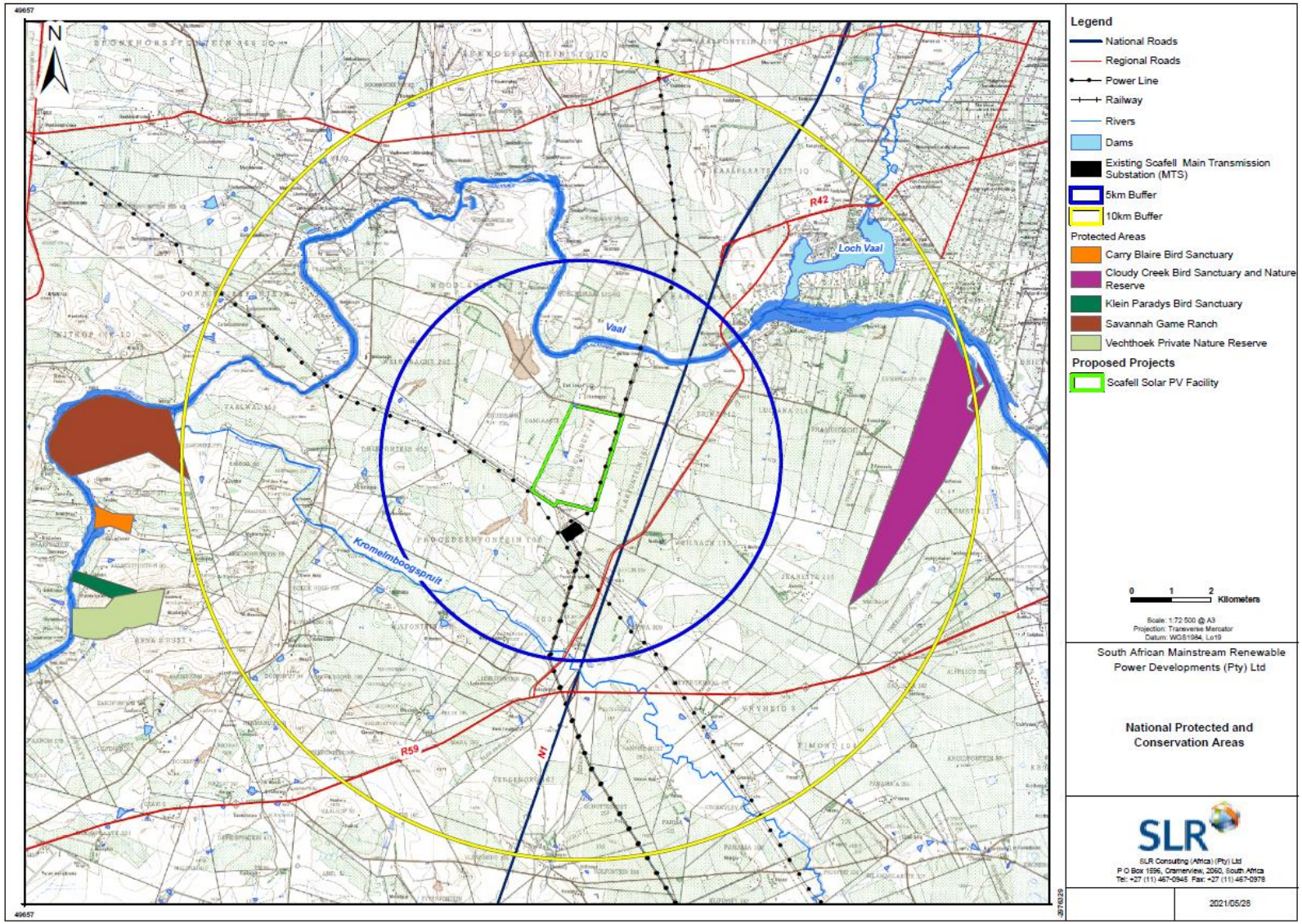

Figure 3-3: Conservation and Protected Areas within the vicinity of the project site

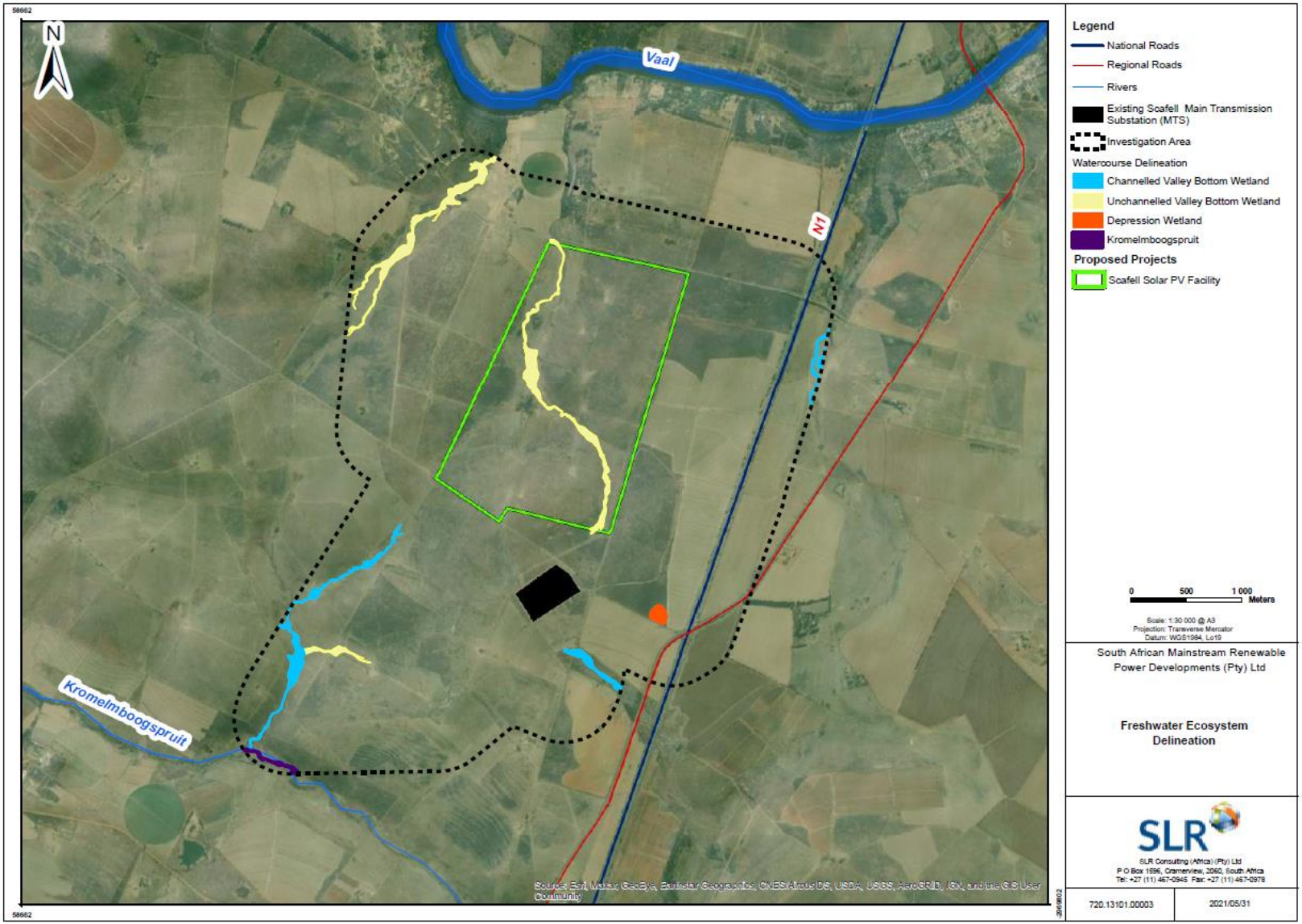

Figure 3-4: Freshwater Resources present within the project site

4. SITE ASSESSMENT

Field-based surveys of the project site were undertaken by the following specialists over the period of January to April 2021:

- Avifauna (Chris van Rooyen Consulting);
- Heritage (Heritage Contracts and Archaeological Consulting);
- Freshwater (Scientific Aquatic Services);
- Terrestrial Biodiversity (Scientific Terrestrial Services);
- Soils and Agricultural Potential (TerraAfrica Environmental Consultants); and
- Visual (Graham Young Landscape Architects).

This Site Sensitivity Verification Report has used the information collected by the above-mentioned specialists to confirm or dispute (as may be applicable) the environmental sensitivity ratings identified by the National Screening Tool (see Section 5 below). A copy of the Screening Report is attached as Appendix 4 of the Scoping Report. The specialist assessments/theme and sensitivity ratings identified by the Screening Tool are summarised in Table 4-1 below.

Table 4-1: Specialist Assessments/themes and Sensitivity Ratings identified by DFFE's Web-based Screening Tool

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per Specialist Verification	Response
Agriculture	High	Low to High	The north-western corner of the Scafell site is deemed to be of high sensitivity as a result of the soil suitability for crop production and the recent (within the last six years) cultivation of land for the establishment of pasture. The rest of project site are considered to be of low and medium sensitivity. A Soil and Agricultural Agro-Ecosystem Specialist Assessment will be undertaken during the impact assessment phase.
Landscape / Visual	Very High	Low to High	The sensitivity of the study area's landscape is dependent on the character, quality, value, and capacity for change. In this context, the study area is deemed to comprise of areas with a low (power utility and sand mining areas), moderate (drainage lines, open farmland, and urban recreation development), and high sensitivity for the bush-covered low hills and the Vaal River and its associated embankments. A Visual Impact Assessment will be undertaken during the impact assessment phase.

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per Specialist Verification	Response
Archaeological and Cultural Heritage	High	High	As archaeological features were identified within the study area, the site is deemed to be of high sensitivity. A Heritage Impact Assessment of the project will be undertaken during the impact assessment phase.
Palaeontology	Very High	Low to Moderate	
Terrestrial Biodiversity	Very High	High	In accordance with the "*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity",* as the Screening Tool identified the site as being of "very high sensitivity" for terrestrial biodiversity, a Terrestrial Biodiversity Specialist Assessment is required.
Aquatic Biodiversity	Low	Very High	While the Screening Tool identified the site as being of "low sensitivity" for aquatic biodiversity, the freshwater specialist deemed portions of the site to be of "very high" sensitivity. Thus, in accordance with the "Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity", a Freshwater Impact Assessment will be undertaken.
Avian	High	Low	The specialist deemed the site to be of low sensitivity as there were no species of conservation concern (SCC) confirmed during the site sensitivity verification survey, and the project site is not located in an Important Bird Area. This, an Avifaunal Compliance Statement will be compiled as part of the EIA phase.
Civil Aviation (Solar PV)	Medium	Medium	The South African Civil Aviation Authority (SACAA) has been identified as a key stakeholder on the project database and will be afforded an opportunity to provide comments of the Scoping Report during the 30-day review and comment period. In accordance with the specialist screening protocols, a Civil Aviation Compliance Statement will be prepared.
Defence	Low	Low	There are no military bases / facilities present within the vicinity of the project site. The nearest military base is Bloemspruit Air Force Base, located 282 km south of the project site outside Bloemfontein in the Free State Province.

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per Specialist Verification	Response
			Thus, no further assessment is deemed necessary.
RFI	Low	Low	The project site for the Scafell Cluster Project falls outside of the Karoo Central Astronomy Advantage Area (KCAAA). SARAO has been identified as a stakeholder on the project database and will be afforded with the opportunity to provide comments during the 30-day review and comment period of the Scoping Report. No further assessment is deemed necessary.
Plant Species	Medium	Medium	These requirements will be addressed as part of the Terrestrial biodiversity study to be undertaken during the impact assessment phase.
Animal Species	Medium	Medium	
Geotechnical	None Provided	-	Mainstream will undertake a detailed Geotechnical Assessment of the project site prior to the commencement of the construction phase, following the issuance of a decision regarding the Application for EA from DFFE.
Socio-Economic	None Provided	-	A detailed Social Impact Assessment for the project will be undertaken during the impact assessment phase.

5. RATIONALE FOR REQUIRED SPECIALIST STUDIES

5.1 AGRICULTURAL IMPACT ASSESSMENT

According to the newly delineated High Potential Agricultural Areas (HPAA) of the Free State Province, the site falls within a Category B HPAA. However, based on the site sensitivity verification undertaken by the specialist, the north-western corner of the site is deemed to be of high sensitivity as a result of the soil suitability for crop production and the recent (within the last six years) cultivation of land for the establishment of pasture. The rest of project site has low and medium sensitivity (see Appendix 1), thus a Soil and Agricultural Agro-Ecosystem Specialist Assessment will be undertaken during the impact assessment phase.

5.2 LANDSCAPE / ViSUAL IMPACT ASSESSMENT

The landscape of the study area and the surrounding environment is characterised mostly by rolling agricultural land, with low hills occurring in the western and southern western parts of the study area. The Vaal River located at least 400 m to the northern boundary of the study area is the dominant landscape feature in the area. The dominant landscape type is agricultural land which is being used mainly for grazing or cultivation.

Visual sensitivities would arise from receptors living in and visiting the study area and observing changes to the aesthetic baseline, currently rated moderate within the context of the sub-region. The visual specialist has indicated that project components are planned within a moderately rated landscape type which has a low visual

absorption capacity. Thus, the proposed project would be potentially highly visible to people traveling along the N1 and within a 3 km radius west, south, and east of the site. The site visit and baseline findings confirm the initial sensitivity ratings to potentially be 'medium' to 'very high. Thus, a Visual Impact Assessment will be undertaken during the impact assessment phase (see Appendix 2).

5.3 ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENt

Based on the outcomes of the field survey by the Specialist, three archaeological sites were identified within the project area. Thus, a Heritage Impact Assessment (including palaeontological study) will be undertaken during the impact assessment phase for the project (see Appendix 3).

5.4 PALAEONTOLOGY IMPACT ASSESSMENT

The Scafell Cluster Project study area is associated with lithologies of the Karoo Supergroup – well known for being a host of fossils as well as coal deposits. According to the SAHRIS Palaeosensitivity Map, the project area is associated with a low to moderate sensitivity. Given that there are no paleochannels or rivers present within the study area and there is a well-documented history within the surrounding area of historical mining activities, the possibility of locating fossils within the study area is deemed to be low by the specialist. However, as noted above, the planned archaeological and cultural heritage impact assessment will also consider the potential impact on paleontologically resources (see Appendix 4).

5.5 AQUATIC BIODIVERSITY IMPACT ASSESSMENT

From the findings of the field-based survey, a single unchanneled valley bottom wetland (associated with a watercourse) traverses the central portion of the project site. Due to this the site is considered sensitive contrary to the screening tool output (Low Sensitivity). Thus, an Aquatic Biodiversity Impact Assessment will be undertaken during the impact assessment phase (see Appendix 5).

5.6 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

The terrestrial biodiversity assessment identified three key faunal habitats on the project site, namely:

i. Transformed;
ii. Grassland; and
iii. Freshwater.

The current land use of the study area and project site, together with the homogenous nature of the landscape and limited cover reduce the suitability of the site for most listed and/or protected mammal species. No invertebrate species of conservation concern was identified within the project site. However, with respect to herptofauna, the African Bullfrog was confirmed and identified within the project site. The African Bullfrog is a listed and protected herpetofauna species.

The specialist has indicated that, based on the field work undertaken, the site is of high sensitivity. Thus, a Terrestrial Biodiversity Specialist Assessment will be undertaken during the impact assessment phase (see Appendix 6).

5.7 AVIAN IMPACT ASSESSMENT

The outcomes of the field-based survey by the specialist indicate that the project site is associated with a low sensitivity. In the site sensitivity verification report prepared by the Avifaunal specialist (see Appendix 1), it has been recommended that an Avifauna Compliance Statement should be compiled during the impact assessment phase of the proposed project (see Appendix 7).

5.8 CIVIL AVIATION ASSESSMENT

The Screening Tool identified the site as being of 'medium' sensitivity, thus a Civil Aviation Compliance Statement will be prepared during the impact assessment phase.

5.9 DEFENCE ASSESSMENT

There are no military bases / facilities within the vicinity of the project site. The nearest military facility from the project site is the Bloemspruit Air Force Base, located 282 km south of the project site near Bloemfontein in the Free State Province. Thus, the site sensitivity verification agrees with the identification of the site as being of low sensitivity and no further assessment is deemed necessary.

5.10 RFI ASSESSMENT

The project site for the Scafell Cluster Project falls outside of the Karoo Central Astronomy Advantage Area (KCAAA). SARAO has been identified as a key stakeholder on the project database and will be afforded with the opportunity to provide comments during the 30-day review and comment period of the Scoping Report. No further assessment is deemed necessary.

5.11 GEOTECHNICAL ASSESSMENT

Mainstream will undertake a detailed Geotechnical Assessment of the project site prior to the commencement of the construction phase, following the issuance of a positive decision regarding the Application for EA from DFFE, as well as the award of preferred bidder status for the proposed project by the DMRE under the REIPPPP, or by another offtaker.

5.12 SOCIO-ECONOMIC ASSESSMENT

A detailed Social Impact Assessment for the project will be undertaken during the impact assessment phase.

5.13 PLANT SPECIES ASSESSMENT

The requirement for a plant species assessment will be addressed as part of the Terrestrial Biodiversity Impact Assessment (see Section 5.6 above).

5.14 ANIMAL SPECIES

The requirement for an animal species assessment will be addressed as part of the Terrestrial Biodiversity Impact Assessment.

6. CONCLUSION

Based on the outcome of this Site Sensitivity Verification Report, the following specialist studies will be undertaken during the impact assessment phase for the proposed project:

- Terrestrial Biodiversity, including plant and animal species (Scientific Terrestrial Services);
- Freshwater (Scientific Aquatic Services);
- Soils and Agricultural Potential (TerraAfrica Environmental Consultants);
- Social (Equisperspectives Research and Consulting Services);
- Visual (Graham Young Landscape Architects); and
- Heritage Impact Assessment, including palaeontological study (Heritage Contracts and Archaeological Consulting).

Compliance statements will be compiled for the following:

- Avifauna (Chris van Rooyen Consulting); and
- Civil Aviation (SLR).

The specialist terms of reference are presented in Section 8.4 of the Scoping Report. The terms of reference of these investigations have been designed to address all the issues that have been identified by the EIA project team. As part of these studies, specialists will gather data relevant to identifying and assessing environmental impacts that might occur as a result of the proposed project in their particular field of expertise. They will provide baseline information and identify and assess impacts according to predefined rating scales. Specialists will also suggest ways in which negative impacts could be mitigated and benefits could be enhanced. The results of the specialist studies will be integrated into an EIA Report.

Reuben Maroga	**Nicholas Arnott**	**Stuart Heather-Clark**
(Report Author)	(Project Manager)	(Reviewer)

Appendix 1: Agriculture Site Sensitivity Specialist Correspondence

TerraAfrica
SOIL. AGRICULTURE. ENVIRONMENT.
www.terraafrica.co.za

Address: 57 Kruger Street, Wolmaransstad, 2630 Telephone: 073 170 9063 Mobile: 082 828 3587 Email: mpienaar@terraafrica.co.za

06 June 2021

To: SLR Consulting
Cnr Main and Campground Roads
Newlands
Cape Town
7700

Dear Nicholas

AGRICULTURAL SITE SENSITIVITY VERIFICATION LETTER FOR THE PROPOSED SCAFELL CLUSTER PROJECTS

The proposed Scafell Cluster projects consist of four solar PV sites as well as a grid corridor that will connect the different PV areas to the Scafell Main Transmission substation. The development area of each proposed PV project is:

- Damlaagte Solar PV Facility (183 ha)
- Scafell Solar PV Facility (280 ha)
- Vlakfontein Solar PV Facility (362 ha)
- Ilikwa Solar PV Facility (228 ha)

The screening reports generated with the National Environmental Screening Tool indicate that the development areas consist of land with High, Medium and Low sensitivity. The Damlaagte, Vlakfontein and Scafell consists of a mixture of High and Medium sensitivity land while the Ilikwa site contains a small with section of land with Low sensitivity.

The development sites were visited on 3 and 4 March 2021 for on-site sensitivity verification. The site assessment that included soil classification of modal soil profiles as well as the sampling of ten soil samples from these profiles. Photographic evidence of soil properties, current land uses and other evidence were taken with a digital camera.

Following the site visit as well as the assessment of available desktop data, the Scafell Cluster project sites are found to have areas that fall in three sensitivity classes i.e. High, Medium and Low. The Vlakfontein site has the largest area with land with high agricultural sensitivity as a result of soil with Moderate-High land capability and the active cultivation of fields within the last five years for the establishment of pasture. The remaining areas of this site has low sensitivity, mainly because of the shallower soil profiles as well as the absence of land cultivation activities the last six years.

The eastern corner of the Ilikwa site, the north-eastern corner of the Damlaagte site and the north-western corner of the Scafell site, have high sensitivity as a result of the soil suitability for crop production and the recent (within the last six years) cultivation of land for the

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establishment of pasture. The rest of project sites have low and medium sensitivity. All four substations as well as the largest part of the powerline corridor, fall on land with low sensitivity.

While it was found that certain areas have lower agricultural sensitivity than indicated by the Environmental Screening Tool, a full Agricultural Agro-Ecosystem Assessment will be conducted for each of the development sites and grid connection as part of the Environmental Impact Assessment (EIA) phase of the Environmental Authorisation application process. The Agricultural Agro-Ecosystem Assessment will meet all requirements as stipulated by the GN320 regulations for renewable energy projects.

Kind regards,

Mariné Pienaar

SACNASP Registration Number: 400274/10

Appendix 2: Landscape/Visual Site Sensitivity Specialist Correspondence

SLR Consulting (Cape Town office)
5th Floor, Letterstedt House, Newlands on Main
Cor Main and Campground Roads
Newlands
Cape Town, 7700

27 May 2021

Attention: Nicholas Arnott
Email: narnott@slrconsulting.com

RE: VISUAL IMPACT ASSESSMENT: MAINSTREAM SCAFELL SOLAR PV CLUSTER, ORANGE FREE STATE - *SENSITIVITY VERIFICATION*

The Mainstream Scafell Solar PV cluster comprises four separate, yet connected projects located near Parys, Free State immediately south of the Vaal River. These developments are:

- Scafell (150MW)
- Vlakfontein (150MW)
- Llikwa (75MW) and
- Damlaagte (150MW).

The Screening Report for environmental authorization as required by the 2014 EIA regulations predicted a Medium to Very High Landscape (solar) Theme Sensitivity rating across all four sites. Refer to Appendix A. The reason is that the development sites are located across an east-west orientated ridgeline and down the slope emanating from this ridge, suggesting that the solar arrays and associated infrastructure would potentially be highly visible from surrounding areas.

Mr Young conducted a site visit on 19 December 2020 and subsequently completed an initial baseline investigation, written up in the Visual Impact Scoping Report[1].

The site visit and baseline findings confirm the initial sensitivity ratings to potentially be 'medium' to 'very high. The Report (GYLA 2021: xiv-xv) sensitivity ratings are and concluded that,

> The study areas scenic quality has been rated moderate to high within the context of the sub-region, and sensitive viewing areas and landscape types identified and mapped indicating potential sensitivity to the project. …

[1] Graham Young Landscape Architect. (2021). Visual Impact Scoping Report, Mainstream Scafell Cluster PV Solar Park. Unpublished Report, Pretoria. 19 February 2021

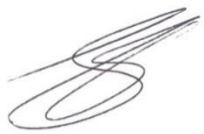
The visual impact of the Project will cause changes in the landscape that are noticeable to viewers experiencing the study area from the N1, Boundary Road, local roads to the north, west, and south of the site, and homesteads also in this general area. Visual impacts that would potentially result from Project activities are likely to be adverse, long-term, and will most likely cause loss of landscape and visual resources. The visual impact on properties along the Vaal River is anticipated to be moderate to low, primarily because the properties are orientation to the river and the screening effect of large trees growing on the adjacent embankments.

The significance of these impacts is investigated further and rated in the assessment phase using computer modelling techniques that establish visibility (viewshed analyses) and visual intrusion (simulations). [In addition] the following issues [must also] be addressed:

- Establish public concern for the Project, specifically as it concerns visual issues (through SLR and the public engagement programme).
- Establish specific management measures (mitigation) to reduce the impact of the project where appropriate.

The results of the Sensitivity Mapping, the site visit, and subsequent Scoping Report confirm that a full visual impact assessment (i.e. not a compliance statement) is required and will be prepared as part of the EIA phase for the project.

Regards

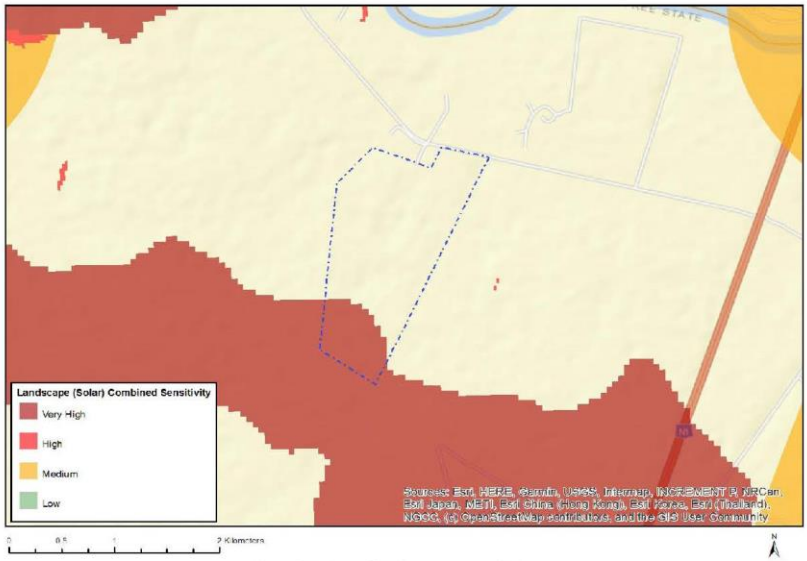


Graham A Young PrLArch FILASA
BL (Toronto) ML (Pretoria)

APPENDIX A: LANDSCAPE THEM SENSITIVITY

DAMLAAGTE

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

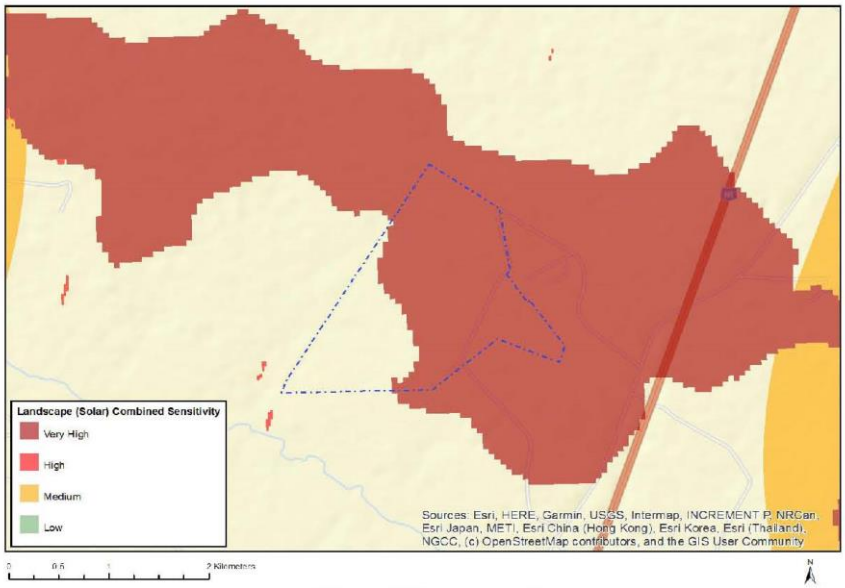
Sensitivity	Feature(s)
Very High	Mountain tops and high ridges

Disclaimer applies
06/05/2021

GRAHAM A YOUNG **LANDSCAPE ARCHITECT**
Graham Young PrLArch FILASA Registration No. 87001
grahamyounglandarch@gmail.com PO Box 331, Groenkloof 0027 +27 (0) 82 462 1491

LLIKWA

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Mountain tops and high ridges

GRAHAM A YOUNG **LANDSCAPE ARCHITECT**
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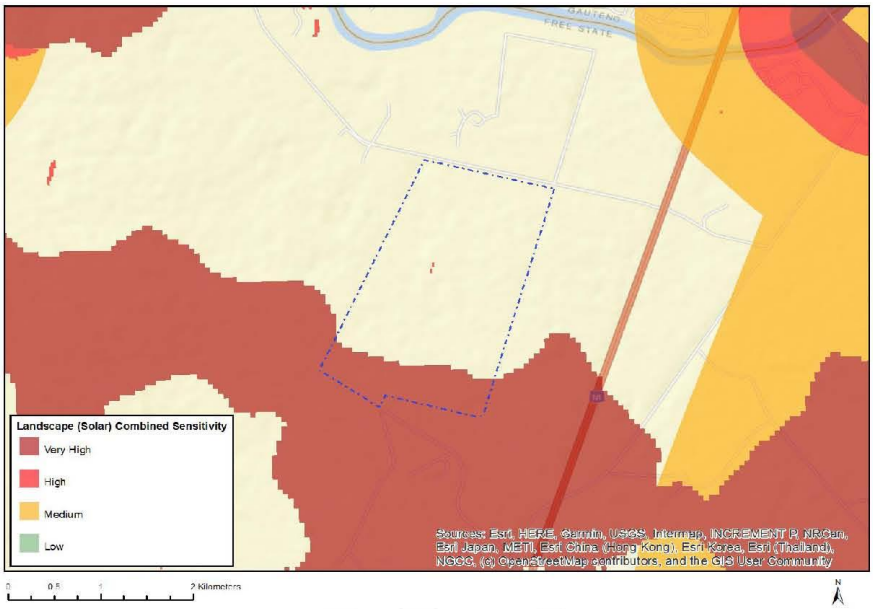
grahamyounglandarch@gmail.com PO Box 331, Groenkloof 0027 +27 (0) 82 462 1491

SCAFELL

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Slope between 1:4 and 1:10
Very High	Mountain tops and high ridges

GRAHAM A YOUNG **LANDSCAPE ARCHITECT**
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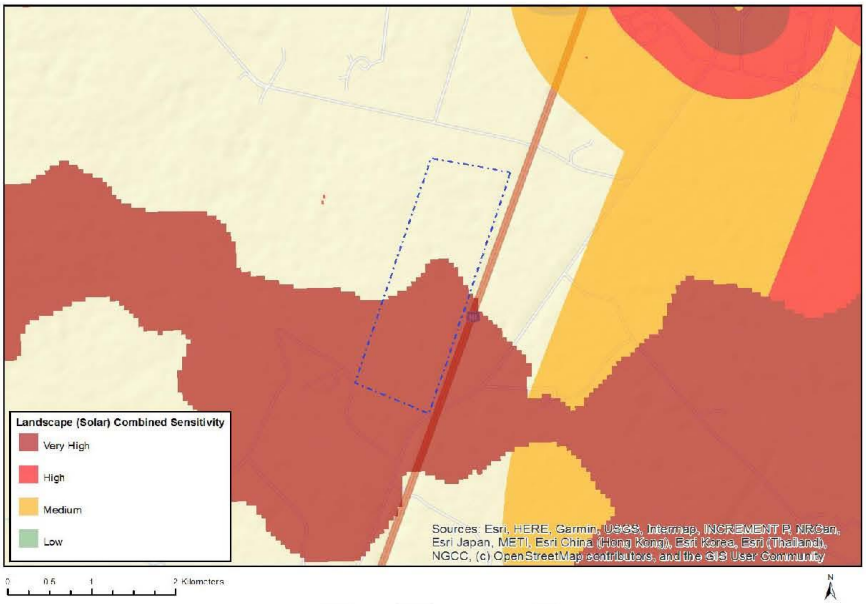
VLAKFONTEIN

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Mountain tops and high ridges

GRAHAM A YOUNG **LANDSCAPE ARCHITECT**
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Appendix 3: Archaeological and Cultural Heritage And Palaeontology Site Sensitivity Specialist Correspondence

Jaco van der Walt BA (Pret) BA (Hons) (Archaeology) [Wits], MA (Archaeology [Wits]

Cell: 082-373-8491.
E-mail: jaco.heritage@gmail.com.
Website: www.heritageconsultants.co.za

Reg no. 2007/224785/23
VAT no. 4660218696

Private Bag X1049
Suite 34
Modimolle
0510

1 June 2021

Attention: Nicholas Arnott

Reference: Heritage Sensitivity Verification – Scafell Cluster Projects.

SLR Consulting (South Africa) (Pty) Ltd ('SLR') has been appointed by Mainstream to undertake the required Environmental Authorisation (EA) application process in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated under the National Environmental Management Act, 1998 (No. 107 of 1998; NEMA), for the proposed Scafell Cluster Projects. SLR prepared a Screening Tool Report for each of the proposed solar PV Facilities (and associated grid connection infrastructure). According to the Screening Tool Reports, the following sensitivities were identified for the "Archaeological and Cultural Heritage" and "Palaeontology"themes for each site:

PROJECT	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY**	**PALAEONTOLOGY THEME SENSITIVITY**
Daamlaagte Solar PV Facility	Low	Very High
Vlakfontein Solar PV Facility	Medium	Very High
Ilikwa Solar PV Facility	High	Very High
Scafell Solar PV Facility	High	Very High

HCAC was appointed to conduct a Heritage Baseline assessment for the Scafell Suite PV Facilities to determine the presence of cultural heritage sites that could potentially be impacted on by the proposed development. The onsite field investigation was undertaken from 25 to 29 January 2021 and key findings of the assessment is outlined below:

- The proposed Damlaagte and Vlakfontein PV has no red flags,
- In the Scafell PV study area heritage constraints area limited to a cemetery and an ephemeral historical stone walled site;
- Historical structures, numerous stone walled sites and a cemetery were identified in the Illikwa PV study area that will require mitigation if impacted on;
- Based on the SAHRA paleontological map the area is of low to moderate to very high paleontological sensitivity.

Jaco van der Walt **BA (Pret) BA (Hons) (Archaeology) [Wits], MA (Archaeology [Wits]**

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E-mail: jaco.heritage@gmail.com.
Website: www.heritageconsultants.co.za

Reg no. 2007/224785/23
VAT no. 4660218696

Private Bag X1049
Suite 34
Modimolle
0510

Based on the findings of the site investigation, the relevant sensitivities for each of the PV sites are as follows:

- Damlaagte and Vlakfontein PV is of low heritage sensitivity;
- Illikwa and Scafell are of Medium to High sensitivity;

In light of the sensitivities associated with the proposed PV facilities and to comply with the requirements of the National Heritage Resources Act of 1999 (NHRA) and the SAHRA requirements, a full heritage impact assessment that includes a paleontological study should be undertaken as part of the EIA phase of the project.

Kindly contact me for more information.

Jaco van der Walt

HCAC

……

Appendix 4: Aquatic Biodiversity Site Sensitivity Specialist Correspondence

Scientific Aquatic Services

Applying science to the real world

29 Arterial Road West, Oriel, Bedfordview, 2007
Tel 011 616 7893
Fax 086 724 3132
www.sasenvironmental.co.za
admin@sasenvgroup.co.za

Name: Stephen van Staden
Date: Monday, 31 May 2021
Ref: SAS 220184

SLR Consulting (Africa) (Pty) Ltd

Building D, Monte Circle (Suite1)
178 Montecasino Boulevard
Fourways
Johannesburg,
2191

Attention: Mr. Reuben Maroga

FRESHWATER ECOSYSTEM VERIFICATION STATEMENT CONSIDERING THE PROPOSED SOLAR PHOTOVOLTAIC (PV) FACILITIES AS PART OF THE SCAFFEL SOLAR CLUSTER DEVELOPMENT NEAR SASOLBURG, FREE STATE.

1. INTRODUCTION AND BACKGROUND SETTING

Scientific Aquatic Services (SAS) was appointed by SLR Consulting (Africa) (Pty) Ltd to consider the freshwater ecosystems and, if appropriate, prepare a freshwater ecosystem impact and compliance statement as part of the Environmental Authorisation (EA) process for the proposed four solar photovoltaic (PV) facilities, which include the Damlaagte, Scaffel, Vlakfontein and Ilikwa solar PV facilities, collectively referred to the 'Scaffel Cluster development' throughout the compliance statement. The proposed Scaffel Cluster development also include infrastructure (substations and powerline corridors). The subject property will hereafter be referred to as the "study area" (indicated in Appendix A, Figure A1 and A2). A 500 m "zone of investigation" around the footprint of the study area, (in accordance with General Notice 509 of 2016 (as it relates to the National Water Act (Act No. 36 of 1998)), will be referred to as the "investigation area". (Appendix A, Figures A1 and A2).

SAS was required to report on aspects of the freshwater ecosystem biodiversity and provide input into any development constraints or Enviro-Legal and/or water use authorisation constraints this may have for the proposed Scaffel Cluster development within the study area in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the National Water Act, 1998 (Act No. 36 of 1998). SAS was required to, if necessary, assess the risk that the proposed Scaffel Cluster development poses to the freshwater ecosystem biodiversity within the receiving environment.

Part of the SAS Environmental Group of Companies

2. OUTCOMES OF THE APPLICATION OF THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA) SCREENING TOOL.

As part of the process of initiating the EA process, SLR Consulting (Africa) (Pty) Ltd applied the DEA screening tool to the study area. According to the guidelines, an applicant intending to undertake an activity on a site identified as being of "very high sensitivity" for an aquatic biodiversity theme must submit an Aquatic Biodiversity Impact Assessment or if the area is identified as being of "low sensitivity" then an Aquatic Biodiversity Compliance Statement must be complied and submitted to the competent authority. The national web based environmental screening tool was results for each development area is summarised below:

- Damlaagte Site – Low aquatic/freshwater biodiversity sensitivity.
- Scaffel Site – Low aquatic/freshwater biodiversity sensitivity;
- Vlakfontein – Mostly low sensitivity, with a very high aquatic sensitivity area along the south-eastern portion of the study area;
- Ilikwa Site – Low aquatic/freshwater biodiversity sensitivity; and

3. OUTCOMES OF THE FIELD ASSESSMENT.

A field assessment was conducted in January 2021 to identify and verify presence of freshwater ecosystem identified as part of the desktop assessment. During the assessment, within the Damlaagte solar PV facility, no freshwater ecosystems were identified, confirming the outcome of the DEA screening tool.

Within the Scaffel solar PV facility, a single unchannelled valley bottom (UCVB 1) wetland was identified traversing the central portion of the area and due to this, the Scaffel site is considered sensitive, contrary to the screening tool output (Low Sensitivity). At the Vlakfontein solar PV facility, a single depression wetland was identified along the south-eastern boundary immediately adjacent to the N1 highway. Although the screening tool for this site was very high, considering that the depression wetland occupies a small footprint of the study area and can be potentially avoided for any proposed activities, the sensitivity of the area is considered medium. Lastly, within the Ilikwa solar PV facility, an unchannelled valley bottom (UCVB 2) was also identified and this forms part of a larger channelled valley bottom wetland system located within the investigation area and due to this, the study area is considered of medium sensitivity. Overall, based on the field assessment, actual sensitivities of the four study areas can be summarised as follows:

Table 1: Classification of study area sensitivities from DEA Screening tool and specialist opinion based on field work assessment undertaken (January 2021).

Study Sites	AQUATIC/FRESHWATER BIODIVERSITY SENSITIVITY	
	Screening tool output	Specialist Opinion
Ilikwa Solar PV Facility	Low	Medium
Vlakfontein Solar PV Facility	Very High	Medium
Scafell Solar PV Facility	Low	Very High
Damlaagte PV Solar Facility	Low	Low

Based on the findings of the assessment, a full assessment is considered necessary for the proposed Scaffel cluster development and this will be prepared as part of the Environmental Impact Assessment

(EIA) phase for the project. We trust that we have interpreted your requirements correctly. Please do not hesitate to contact us if there are any aspects of this memorandum that you would like to discuss.

Yours Faithfully,

Stephen van Staden[1]
SACNASP REG.NO**: 400134/05 (Ecology)**

Declaration of independence and CV included in Appendix B and C respectively

[1] Co-authored by N. Lushozi

APPENDIX A- PROJECT MAPS

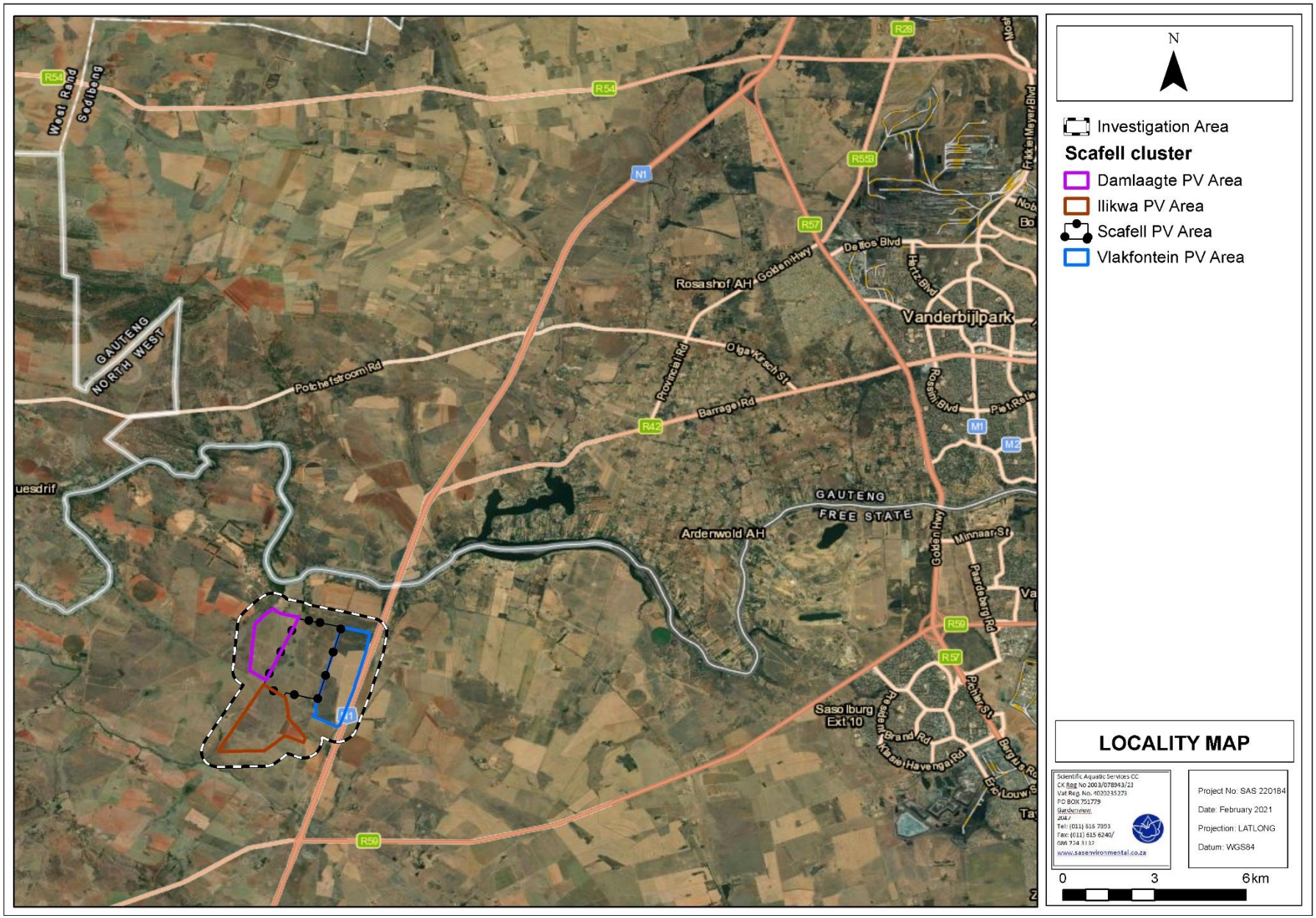


Figure A1: A digital satellite image depicting the location of the study and investigation areas in relation to the surrounding environment.

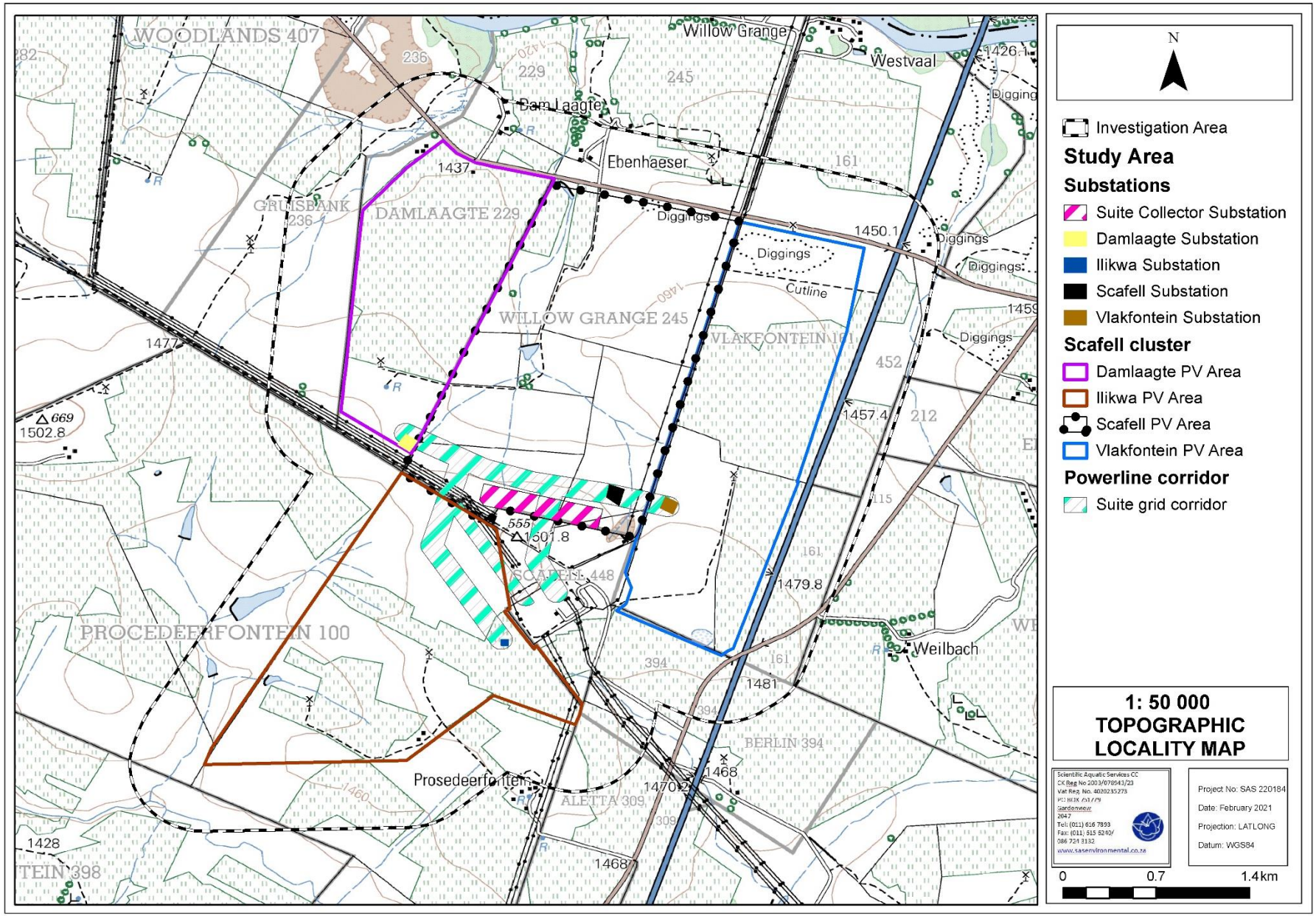


Figure A2: The study and investigation areas depicted on a 1:50 000 topographical map in relation to the surrounding area.

APPENDIX B - DECLARATION OF INDEPENDENCE

DETAILS, EXPERTISE AND CURRICULUM VITAE OF SPECIALISTS

1. (a) (i) Details of the specialist who prepared the report

Stephen van Staden MSc (Environmental Management) (University of Johannesburg)

Nqobile Lushozi MSc (Geoinformatics) (Stellenbosch University)

1. (a). (ii) The expertise of that specialist to compile a specialist report including a curriculum vitae

Company of Specialist:	Scientific Aquatic Services		
Name / Contact person:	Stephen van Staden		
Postal address:	29 Arterial Road West, Oriel, Bedfordview		
Postal code:	1401	Cell:	083 415 2356
Telephone:	011 616 7893	Fax:	011 615 6240/ 086 724 3132
E-mail:	stephen@sasenvgroup.co.za		
Qualifications	MSc (Environmental Management) (University of Johannesburg) BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg) BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)		
Registration / Associations	Registered Professional Natural Scientist at South African Council for Natural Scientific Professions (SACNASP) Accredited River Health Practitioner by the South African River Health Program (RHP) Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum		

1. (b) a declaration that the specialist is independent in a form as may be specified by the competent authority.

I, Stephen van Staden, declare that -

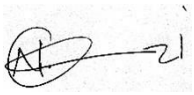
- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct

---

Signature of the Specialist

I, Nqobile Lushozi, declare that -

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct



Signature of the Specialist

APPENDIX C- CV OF SPECIALISTS

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF STEPHEN VAN STADEN

PERSONAL DETAILS

Position in Company	Group CEO, Water Resource Discipline Lead, Managing Member, Ecologist, Aquatic Ecologist
Joined SAS Environmental Group of Companies	2003 (year of establishment)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Registered Professional Scientist at South African Council for Natural Scientific Professions (SACNASP)
Accredited River Health Practitioner by the South African River Health Program (RHP)
Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum
Member of the Gauteng Wetland Forum
Member of International Association of Impact Assessors (IAIA) South Africa;
Member of the Land Rehabilitation Society of South Africa (LaRSSA)

EDUCATION

Qualifications

MSc Environmental Management (University of Johannesburg)	2003
BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg)	2001
BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)	2000

Short Courses

Integrated Water Resource Management, the National Water Act, and Water Use Authorisations, focusing on WULAs and IWWMPs	2017
Tools for Wetland Assessment (Rhodes University)	2017
Legal liability training course (Legricon Pty Ltd)	2018
Hazard identification and risk assessment training course (Legricon Pty Ltd)	2018
Wetland Management: Introduction and Delineation (WLID1502S) (University of the Free State)	2018
Hydropedology and Wetland Functioning (TerraSoil Science and Water Business Academy)	2018

AREAS OF WORK EXPERIENCE

South Africa – All Provinces
Southern Africa – Lesotho, Botswana, Mozambique, Zimbabwe Zambia
Eastern Africa – Tanzania Mauritius
West Africa – Ghana, Liberia, Angola, Guinea Bissau, Nigeria, Sierra Leona
Central Africa – Democratic Republic of the Congo

DEVELOPMENT SECTORS OF EXPERIENCE

1. Mining: Coal, chrome, Platinum Group Metals (PGMs), mineral sands, gold, phosphate, river sand, clay, fluorspar
2. Linear developments (energy transmission, telecommunication, pipelines, roads)
3. Minerals beneficiation
4. Renewable energy (Hydro, wind and solar)
5. Commercial development
6. Residential development
7. Agriculture
8. Industrial/chemical

KEY SPECIALIST DISCIPLINES

Legislative Requirements, Processes and Assessments

- Water Use Applications (Water Use Licence Applications / General Authorisations)
- Environmental and Water Use Audits
- Freshwater Resource Management and Monitoring as part of EMPR and WUL conditions

Freshwater Assessments

- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning
- Maintenance and Management Plans
- Plant Species and Landscape Plans
- Freshwater Offset Plans
- Hydropedological Assessment
- Pit Closure Analysis

Aquatic Ecological Assessment and Water Quality Studies

- Habitat Assessment Indices (IHAS, HRC, IHIA & RHAM)
- Aquatic Macro-Invertebrates (SASS5 & MIRAI)
- Fish Assemblage Integrity Index (FRAI)
- Fish Health Assessments
- Riparian Vegetation Integrity (VEGRAI)
- Toxicological Analysis
- Water quality Monitoring
- Screening Test
- Riverine Rehabilitation Plans

Biodiversity Assessments

- Floral Assessments
- Biodiversity Actions Plan (BAP)
- Biodiversity Management Plan (BMP)
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Terrestrial Monitoring
- Biodiversity Offset Plan

Soil and Land Capability Assessment

- Soil and Land Capability Assessment
- Hydropedological Assessment

Visual Impact Assessment

- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF NQOBILE LUSHOZI

PERSONAL DETAILS

Position in Company	Junior Ecologist
Joined SAS Environmental Group of Companies	2019

MEMBERSHIP IN PROFESSIONAL SOCIETIES

South African Wetland Society (SAWS)
International Associated for Impact Assessment South Africa (IAIAsa)

EDUCATION

Qualifications

MSc (Geoinformatics) (Stellenbosch University)	2019
BSc (Hons) (Environmental Sciences) (University of KwaZulu-Natal)	2016
BSc (Environmental Sciences) (University of KwaZulu-Natal)	2014

SHORT COURSES

Additional Training

Advanced Grass Identification Course	(2021)
Tools for Wetland Assessments	(2020)
Wetland Back-2Basics Course	(2019)

AREAS OF WORK EXPERIENCE

South Africa – KwaZulu-Natal, Gauteng, Mpumalanga, Free-State, Limpopo

KEY SPECIALIST DISCIPLINES

Freshwater Assessments

- Desktop Freshwater Delineation
- Freshwater Verification Assessment
- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning

Aquatic Ecological Assessment and Water Quality Studies

- Habitat Assessment Indices (IHAS, IHIA)
- Toxicological Analysis
- Water quality Monitoring
- Mass and Salt Balance Determination Studies

Appendix 5: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Specialist Correspondence

Scientific Terrestrial Services

Applying science to the real world

29 Arterial Road West, Oriel, Bedfordview, 2007
Tel 011 616 7893
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admin@sasenvgroup.co.za
www.sasenvironmental.co.za

Name: Stephan van Staden
Christopher Hooton
Date: Monday, 31 May 2021
Ref: STS 200077

SLR Environmental Consulting (Pty) Ltd
Tel: 011 467 0945
E-mail: rmaroga@slrconsulting.com

Attention: Mr Reuben Maroga

RE: BIODIVERSITY VERIFICATION STATEMENT CONSIDERING THE PROPOSED SOLAR PHOTOVOLTAIC (PV) FACILITIES AS PART OF THE SCAFFEL CLUSTER DEVELOPMENT NEAR SASOLBURG, FREE STATE.

.

1. INTRODUCTION AND BACKGROUND SETTING

Scientific Terrestrial Services CC (STS) was appointed by SLR Environmental Consulting to conduct and prepare a Biodiversity Assessment as part of the Environmental Impact Assessment (EIA) and Environmental Authorisation (EA) process for the proposed development of the Scafell Cluster, which consists of four solar photovoltaic (PV) facilities, namely Damlaagte Solar PV Facility, Scafell Solar PV Facility, Vlakfontein Solar PV Facility, and Ilikwa Solar PV Facility. The development of the Scafell Cluster also included the development of associated infrastructure (substations and powerline corridors). The Scafell Cluster and associated infrastructure are located approximately 19 km west of the town of Sasolburg, Free State Province, henceforth referred to as the "study area".

An on-site visual investigation of the study area was conducted between the 5th and 8th of January 2021 to confirm the assumptions made during the consultation of the background maps and to determine whether the sensitivity of the terrestrial and floral biodiversity associated with the study area confirms the results of the online National Web-based Environmental Screening Tool and thus confirms the necessity for full EIA protocol to be undertaken.

During the field assessment, three broad habitat units, with associated subunits, were identified. The units within the study area are listed in the table below and a summary of the ground-truthed sensitivity identified on site is provide below:

Table 1: Identified habitat units within the study area and their associated ground-truthed sensitivity.

Habitat Units	Floral Sensitivity	Fauna Sensitivity
Transformed Habitat	Low Sensitivity	Low Sensitivity
Grassland Habitat:		
• Degraded Grassland	Moderately low Sensitivity	Moderately low Sensitivity
• *Seriphium*-dominated Grassland	Intermediate Sensitivity	Intermediate Sensitivity
• *Themeda*-rich Grassland	Moderately high Sensitivity	Intermediate Sensitivity
Freshwater Habitat	Moderately high Sensitivity	Moderately high Sensitivity

Vlakfontein PV Facility: four habitat units/subunits, including the Transformed Habitat (low sensitivity), *Seriphium*-dominated Grassland Subunit (intermediate Sensitivity), *Themeda*-rich Grassland Subunit (moderately high sensitivity) and a small area of Freshwater Habitat (moderately high sensitivity) were located within this PV Facility. Development within this PV Facility will result in the potential loss of suitable habitat for several SCC that are associated with the habitat units/subunits within the PV Facility, including *Crinum bulbispermum, Helichrysum chionosphaerum*, *Helichrysum acutatum* and *Boophone disticha.* The small extent of *Seriphium*-dominated Grassland Subunit and *Themeda*-rich Grassland Subunit and the remaining transformed habitat adjacent to a National highway reduces the farm portion's faunal sensitivity. Faunal SCC may utilise this farm portion temporarily for foraging but it unlikely that breeding will occur here. According to the Free State Biodiversity Plan, the Vlakfontein PV Facility is associated with areas classified as CBA2, ESA1, ESA2 and “Degraded Areas”. This farm portion preserved the least species rich faunal assemblage. The largely transformed nature of the habitat, as a result of crop/feed production and domestic animal grazing, and the adjacent National Highway (N1) and unnamed roads are major factors impacting on the existing faunal assemblage on the farm portion. The resulting reduced connectivity, absence of niche habitat and the homogenous nature of the Seriphium dominated grassland limit the conservation potential of the farm portion for fauna. The portions proximity to the N1 highway, the absence of movement corridors for fauna, the reduced habitat and forage availability and the resulting species poor faunal assemblage with an absence of SCC habitat make it suitable for future PV development.

Scafell PV Facility: three habitat units/subunits were located within this PV Facility: The *Seriphium*-dominated Grassland Subunit (intermediate Sensitivity), *Themeda*-rich Grassland Subunit (moderately high sensitivity) and a large area of Freshwater Habitat (moderately high sensitivity. Development within this PV Facility will result in the greatest loss to both the *Themeda*-rich Grassland Subunit and the Freshwater Habitat Units well as the potential loss of suitable habitat for several SCC that are associated with the habitat unit /subunits, including *Aloe davyana, Crinum bulbispermum, Helichrysum chionosphaerum*, *Helichrysum acutatum* and *Boophone disticha.* According to the Free State Biodiversity Plan, the Scafell PV Facility is associated with areas classified as CBA2, ESA1, and ESA2. From a faunal perspective, this PV Facility comprised of the greatest diversity of fauna and preserved the most valuable habitat for SCC (both breeding and feeding). Maintaining movement corridors for fauna between portions of the *Seriphium*-dominated Grassland Subunit and the *Themeda*-rich Grassland Subunit are important to maintaining ecological processes and services. This farm portions is the most structurally diverse and floristically rich and thus offers the highest habitat variability and availability for fauna. A relatively large wetland system meanders diagonally through the farm portion, not only providing freshwater and wetland habitat, but also an important movement corridor and habitat for the existing faunal assemblage and particularly avifaunal SCC. This also maintains important hydrological functions through water channelling and moisture rich niche habitat. It is important that a corridor for the movement of larger and smaller mammal fauna be maintained throughout this freshwater system and portions adjacent to it to maintain ecological processes and functions. Southern portions of this farm are currently partially protected under existing High Voltage Powerlines under which a suitable movement corridor with high floristic richness, faunal forage and habitat availability persists. Limited opportunities for large contiguous PV arrays are presented within this property due to the more sensitive nature of the wetland and adjacent habitat which traverses the farm portion diagonally.

Damlaagte PV Facility: three habitat units/subunits were located within this PV Facility: The Transformed Habitat Unit (low sensitivity), Degraded Grassland Subunit (moderately low sensitivity), and large areas of the *Seriphium*-dominated Grassland Subunit (intermediate Sensitivity). Development

within this Area will result in the greatest loss to the *Seriphium*-dominated Grassland Subunit. A large section of this PV Facility comprises the Degraded Grassland Subunit in which AIP species are prolific. AIP management and control during and post-construction of any development within this area is of particular importance. Although no SCC were recorded within this PV Facility, suitable habitat for several SCC species is present, particularly within the *Seriphium*-dominated Grassland habitat. According to the Free State Biodiversity Plan, this PV Facility is associated with areas classified as ESA1, ESA2, and "Degraded Areas". The homogenous nature of the landscape and the reduced areas of sensitive faunal habitat with limited movement corridors, competition from domestic grazers and limited shelter do not lend themselves to maintaining high faunal diversity. Thus, impacts on fauna within this portion will be lower in their impact rating as compared to Scaffel and Ilikwa. This geomorphically flat farm portion comprises of grassland in various stages of recovery from historic cultivation. Currently grazed by domestic cattle at high densities lowered grassland floristic richness, faunal forage and specialist opportunities (obligatory relationships or niche habitat) have resulted from these activities. The absence of wooded areas or locations like valleys or hills where larger game can shelter reducing the probability of sustained habitation by larger mammal fauna. Furthermore, fencing, both electrified and conventional cattle fencing, reduces the probability that most larger fauna will utilize this farm portion as a corridor for movement. The variable grazing pressure from livestock and the altered response from the vegetation does open up habitat for many avifauna, however, these are mostly common species as the more sensitive assemblages prefer the wetland habitat within the broader landscape. Reduced niche habitat (rocky, wooded or wet response) and a sub-climax floristic composition decreases the habitat suitability for the remaining faunal classes.

Ilikwa PV Facility: five habitat units/subunits were located within this PV Facility: The Degraded Grassland Subunit (moderately low sensitivity), *Seriphium*-dominated Grassland Subunit (intermediate Sensitivity), *Themeda*-rich Grassland Subunit (moderately high sensitivity) and a small area of Freshwater Habitat (moderately high sensitivity. The Damlaagte PV Facility comprises sections of both the Degraded Grassland Subunit and the Transformed Habitat Unit in which AIP species are prolific. AIP management and control during and post-construction of any development within this area is of particular importance. Development within this PV Facility will result in the potential loss of suitable habitat for several SCC that are associated with the habitat units/subunits associated with the PV Facility (particularly the *Seriphium*-dominated and the *Themeda*-rich Grassland subunits), including *Aloe davyana, Crinum bulbispermum, Helichrysum chionosphaerum*, *Helichrysum acutatum* and *Boophone disticha.* Faunal diversity within the *Seriphium*-dominated Grassland Subunit and *Themeda*-rich Grassland Subunit within the northern portion of the study area maintain important processes and functions. Impacts on these areas should be limited to the higher sensitivity areas and the movement of fauna should be maintained to preserve the integrity of these subunits. According to the Free State Biodiversity Plan, the Ilikwa PV Facility is associated with areas classified as ESA1, ESA2 and "Other Areas". This farm portion has experienced current and historic agriculture and grazing by domestic animals. Agricultural activities mostly occurred in the southern and eastern sections of the farm portion and these areas were noted to harbour the least sensitive faunal assemblage as a result of the homogenous vegetation physiognomy and reduced species richness. Correspondingly the northern section of the farm where existing High Voltage Powerlines traverse has maintained moderate floral assemblages which not only provide increased forage opportunities for most fauna but also allow a corridor for movement and increased habitat suitability. Historic disturbances have occurred within the southern and eastern sections of the farm where it appears kraals and homesteads existed, the resulting debris and disturbances have provided areas of altered habitat (Rocky areas and tree/bush clumps) which provide areas of altered structure and shelter for species. These areas however do not represent the reference vegetation type.

2. SCREENING TOOL OUTPUT AND FIELD ASSESSMENT RESULTS

The online National Web-based Environmental Screening Tool identified the following sensitivities for the study area:

- Plant Species Theme: For the Plant Species theme, the entire study area is within an area that has a **medium sensitivity**. Sensitive species identified by the Screening tool include: Sensitive species 691 (VU)[i] and Sensitive species 1252 (VU);
- Animal Species Theme: For the Animal Species theme, a **medium sensitivity** was reported for the study area. Sensitive species identified by the Screening tool include: *Lepidochrysops procera* (Potchefstroom Blue); and
- Terrestrial Species Theme: The Terrestrial Sensitivity for the study area has a **very high sensitivity**. Triggered features include: Critical Biodiversity Area 2, Ecological Support Area 1, Ecological Support Area 2, and a vulnerable ecosystem.

The table below summaries the online screening tool report's outputs and specialist opinion with regard to each of the PV facilities located within the study area.

Table 2: Table summarising Online Web-based Screening Tool report's outputs and specialist opinion of the sensitivity of the subject property due to habitat observed.

	PLANTS		ANIMAL		Terrestrial	
Study Sites	**Screening tool output**	**Specialist Opinion**	**Screening tool output**	**Specialist Opinion**	**Screening tool output**	**Specialist Opinion**
Ilikwa Solar PV Facility	Medium	Medium	Medium	Low	Very High	Medium
Vlakfontein Solar PV Facility	Medium	Low	Medium	Low	Very High	Medium
Scafell Solar PV Facility	Medium	Medium	Medium	Medium	Very High	High
Damlaagte PV Solar Facility	Medium	Medium	Medium	Low	Very High	Medium

Based on the findings of the assessment, a full assessment is considered necessary for the proposed Scaffel cluster development and this will be prepared as part of the Environmental Impact Assessment (EIA) phase for the project. We trust that we have interpreted your requirements correctly. Please do not hesitate to contact us if there are any aspects of this memorandum that you would like to discuss.

Yours Faithfully,

Stephen van Staden
SACNASP REG.NO**: 400134/05 (Ecology)**

Declaration of independence and CV included in Appendix B and C respectively

Declaration of Independence

DETAILS, EXPERTISE AND CURRICULUM VITAE OF SPECIALISTS

1. (a) (i) Details of the specialist who prepared the report

Stephen van Staden MSc (Environmental Management) (University of Johannesburg)

1. (a). (ii) The expertise of that specialist to compile a specialist report including a curriculum vitae

Company of Specialist:	Scientific Aquatic Services		
Name / Contact person:	Stephen van Staden		
Postal address:	29 Arterial Road West, Oriel, Bedfordview		
Postal code:	1401	Cell:	083 415 2356
Telephone:	011 616 7893	Fax:	011 615 6240/ 086 724 3132
E-mail:	stephen@sasenvgroup.co.za		
Qualifications	MSc (Environmental Management) (University of Johannesburg) BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg) BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)		
Registration / Associations	Registered Professional Natural Scientist at South African Council for Natural Scientific Professions (SACNASP) Accredited River Health Practitioner by the South African River Health Program (RHP) Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum		

1. (b) a declaration that the specialist is independent in a form as may be specified by the competent authority

I, Stephen van Staden, declare that -

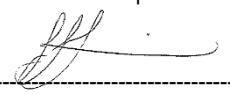
- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct

---

Signature of the Specialist

I, Samantha-Leigh Daniels, declare that -

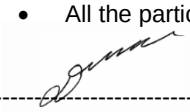
- I act as the **independent specialist** in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct



Signature of the Specialist

I, Daryl van der Merwe, declare that -

- I act as the **independent specialist** in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct



Signature of the Specialist

CV of specialist

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION CURRICULUM VITAE OF STEPHAN VAN STADEN

PERSONAL DETAILS

Position in Company	Group CEO, Water Resource discipline lead, Managing member, Ecologist, Aquatic Ecologist
Joined SAS Environmental Group of Companies	2003 (year of establishment)

EDUCATION

Qualifications

MSc Environmental Management (University of Johannesburg)	2003
BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg)	2001
BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)	2000
Tools for wetland assessment short course Rhodes University	2016
Legal liability training course (Legricon Pty Ltd)	2018
Hazard identification and risk assessment training course (Legricon Pty Ltd)	2013

Short Courses

Certificate – Department of Environmental Science in Legal context of Environmental Management, Compliance and Enforcement (UNISA)	2009

AREAS OF WORK EXPERIENCE

South Africa – All Provinces
Southern Africa – Lesotho, Botswana, Mozambique, Zimbabwe Zambia
Eastern Africa – Tanzania Mauritius
West Africa – Ghana, Liberia, Angola, Guinea Bissau, Nigeria, Sierra Leona
Central Africa – Democratic Republic of the Congo

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Floral Assessments
- Biodiversity Actions Plan (BAP)
- Biodiversity Management Plan (BMP)
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Terrestrial Monitoring
- Protected Tree and Floral Marking and Reporting
- Biodiversity Offset Plan

Freshwater Assessments

- Desktop Freshwater Delineation
- Freshwater Verification Assessment
- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning
- Maintenance and Management Plans
- Plant species and Landscape Plan
- Freshwater Offset Plan
- Hydropedological Assessment
- Pit Closure Analysis

Aquatic Ecological Assessment and Water Quality Studies

- Habitat Assessment Indices (IHAS, HRC, IHIA & RHAM)
- Aquatic Macro-Invertebrates (SASS5 & MIRAI)
- Fish Assemblage Integrity Index (FRAI)
- Fish Health Assessments
- Riparian Vegetation Integrity (VEGRAI)
- Toxicological Analysis
- Water quality Monitoring
- Screening Test
- Riverine Rehabilitation Plans

Soil and Land Capability Assessment

- Soil and Land Capability Assessment
- Soil Monitoring
- Soil Mapping

Visual Impact Assessment

- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments
- View Shed Analyses
- Visual Modelling

Legislative Requirements, Processes and Assessments

- Water Use Applications (Water Use Licence Applications / General Authorisations)
- Environmental and Water Use Audits
- Freshwater Resource Management and Monitoring as part of EMPR and WUL conditions

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF SAMANTHA-LEIGH DANIELS

PERSONAL DETAILS

Position in Company	Junior Floral Ecologist
Joined SAS Environmental Group of Companies	2020

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Member of the South African Association of Botanists (SAAB)
Member of the Botanical Society of South Africa (BotSoc)
Member of the *Association for Tropical Biology and Conservation (ATBC)*

EDUCATION

Qualifications

PhD (Plant Science) (University of Pretoria)	Present
MSc (Plant Science) (University of Pretoria)	2017
BSc (Hons) Zoology & Entomology (University of Pretoria)	2014
BSc Zoology & Entomology (University of Pretoria)	2013

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Free State

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Terrestrial Ecological and Biodiversity Scoping Assessments
- Terrestrial Ecological and Biodiversity Screening Assessments
- Floral Assessments
- Alien and Invasive Control Plan (AICP)
- Terrestrial Monitoring
- Desktop Studies, Mapping and Background Information Research

Training

- Plant species identification
- Herbarium usage and protocols

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF DARYL VAN DER MERWE

PERSONAL DETAILS

Position in Company	Field Biologist, Member Terrestrial Ecology
Joined SAS Environmental Group of Companies	2019

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Member of the South African Environmental Observation Network (SAEON)

EDUCATION

Qualifications

MSc (Conservation Biology) (University of Cape Town)	2019
BSc (Hons) Plant Science (Ecology) (University of Pretoria)	2014
BSc Environmental Science (University of Pretoria)	2013

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, Free State, Western Cape and Northern Cape

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Faunal Assessments
- Invertebrate Assessments
- Invertebrate Monitoring
- Avifaunal Assessments
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Terrestrial Monitoring
- Protected Tree and Floral Marking and Reporting

Legislative Requirements, Processes and Assessments

- Water Use Applications (Water Use Licence Applications / General Authorisations)
- Environmental and Water Use Audits
- Freshwater Resource Management and Monitoring as part of EMPR and WUL conditions

[i] The National Web-based Environmental Screening Tool provides names of sensitive species likely to be present within the study area and its surrounds. Within the screening tool outcome, the names of some species are not provided, and these species are rather assigned a number keeping them unidentifiable (e.g., Sensitive species 1). This procedure is attributed to the vulnerability of the species to threats such as illegal harvesting and overexploitation. According to the best practise guidelines provided by South African National Biodiversity Institute (SANBI), the name of sensitive species **may not appear** in the final EIA report **nor any of the specialist reports** released into the public domain. However, the conservation threat status of the species has been provided.

Appendix 6: Avifaunal Site Sensitivity Specialist Correspondence

Avifaunal Site Sensitivity Verification: Scafell PV Cluster

Prior to commencing with the specialist assessment in accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool).

The details of the site sensitivity verification are noted below:

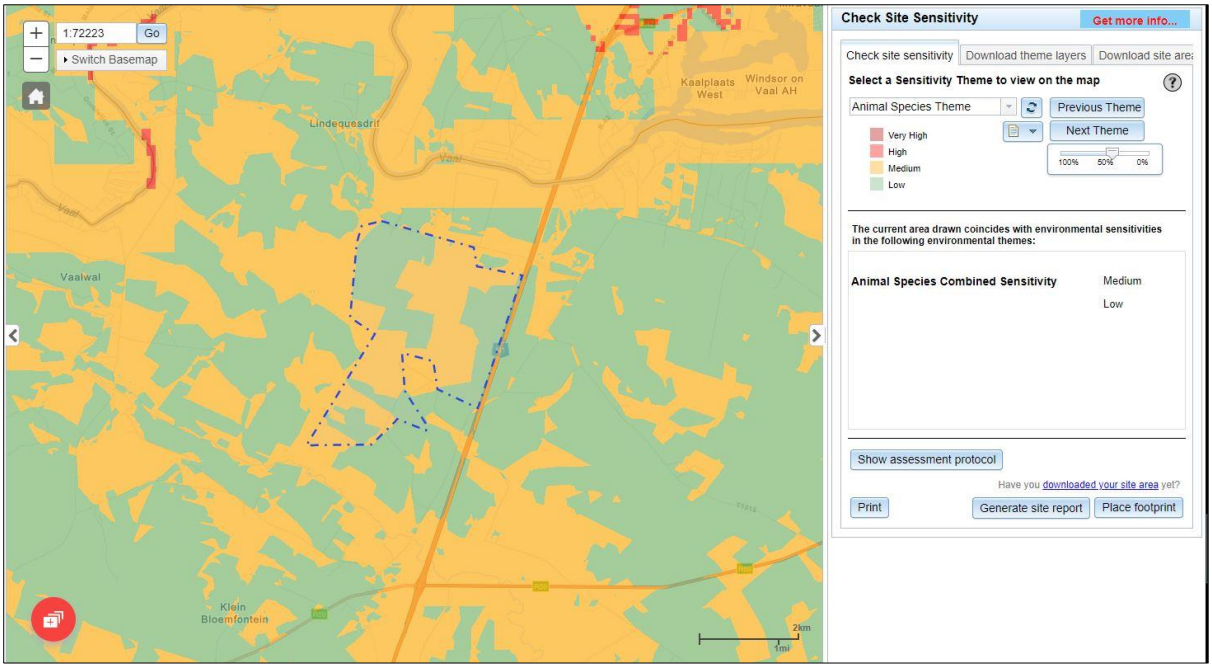
Date of Site Visits	18 January 2021
Specialist Name	Albert Froneman
Professional Registration Number	MSc Conservation Biology (SACNASP Zoological Science Registration number 400177/09
Specialist Affiliation / Company	Chris van Rooyen Consulting

1. Methodology

- Bird distribution data from the Southern African Bird Atlas Project 2 (SABAP 2) was obtained (http://sabap2.adu.org.za/), in order to ascertain which species occur in the pentad where the proposed development area is located. A pentad grid cell covers 5 minutes of latitude by 5 minutes of longitude (5'× 5'). Each pentad is approximately 8 × 7.6 km. The SABAP2 data covers the period 2007 to 2020. The relevant pentad is 2645_2735. A total of 31 SABAP2 full protocol lists had been completed for the pentad where the proposed project is located (i.e. bird listing surveys lasting a minimum of two hours each). In addition, 36 ad hoc protocol lists (i.e. bird listing surveys lasting less than two hours but still giving useful data) were also recorded. The SABAP2 data was therefore regarded as an adequate indicator of the avifauna which could occur at the study area, and it was further supplemented by data collected during the on-site surveys.
- A classification of the vegetation types in the development area was obtained from the Atlas of Southern African Birds 1 (SABAP1) and the National Vegetation Map (2018) accessed via the South African National Biodiversity Institute (SANBI) Biodiversity Geographic Information System (BGIS) map viewer (SANBI 2021).
- The national threatened status of all priority species was determined with the use of the most recent edition of the Red Data Book of Birds of South Africa, Lesotho and Swaziland (Taylor *et al*. 2015).
- The global threatened status of all priority species was determined by consulting the latest (2021.1) International Union for Conservation of Nature (IUCN) Red List of Threatened Species.
- The Important Bird and Biodiversity Areas of South Africa (Marnewick *et al.* 2015) was consulted for information on potentially relevant Important Bird Areas (IBAs).
- The Department of Forestry, Fisheries and Environment (DFFE) National Screening Tool was used to determine the assigned avian sensitivity of the study area.
- Satellite imagery from Google Earth was used to view the broader area on a landscape level and to help identify bird habitat on the ground.
- On-site surveys were conducted on 18 January 2021. The development site was inspected with a 4x4 vehicle and on foot. All birds were recorded. A pair of Zeiss 10 x 32 binoculars were used.
- The focus of the study is primarily on the potential impacts of the proposed solar PV facility on priority species.

- Priority species are defined as follows:
  - South African Red Data species.
  - South African endemics and near-endemics.
  - Raptors
  - Waterbirds

2. DFFE Screening Tool Classification



The development site and immediate environment is classified as low sensitivity for avifauna from a PV perspective.

3. Results of site assessment

3.1 Avifauna

A total of 194 species could potentially occur within the pentad where the project is located. Of these, 62 are classified as priority species. Of the 62 priority species, 31 have a medium to high probability of occurring in the development site. Of the 31 priority species with a medium to high probability of occurrence, 19 were recorded during site surveys. No Red Data species were recorded by SABAP2 in this pentad or during site surveys.

See Appendix 1 for a table indicating the priority species that are likely to occur in the development site.

3.2 Bird habitat

The dominant vegetation type at the development site is Soweto Highveld Grassland (Mucina & Rutherford 2006). However, vegetation structure, rather than the actual plant species, is more significant for bird species distribution and abundance (Harrison *et al.* 1997). The following bird habitats were recorded at the development site:

- Medium to tall grassland (including flooded grassland and wetlands)

- Clumps of woodland (*Vachellia karroo*)
- High voltage lines
- Dams
- Agriculture (cultivated grazing)
- Alien trees

3.1.1 Grassland

The following priority species could potentially use the grassland in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Cloud Cisticola	*Cisticola textrix*	29.03	5.56	H	x
Western Cattle Egret	*Bubulcus ibis*	67.74	13.89	H	x
Black-headed Heron	*Ardea melanocephala*	58.06	8.33	H	x
Black-winged Kite	*Elanus caeruleus*	77.42	22.22	H	x
Pied Starling	*Spreo bicolor*	48.39	0.00	H	
Blacksmith Lapwing	*Vanellus armatus*	93.55	5.56	H	x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Spotted Eagle-owl	*Bubo africanus*	3.23	0.00	M	
Amur Falcon	*Falco amurensis*	6.45	2.78	M	
Lesser Kestrel	*Falco naumanni*	6.45	0.00	M	
Marsh Owl	*Asio capensis*	3.23	2.78	M	
Greater Kestrel	*Falco rupicoloides*	3.23	0.00	M	x

3.1.2 Woodland

The following priority species could potentially use the clumps of woodland in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Fiscal Flycatcher	*Sigelus silens*	83.87	2.78	H	
Black-winged Kite	*Elanus caeruleus*	77.42	22.22	H	x
Pied Starling	*Spreo bicolor*	48.39	0.00	H	
Karoo Thrush	*Turdus smithi*	54.84	2.78	H	
Cape White-eye	*Zosterops virens*	41.94	2.78	H	
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Spotted Eagle-owl	*Bubo africanus*	3.23	0.00	M	
Greater Kestrel	*Falco rupicoloides*	3.23	0.00	M	x

3.1.3 High voltage lines

The following priority species could potentially use the high voltage lines in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Black-headed Heron	*Ardea melanocephala*	58.06	8.33	H	x
Black-winged Kite	*Elanus caeruleus*	77.42	22.22	H	x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Amur Falcon	*Falco amurensis*	6.45	2.78	M	
Lesser Kestrel	*Falco naumanni*	6.45	0.00	M	
Greater Kestrel	*Falco rupicoloides*	3.23	0.00	M	x

3.1.4 Dams

The following priority species could potentially use the dams in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Red-knobbed Coot	*Fulica cristata*	29.03	0.00	H	x
Reed Cormorant	*Phalacrocorax africanus*	58.06	5.56	H	
White-breasted Cormorant	*Phalacrocorax carbo*	32.26	2.78	H	x
Egyptian Goose	*Alopochen aegyptiacus*	83.87	13.89	H	x
Spur-winged Goose	*Plectropterus gambensis*	64.52	11.11	H	x
Blacksmith Lapwing	*Vanellus armatus*	93.55	5.56	H	x
Yellow-billed Duck	*Anas undulata*	61.29	0.00	M	x
African Fish-eagle	*Haliaeetus vocifer*	25.81	0.00	M	x
Glossy Ibis	*Plegadis falcinellus*	22.58	2.78	M	x
Red-billed Teal	*Anas erythrorhyncha*	12.90	0.00	M	x
Fulvous Whistling Duck	*Dendrocygna bicolor*	6.45	0.00	M	x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Little Grebe	*Tachybaptus ruficollis*	16.13	2.78	M	x
African Sacred Ibis	*Threskiornis aethiopicus*	45.16	13.89	M	
Common Moorhen	*Gallinula chloropus*	29.03	0.00	M	x
South African Shelduck	*Tadorna cana*	16.13	0.00	M	

3.1.5 Agriculture

The following priority species could potentially use the agricultural fields in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Western Cattle Egret	*Bubulcus ibis*	67.74	13.89	H	x
Egyptian Goose	*Alopochen aegyptiacus*	83.87	13.89	H	x
Spur-winged Goose	*Plectropterus gambensis*	64.52	11.11	H	x
Black-headed Heron	*Ardea melanocephala*	58.06	8.33	H	x
Black-winged Kite	*Elanus caeruleus*	77.42	22.22	H	x
Blacksmith Lapwing	*Vanellus armatus*	93.55	5.56	H	x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Spotted Eagle-owl	*Bubo africanus*	3.23	0.00	M	
Amur Falcon	*Falco amurensis*	6.45	2.78	M	
African Sacred Ibis	*Threskiornis aethiopicus*	45.16	13.89	M	
Lesser Kestrel	*Falco naumanni*	6.45	0.00	M	

3.1.6 Alien trees

The following priority species could potentially use the alien trees in the development site:

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Possibility of regular occurrence	Recorded during surveys
Common Buzzard	*Buteo vulpinus*	29.03	5.56	H	x
Western Cattle Egret	*Bubulcus ibis*	67.74	13.89	H	x
Black-headed Heron	*Ardea melanocephala*	58.06	8.33	H	x
Black-winged Kite	*Elanus caeruleus*	77.42	22.22	H	x
Greater Kestrel	*Falco rupicoloides*	3.23	0.00	M	x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	M	
Spotted Eagle-owl	*Bubo africanus*	3.23	0.00	M	
Amur Falcon	*Falco amurensis*	6.45	2.78	M	
African Sacred Ibis	*Threskiornis aethiopicus*	45.16	13.89	M	
Lesser Kestrel	*Falco naumanni*	6.45	0.00	M	

4. Conclusions

The DFFE Screening tool classification of **low sensitivity** for the proposed development site is confirmed based on the following:

- There is no suspected occurrence of species of conservation concern (SCC) at the development site as defined 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, namely listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable).
- The absence of SCC was confirmed during the site sensitivity verification surveys.
- The development site is not located in an Important Bird Area.

5. Recommendations

The following preliminary recommendations are put forward:

1. An avifaunal Compliance Statement must be compiled, based on one round of surveys in the development site to assess the impact of the proposed PV facilities on priority species.
2. The following impacts must be addressed in the Compliance Statement:
    - Collisions with the solar panels.
    - Displacement due to disturbance associated with the construction of the project infrastructure.
    - Displacement due to habitat transformation associated with the construction of the project infrastructure.
    - Entrapment in perimeter fences.
3. The Compliance Statement must delineate areas of high sensitivity for priority species, including any No-Go areas.

6. References

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APPENDIX 1: SPECIES RECORDED IN THE 2645_2735 PENTAD DURING SABAP2 SURVEYS

Species	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Solar priority species	Recorded during surveys
Acacia Pied Barbet	*Tricholaema leucomelas*	54.84	0.00		x
African Black Duck	*Anas sparsa*	9.68	0.00	x	
African Black Swift	*Apus barbatus*	3.23	0.00		
African Darter	*Anhinga rufa*	41.94	8.33	x	
African Firefinch	*Lagonosticta rubricata*	3.23	0.00		
African Fish-eagle	*Haliaeetus vocifer*	25.81	0.00	x	x
African Hoopoe	*Upupa africana*	48.39	0.00		
African Jacana	*Actophilornis africanus*	6.45	0.00	x	
African Palm-swift	*Cypsiurus parvus*	45.16	2.78		x
African Paradise-flycatcher	*Terpsiphone viridis*	12.90	0.00		
African Pied Wagtail	*Motacilla aguimp*	0.00	2.78		
African Pipit	*Anthus cinnamomeus*	74.19	2.78		x
African Purple Swamphen	*Porphyrio madagascariensis*	3.23	0.00	x	
African Quailfinch	*Ortygospiza atricollis*	38.71	5.56		
African Red-eyed Bulbul	*Pycnonotus nigricans*	93.55	5.56		x
African Reed-warbler	*Acrocephalus baeticatus*	16.13	2.78		
African Sacred Ibis	*Threskiornis aethiopicus*	45.16	13.89	x	
African Snipe	*Gallinago nigripennis*	16.13	0.00		
African Spoonbill	*Platalea alba*	12.90	0.00	x	
African Stonechat	*Saxicola torquatus*	90.32	5.56		x
African Wattled Lapwing	*Vanellus senegallus*	25.81	0.00		
Amethyst Sunbird	*Chalcomitra amethystina*	9.68	0.00		
Amur Falcon	*Falco amurensis*	6.45	2.78	x	
Anteating Chat	*Myrmecocichla formicivora*	87.10	5.56		x
Ashy Tit	*Parus cinerascens*	3.23	0.00		
Banded Martin	*Riparia cincta*	6.45	2.78		x
Barn Owl	*Tyto alba*	3.23	0.00	x	
Barn Swallow	*Hirundo rustica*	38.71	19.44		x
Bar-throated Apalis	*Apalis thoracica*	25.81	5.56		
Black Crake	*Amaurornis flavirostris*	3.23	0.00	x	
Black Sparrowhawk	*Accipiter melanoleucus*	3.23	0.00	x	
Black-chested Prinia	*Prinia flavicans*	90.32	5.56		x
Black-collared Barbet	*Lybius torquatus*	32.26	2.78		
Black-headed Heron	*Ardea melanocephala*	58.06	8.33	x	x
Black-shouldered Kite	*Elanus caeruleus*	77.42	22.22	x	x
Blacksmith Lapwing	*Vanellus armatus*	93.55	5.56		x
Black-throated Canary	*Crithagra atrogularis*	80.65	8.33		x

Species cont.	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Solar priority species	Recorded during surveys
Black-winged Stilt	*Himantopus himantopus*	6.45	0.00	x	
Blue Waxbill	*Uraeginthus angolensis*	83.87	2.78		
Bokmakierie	*Telophorus zeylonus*	45.16	0.00		x
Brown-crowned Tchagra	*Tchagra australis*	32.26	0.00		x
Brown-hooded Kingfisher	*Halcyon albiventris*	16.13	0.00		
Brown-throated Martin	*Riparia paludicola*	74.19	0.00		
Buffy Pipit	*Anthus vaalensis*	6.45	0.00		x
Burchell's Coucal	*Centropus burchellii*	9.68	0.00		
Cape Glossy Starling	*Lamprotornis nitens*	61.29	2.78		x
Cape Longclaw	*Macronyx capensis*	74.19	8.33		x
Cape Robin-chat	*Cossypha caffra*	77.42	2.78		x
Cape Sparrow	*Passer melanurus*	87.10	0.00		x
Cape Turtle-dove	*Streptopelia capicola*	93.55	27.78		
Cape Wagtail	*Motacilla capensis*	48.39	0.00		
Cape White-eye	*Zosterops virens*	41.94	2.78	x	
Capped Wheatear	*Oenanthe pileata*	6.45	2.78		
Cardinal Woodpecker	*Dendropicos fuscescens*	12.90	0.00		
Cattle Egret	*Bubulcus ibis*	67.74	13.89	x	
Chestnut-backed Sparrowlark	*Eremopterix leucotis*	3.23	0.00		
Chestnut-vented Tit-babbler	*Parisoma subcaeruleum*	83.87	5.56		x
Chinspot Batis	*Batis molitor*	22.58	0.00		
Cinnamon-breasted Bunting	*Emberiza tahapisi*	9.68	0.00		
Cloud Cisticola	*Cisticola textrix*	29.03	5.56	x	x
Common (Southern) Fiscal	*Lanius collaris*	100.00	8.33		x
Common Moorhen	*Gallinula chloropus*	29.03	0.00	x	x
Common Myna	*Acridotheres tristis*	80.65	2.78		x
Common Ostrich	*Struthio camelus*	41.94	0.00		
Common Quail	*Coturnix coturnix*	0.00	2.78		
Common Sandpiper	*Actitis hypoleucos*	3.23	0.00	x	
Common Scimitarbill	*Rhinopomastus cyanomelas*	6.45	0.00		
Common Starling	*Sturnus vulgaris*	3.23	0.00		
Common Waxbill	*Estrilda astrild*	35.48	2.78		x
Coqui Francolin	*Peliperdix coqui*	6.45	0.00		
Crested Barbet	*Trachyphonus vaillantii*	74.19	8.33		x
Crowned Lapwing	*Vanellus coronatus*	87.10	11.11		x
Dark-capped Bulbul	*Pycnonotus tricolor*	0.00	5.56		
Desert Cisticola	*Cisticola aridulus*	25.81	2.78		x
Diderick Cuckoo	*Chrysococcyx caprius*	32.26	0.00		x
Eastern Clapper Lark	*Mirafra fasciolata*	16.13	0.00		x

Species cont.	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Solar priority species	Recorded during surveys
Egyptian Goose	*Alopochen aegyptiacus*	83.87	13.89	x	x
European Bee-eater	*Merops apiaster*	41.94	5.56		x
Familiar Chat	*Cercomela familiaris*	3.23	0.00		
Fiscal Flycatcher	*Sigelus silens*	83.87	2.78	x	
Fulvous Duck	*Dendrocygna bicolor*	6.45	0.00	x	x
Garden Warbler	*Sylvia borin*	3.23	0.00		
Giant Kingfisher	*Megaceryle maximus*	12.90	2.78	x	
Glossy Ibis	*Plegadis falcinellus*	22.58	2.78	x	x
Golden-tailed Woodpecker	*Campethera abingoni*	12.90	0.00		
Goliath Heron	*Ardea goliath*	9.68	0.00	x	
Great Egret	*Egretta alba*	6.45	0.00	x	
Greater Honeyguide	*Indicator indicator*	6.45	0.00		
Greater Kestrel	*Falco rupicoloides*	3.23	0.00	x	x
Greater Striped Swallow	*Hirundo cucullata*	48.39	2.78		x
Green Wood-hoopoe	*Phoeniculus purpureus*	19.35	2.78		
Green-backed Heron	*Butorides striata*	3.23	0.00	x	
Green-winged Pytilia	*Pytilia melba*	38.71	0.00		
Grey Heron	*Ardea cinerea*	25.81	2.78	x	
Grey-headed Gull	*Larus cirrocephalus*	3.23	0.00	x	
Hadeda Ibis	*Bostrychia hagedash*	93.55	8.33	x	x
Hamerkop	*Scopus umbretta*	6.45	2.78	x	
Helmeted Guineafowl	*Numida meleagris*	100.00	16.67		x
House Sparrow	*Passer domesticus*	48.39	0.00		
Jameson's Firefinch	*Lagonosticta rhodopareia*	3.23	0.00		
Kalahari Scrub-robin	*Cercotrichas paena*	70.97	5.56		
Karoo Thrush	*Turdus smithi*	54.84	2.78	x	
Laughing Dove	*Streptopelia senegalensis*	100.00	8.33		x
Lesser Grey Shrike	*Lanius minor*	3.23	2.78		
Lesser Honeyguide	*Indicator minor*	9.68	0.00		
Lesser Kestrel	*Falco naumanni*	6.45	0.00	x	
Lesser Swamp-warbler	*Acrocephalus gracilirostris*	12.90	0.00		
Levaillant's Cisticola	*Cisticola tinniens*	83.87	8.33		x
Little Egret	*Egretta garzetta*	16.13	0.00	x	
Little Grebe	*Tachybaptus ruficollis*	16.13	2.78	x	x
Little Sparrowhawk	*Accipiter minullus*	3.23	0.00	x	
Little Swift	*Apus affinis*	54.84	11.11		x
Long-crested Eagle	*Lophaetus occipitalis*	3.23	0.00	x	
Long-tailed Paradise-whydah	*Vidua paradisaea*	12.90	0.00		
Long-tailed Widowbird	*Euplectes progne*	87.10	13.89		x

Species cont.	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Solar priority species	Recorded during surveys
Malachite Kingfisher	*Alcedo cristata*	6.45	2.78	x	
Marsh Owl	*Asio capensis*	3.23	2.78	x	
Namaqua Dove	*Oena capensis*	32.26	2.78		
Natal Spurfowl	*Pternistis natalensis*	12.90	2.78		x
Neddicky	*Cisticola fulvicapilla*	87.10	2.78		x
Northern Black Korhaan	*Afrotis afraoides*	90.32	5.56		x
Orange River Francolin	*Scleroptila levaillantoides*	25.81	2.78		x
Orange River White-eye	*Zosterops pallidus*	38.71	2.78		
Orange-breasted Waxbill	*Amandava subflava*	19.35	0.00		
Osprey	*Pandion haliaetus*	0.00	2.78	x	
Peregrine Falcon	*Falco peregrinus*	3.23	0.00	x	
Pied Avocet	*Recurvirostra avosetta*	6.45	0.00		
Pied Crow	*Corvus albus*	16.13	16.67		x
Pied Kingfisher	*Ceryle rudis*	9.68	0.00	x	
Pied Starling	*Spreo bicolor*	48.39	0.00	x	
Pink-billed Lark	*Spizocorys conirostris*	3.23	0.00		
Pin-tailed Whydah	*Vidua macroura*	45.16	2.78		x
Plain-backed Pipit	*Anthus leucophrys*	3.23	0.00		
Purple Heron	*Ardea purpurea*	6.45	0.00	x	
Rattling Cisticola	*Cisticola chiniana*	19.35	0.00		
Red-backed Shrike	*Lanius collurio*	3.23	0.00	x	
Red-billed Firefinch	*Lagonosticta senegala*	9.68	0.00		
Red-billed Quelea	*Quelea quelea*	48.39	5.56		
Red-billed Teal	*Anas erythrorhyncha*	12.90	0.00	x	x
Red-capped Lark	*Calandrella cinerea*	6.45	0.00		
Red-chested Cuckoo	*Cuculus solitarius*	22.58	2.78		x
Red-chested Flufftail	*Sarothrura rufa*	3.23	0.00	x	
Red-collared Widowbird	*Euplectes ardens*	45.16	0.00		
Red-eyed Dove	*Streptopelia semitorquata*	93.55	8.33		x
Red-faced Mousebird	*Urocolius indicus*	77.42	2.78		x
Red-headed Finch	*Amadina erythrocephala*	22.58	0.00		
Red-knobbed Coot	*Fulica cristata*	29.03	0.00	x	x
Red-throated Wryneck	*Jynx ruficollis*	12.90	0.00		x
Reed Cormorant	*Phalacrocorax africanus*	58.06	5.56	x	
Rock Dove	*Columba livia*	22.58	0.00		
Rock Martin	*Hirundo fuligula*	3.23	0.00		
Rufous-naped Lark	*Mirafra africana*	64.52	5.56		x
Scaly-feathered Finch	*Sporopipes squamifrons*	58.06	0.00		x
South African Cliff-swallow	*Hirundo spilodera*	48.39	8.33	x	x

Species cont.	Taxonomic name	Full protocol reporting rate	Ad hoc protocol reporting rate	Solar priority species	Recorded during surveys
South African Shelduck	*Tadorna cana*	16.13	0.00	x	
Southern Grey-headed Sparrow	*Passer diffusus*	90.32	2.78		x
Southern Masked-weaver	*Ploceus velatus*	100.00	19.44		x
Southern Red Bishop	*Euplectes orix*	96.77	8.33		x
Speckled Mousebird	*Colius striatus*	61.29	8.33		
Speckled Pigeon	*Columba guinea*	93.55	0.00		x
Spike-heeled Lark	*Chersomanes albofasciata*	16.13	0.00		x
Spotted Eagle-owl	*Bubo africanus*	3.23	0.00	x	
Spotted Flycatcher	*Muscicapa striata*	9.68	2.78		
Spotted Thick-knee	*Burhinus capensis*	16.13	0.00		x
Spur-winged Goose	*Plectropterus gambensis*	64.52	11.11	x	x
Squacco Heron	*Ardeola ralloides*	6.45	0.00	x	
Common Buzzard	*Buteo vulpinus*	29.03	5.56	x	x
Streaky-headed Seedeater	*Crithagra gularis*	12.90	0.00		
Swainson's Spurfowl	*Pternistis swainsonii*	70.97	8.33		x
Swallow-tailed Bee-eater	*Merops hirundineus*	16.13	0.00		
Tawny-flanked Prinia	*Prinia subflava*	32.26	5.56		x
Thick-billed Weaver	*Amblyospiza albifrons*	3.23	0.00		
Three-banded Plover	*Charadrius tricollaris*	22.58	0.00		
Wailing Cisticola	*Cisticola lais*	6.45	0.00		x
Wattled Starling	*Creatophora cinerea*	38.71	0.00		
Whiskered Tern	*Chlidonias hybrida*	9.68	0.00	x	
White Stork	*Ciconia ciconia*	0.00	2.78	x	
White-backed Mousebird	*Colius colius*	38.71	0.00		x
White-bellied Sunbird	*Cinnyris talatala*	38.71	2.78		
White-breasted Cormorant	*Phalacrocorax carbo*	32.26	2.78	x	x
White-browed Sparrow-weaver	*Plocepasser mahali*	100.00	11.11		
White-faced Duck	*Dendrocygna viduata*	3.23	2.78	x	
White-fronted Bee-eater	*Merops bullockoides*	9.68	0.00		
White-rumped Swift	*Apus caffer*	48.39	2.78		x
White-throated Swallow	*Hirundo albigularis*	41.94	0.00		x
White-winged Widowbird	*Euplectes albonotatus*	25.81	5.56		x
Willow Warbler	*Phylloscopus trochilus*	19.35	0.00		
Wing-snapping Cisticola	*Cisticola ayresii*	6.45	0.00		x
Wood Sandpiper	*Tringa glareola*	3.23	0.00	x	
Yellow Canary	*Crithagra flaviventris*	61.29	0.00		x
Yellow-billed Duck	*Anas undulata*	61.29	0.00	x	x
Yellow-billed Egret	*Egretta intermedia*	6.45	0.00	x	
Yellow-crowned Bishop	*Euplectes afer*	70.97	2.78		x
Zitting Cisticola	*Cisticola juncidis*	51.61	8.33		x

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