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REPORT DETAILS

Title:	**Environmental Impact Assessment Report: Scoping and Environmental Impact Assessment for the proposed development of *Maxwell PV* 100 MW Photovoltaic Facility near Dealesville, Free State.**
Prepared for:	29 Solar (Pty) Ltd
Prepared by:	Council for Scientific and Industrial Research (CSIR)
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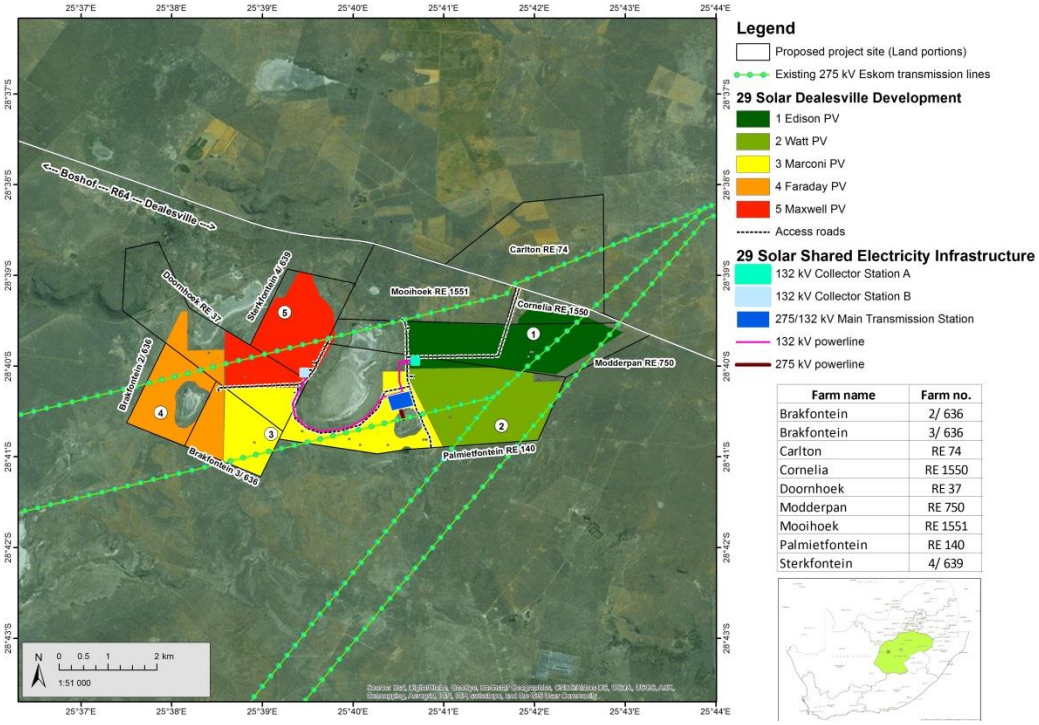
DEA Reference Number:	14/12/16/3/3/2/852
CSIR Report Number:	CSIR/CAS/EMS/IR/2015/0014/A
CSIR Project Number:	EMS0104
Date:	March 2016
To be cited as:	CSIR. 2016. Environmental Impact Assessment Report: Scoping and Environmental Impact Assessment for the proposed development of Maxwell PV 100 MW Photovoltaic Facility near Dealesville, Free State. CSIR Report Number: CSIR/CAS/EMS/IR/2015/0010/A. Stellenbosch.

EXECUTIVE SUMMARY

Overview

29 Solar (Pty) Ltd (Reg. No. 2015/002969/07) (hereafter referred to as 29 Solar) is proposing to construct and operate five 100 megawatt (MW) solar photovoltaic (PV) facilities and associated electrical infrastructure over nine farms close to Dealesville, in the Free State province. The five projects and associated infrastructure is collectively referred to as the ***29 Solar Dealesville Development*** and is situated approximately 50 km south-east of Boshof and approximately 70 km north-east of Bloemfontein.



Farm name	Farm no.
Brakfontein	2/ 636
Brakfontein	3/ 636
Carlton	RE 74
Cornelia	RE 1550
Doornhoek	RE 37
Modderpan	RE 750
Mooihoek	RE 1551
Palmietfontein	RE 140
Sterkfontein	4/ 639

The proposed 29 Solar Dealesville Development consisting of five 100 MW solar PV facilities, located approximately 5 km west of Dealesville, Free State.

The CSIR has been commissioned to undertake the environmental assessments for the 29 Solar Dealesville Development in terms of the National Environmental Management Act (NEMA) (Act no 107 of 1998) (South Africa, 1998) and Environmental Impact Assessment (EIA) Regulations of 2014 (South Africa, 2014). The EIA entails undertaking five separate Scoping and EIA processes for each of the five proposed solar PV facilities and shared electricity infrastructure to transfer generated power to the national electricity grid.

The projects are known as:

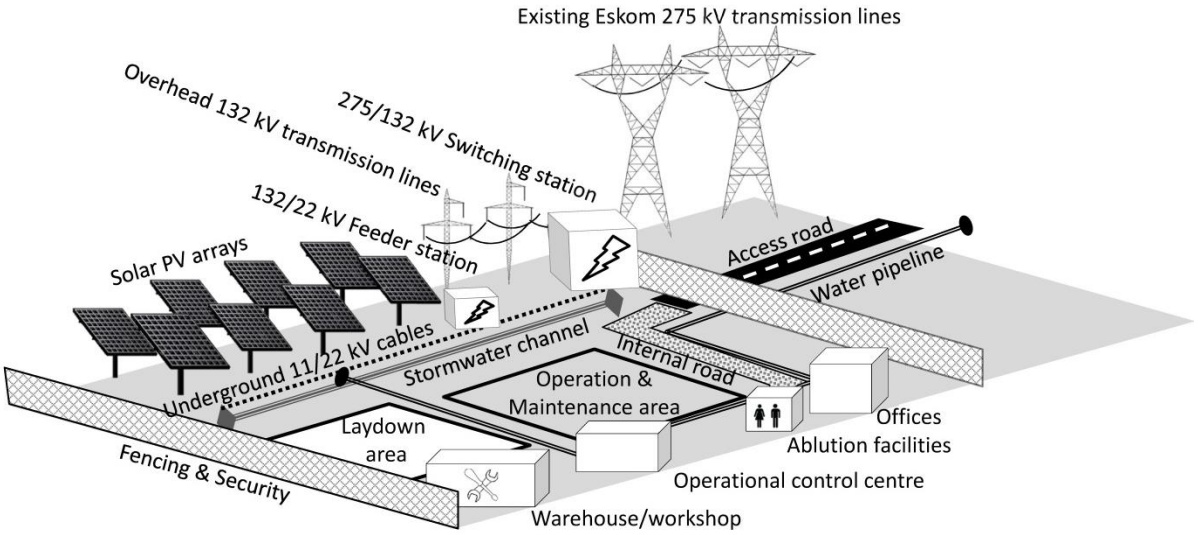
1. Edison PV (DEA Reference Number: 14/12/16/3/3/2/851)
2. Watt PV (DEA Reference Number: 14/12/16/3/3/2/854)
3. Faraday PV (DEA Reference Number: 14/12/16/3/3/2/855)
4. Marconi PV (DEA Reference Number: 14/12/16/3/3/2/853)
5. **Maxwell PV (DEA Reference Number: 14/12/16/3/3/2/852)**

This document constitutes the Environmental Impact Assessment Report (EIAr) for the **Maxwell PV** project and the **shared 29 Solar Electricity Infrastructure**. Project details are provided below.

Project description

	General
Closest town:	Dealesville
Local Municipality:	Tokologo
District Municipality:	Lejweleputswa
Province:	Free State
	Maxwell PV Solar Field
Technology:	Solar PV
Maximum capacity:	100 MW
Final development envelope footprint:	295.76 ha
Location (centre point of proposed PV area):	28°39'37.28"S; 25°39'26.78"E
Land portions:	Doornhoek RE 37 [SG Code: F00400000000003700000; Area 416.84 ha] Brakfontein 2/ 636 [SG Code: F00400000000063600002; Area 183.66 ha]
Associated infrastructure	Solar field: • Solar Arrays mounted on Horizontal Single Axis Tracking; and • Underground 11, 22 or 33 kV cables Building infrastructure: • Offices; • Ablution facilities; • Operational control centre; and • Warehouse/workshop; Associated infrastructure: • Access roads and internal gravel roads; • Fencing and security • Operation and Maintenance Area; • Laydown Area; • Stormwater channels; and • Water pipelines.
	29 Solar Dealesville Development Shared Electricity Infrastructure
Electricity infrastructure:	• Two 132/22 kV collector substations • One 275/132 kV Main Transmission Station (MTS) • 132 kV overhead transmission lines connecting the collector substation to the MTS • 275 kV transmission line looping into existing 275 kV Eskom transmission line
Connection to National Electricity Grid:	Loop-in-loop-out (LILO) of existing 275 kV Eskom lines
Footprint area:	120 m x 120 m (per collector substation) 200 m x 300 m (MTS)
Location (centre point of substations):	Collector substation A: 28°39'56.45"S; 25°40'41.07"E Collector substation B: 28°40'4.49"S; 25°39'27.53"E MTS: 28°40'23.06"S; 25°40'31.40"E
Land portions:	Cornelia RE 1550 [SG Code: F00400000000155000000; Area 85.26 ha] Modderpan RE 750 [SG Code: F00400000000075000000; Area 428 ha] Mooihoek RE 1551 [SG Code: F00400000000155100000; Area 342.81 ha] Doornhoek RE 37 [SG Code: F00400000000003700000; Area 416.84ha] Palmietfontein RE 140 [SG Code: F00400000000014000000; Area 810.75ha] Sterkfontein 4/ 639 [SG Code: F00400000000063900004; Area 237.24 ha] Brakfontein 3/ 636 [SG Code: F00400000000063600003; Area 183.6 ha]

The Maxwell PV facility will broadly consist of a solar field, building infrastructure, associated infrastructure and electricity infrastructure.



Schematic summary of infrastructure associated with the proposed Edison PV project. Note: drawing not to scale.

Purpose of the project

The Integrated Resource Plan for South Africa for the period 2010 to 2030 (hereinafter referred to as "IRP 2010") (DoE, 2011) was released by government in 2010, with an updated report in 2013, and proposes to develop and secure 17 800 MW of renewable energy capacity by 2030 (including wind, solar and other energy sources). The IRP 2010 has set up a target of 3 725 MW of renewable energy to be produced by Independent Power Producers (IPPs) by 2016. Subsequent to this, an additional target of 6300 MW from renewable energy sources was added to the Renewable Energy IPP Procurement Programme as published in Government Gazette No. 39111 of 18 August 2015 (South Africa, 2015). The additional target allocated for wind energy is 3040 MW and 2200 MW for solar PV.

Linked to this, in 2011, the Department of Energy (DoE) launched the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of onshore wind, solar thermal, solar PV, biomass, biogas, landfill gas or small hydro projects. The two main evaluation criteria for compliant proposals are price and economic development, with other selection criteria including technical feasibility and grid connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders with the highest rankings (according to the aforementioned criteria) are appointed as "Preferred Bidders" by the DoE. The proposed projects aim to contribute to these strategic imperatives.

Triggered Activities listed in the 2014 NEMA EIA Regulations

EA 1: MAXWELL PV SOLAR ENERGY FACILITY	EA 2: 29 SOLAR ELECTRICITY INFRASTRUCTURE
Activities:	
GN R983, Activity 28 (ii): Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.	
GN R984, Activity 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area.	
	GN R984, Activity 9: The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.
GN R984, Activity 15: The clearance of an area of 20 hectares or more of indigenous vegetation.	
GN R985, Activity 12 (i): The clearance of an area of 300 square metres or more of indigenous vegetation in Free State within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment.	

Specialist studies

The following specialist studies have been identified based on the issues identified to date, and were undertaken early 2016.

Specialists appointed to undertake the Specialist Studies.

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Rudi Greffrath (fauna & flora ecologist)	Digby Wells (Pty) Ltd	**Ecological Impact Assessment (including Terrestrial Ecology, Wetlands and Aquatic Ecology)**
Crystal Rowe (flora ecologist)		
Russell Tate (aquatic ecologist)		
Danie Otto (terrestrial and aquatic ecologist)		
Phil Patton (ornithologist)	Digby Wells (Pty) Ltd	**Avifauna Impact Assessment**
Henry Holland	Private	**Visual Impact Assessment**
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	**Heritage Impact Assessment (Archaeology and Cultural Landscape)**
Lloyd Rossouw	Palaeo Field Services	**Desktop Palaeontological Impact Assessment**
Julian Conrad	GEOSS	**Geohydrological Assessment**
Johann Lanz	Private	**Soils and Agricultural Potential Assessment**
Dr. Hugo van Zyl (EIA Phase)	Independent Economic Researchers	**Socio-economics**

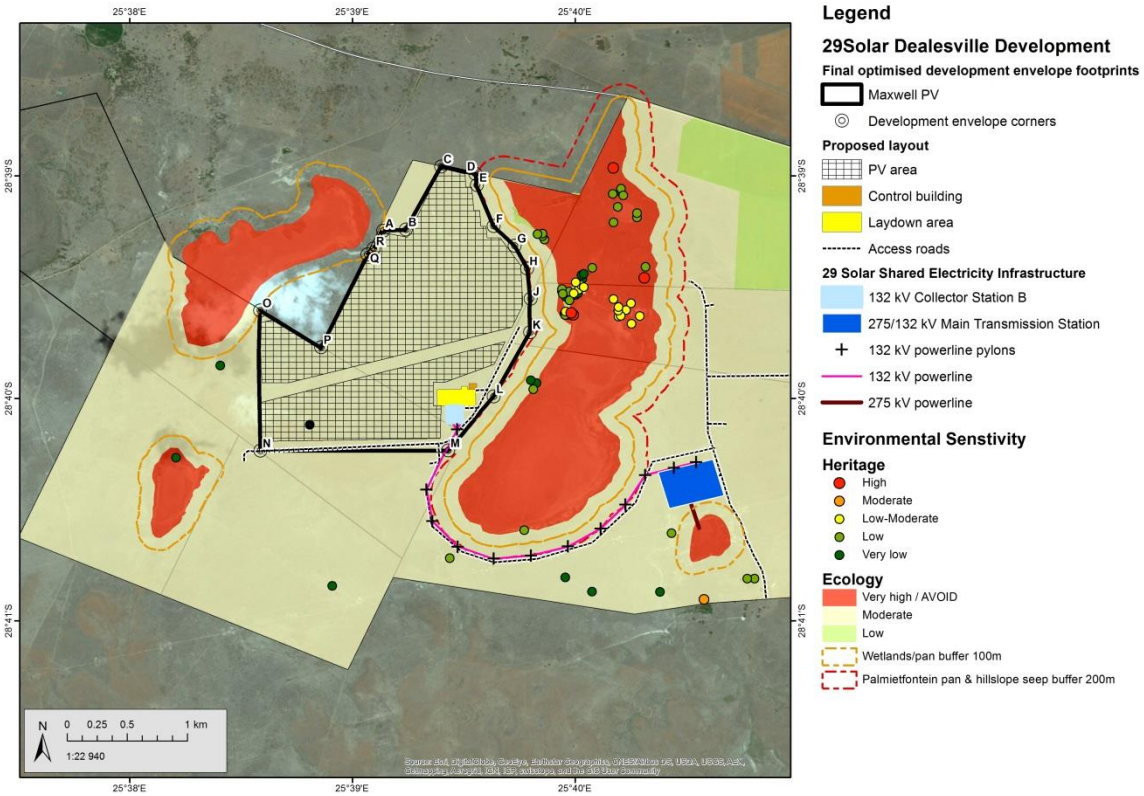
Environmental risks and impacts

Potential risks and impacts associated with the 29 Solar Dealesville Development has an overall moderate to low negative significance (after mitigation), whilst positive impacts stem from the potential diversification of land use income, and heightened security against stock theft and predation. Implementation of proposed avoidance, management, mitigation and monitoring actions, as prescribed in Volume B: EMPr, are key to reducing anticipated impacts associated with the development to overall low to very low negative.

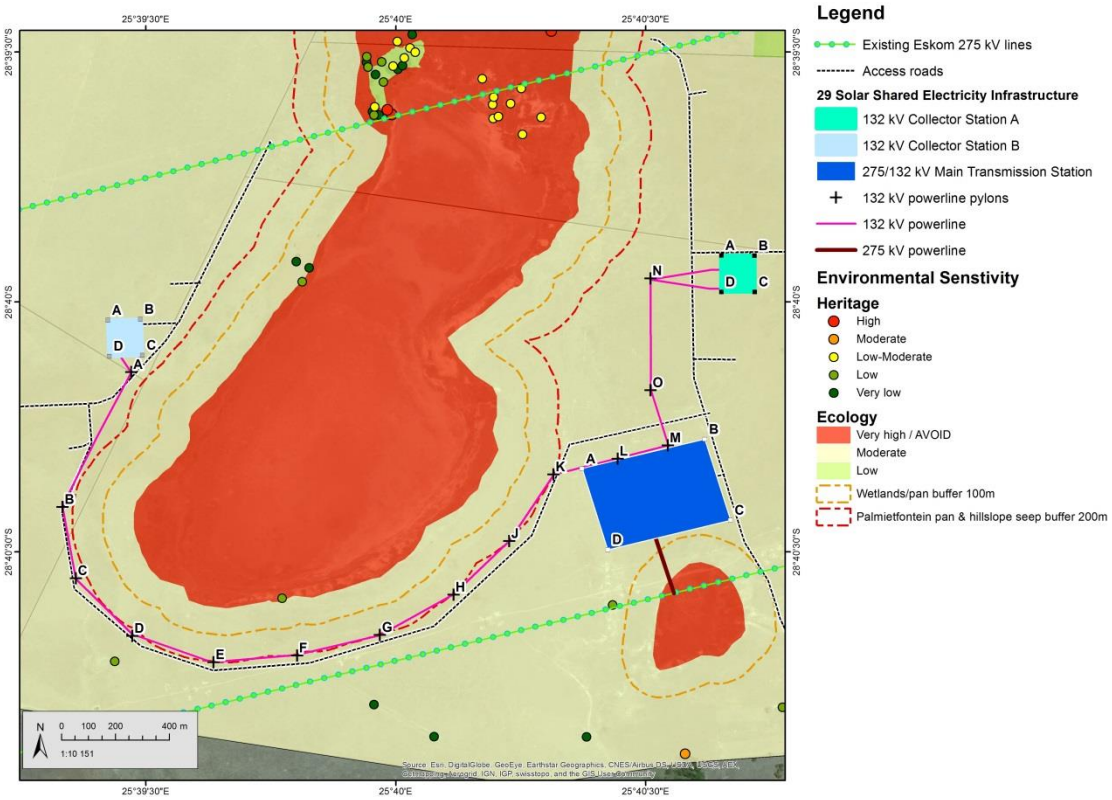
The following environmental buffers/setbacks have been proposed by specialists, and were included in the development footprint planning:

- 100 m from wetlands/pans;
- 200 m from the large Palmietfontein pan and associated hillslope seep area;
- 20 m from identified heritage features;
- Sensitive agricultural resources (cultivated fields); and
- 500 m from occupied buildings.

The avoidance of sensitive the above sensitive features minimise to potential impact of the proposed 29 Solar Dealesville Development.



Environmental sensitivity map indicating the Maxwell PV development envelope with proposed technical layout, which avoids all environmental sensitivities.



Environmental sensitivity map indicating the proposed collector substations, MTS, and 132 kV powerline. Pylons are outside the 200 m environmental setback for the Palmietfontein pan.

Reasoned opinion of the EAP

The project proponent (29 Solar) has indicated their commitment to environmental responsibility by adhering to specialist recommendations of environmental buffers in planning the development footprints. Based on the findings of independent specialists and final development plans, it is the reasoned opinion of the EAPs, Ms. Luanita van der Walt and Ms. Surina Laurie, that the proposed Maxwell PV facility and the shared 29 Solar electricity infrastructure be granted environmental authorisation in terms of the 2014 EIA Regulations.

Furthermore, the EAP, on behalf of 29 Solar, requests for Section 25 (2) of the 2014 EIA Regulations to be enacted by the Competent Authority by the means of issuing EAs for the solar PV aspects, components and activities associated with each of the five projects of the 29 Solar Dealesville Development (EA 1 – EA 5) and a single separate EA for the electricity infrastructure aspects, components and activities (EA 6).

30-day commenting period for this EIAr

Public involvement forms an important component of this process, by assisting in the identification of issues and alternatives to be evaluated. A draft version of this report was available for comment for a 30-day period from the date of release (15 March to 18 April 2016).

As part of the Scoping process all Interested and Affected Parties are invited to comment on the EIA Reports as part of the EIA Process. Electronic versions of the reports are available on the project website at: http://www.csir.co.za/eia/29capitalsolar.

Comments and I&AP Registrations may be submitted to:

CSIR
Environmental Management Services

Contact Person:

Luanita van der Walt

PO Box 320, Stellenbosch, 7599

Tel: 021 888 2490 | *Fax*: 021 888 2693 | *Email:* LvdWalt1@csir.co.za

LIST OF ABBREVIATIONS

AC	Alternating current
AGIS	Agricultural Geo-Referenced Information System
BA	Basic Assessment
BGIS	Biodiversity Geographical Information System
BID	Background Information Document
CARA	Conservation of Agricultural Resources Act
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
CSIR	Council for Scientific and Industrial Research
CSP	Concentrated Solar Power
DAFF	Department of Agriculture, Forestry and Fisheries
DC	Direct current
DDT	Data Deficient
DEA	Department of Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DFA	Development Facilitation Act
DNI	Direct Normal Irradiance
DoE	Department of Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EGI	Electricity Grid Corridor
EIA	Environmental Impact Assessment
EIAr	Environmental Impact Assessment report
EIS	Ecological Importance and Sensitivity
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EN	Endangered
ESS	Environmental Screening Study
EW	Extinct in the Wild
EX	Extinct
FSHRA	Free State Heritage Resources Agency
GHI	Global Horizontal Irradiation
HIA	Heritage Impact Assessment
HV	High voltage
I&AP	Interested and Affected Party
IBA	Important Bird Area
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer

IRP	Integrated Resource Plan
IUCN	International Union for the Conservation of Nature
kV	Kilovolt
LC	Least Concern
LV	Low voltage
mG	Milligauss
MV	Medium voltage
MW	Megawatt
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGA	National Groundwater Archive
NHRA	National Heritage Resources Act
NPA	National Protected Area
NPAES	National Protected Area Expansion Strategy
NT	Near Threatened
NWA	National Water Act
PES	Present Ecological Status
PGDP	Provincial Growth and Development Plan
PIA	Palaeontological Impact Assessment
PoS	Plan of Study
PPA	Power Purchase Agreement
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SAHRA	South African Heritage Resources Agency
SALA	Subdivision of Agricultural Land Act
SANBI	South African National Biodiversity Institute
SANEDI	South African National Energy Development Institute
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SIP	Strategic Infrastructure Plan
SQR	Sub Quaternary Reaches
SSC	Species of Special Concern
ToPs	Threatened or Protected Species List
ToR	Terms of Reference
VIA	Visual Impact Assessment
VU	Vulnerable
WASA	Wind Atlas of South Africa
WUL	Water Use Licence