Draft

Amended Environmental Impact Assessment Report

&

Environmental Management Program

in terms of the

S. 32 Amendment Application for the

Construction & Operation of a

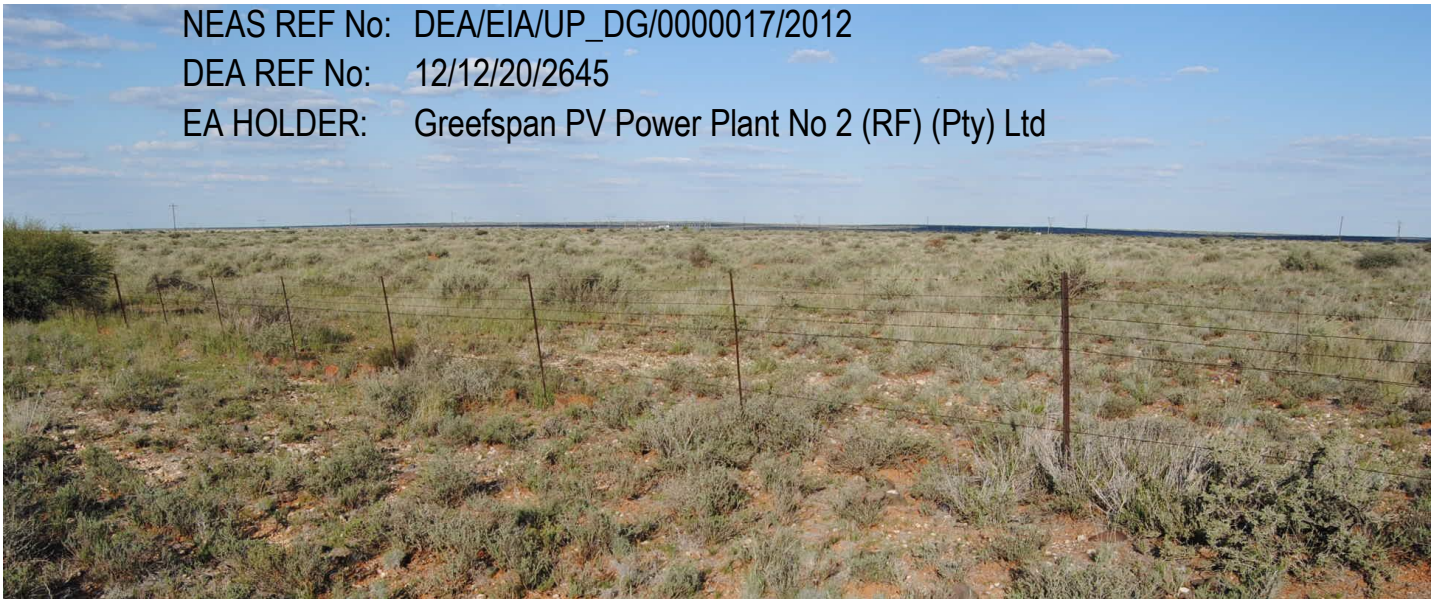
Switching Station & Evacuation Powerlines

at the

Greefspan PV Power Plant No. 2

Pixley ka Seme District Municipality

Northern Cape Province



Van Zyl Environmental Consultants cc

2009/073037/23

EAP Report Number: **2016/24/1**
Environmental Report Date: **27 September2017**

PROJECT DETAILS

Environmental Authorisation Holder	Greefspan PV Power Plant No. 2 (RF) (Pty) Ltd		
Contact person:	Mr Andrew Melville Johnson		
Postal address:	PO Box 22, PARKLANDS, 2121		
Telephone:	(010) 595 3333	Cell:	
E-mail:	ajohnson@sunedison.com	Fax:	083 854 1986

Environmental Assessment Practitioner (EAP):	Van Zyl Environmental Consultants CC		
Contact person:	Irmé van Zyl		
Postal address:	PO Box 567		
	Upington		
	Postal code:	8800	
Telephone:	054 338 0722	Cell:	072 222 6194
E-mail:	ibvanzyl@telkomsa.net	Fax:	086 624 0306
EAP Qualifications:	Masters Environmental Management (UFS)		
EAP Registrations/Associations:	IAIAsa		

Name of landowner:	Pieter van Niekerk Familie Trust IT41/2000		
Contact person:	Mr P.L. Van Niekerk		
Postal address:	P.O. Box 11, Douglas, 8730		
Telephone:	053 298 1257	Cell:	082 829 3558
E-mail:	pvn@douglas.co.za plvn@mweb.co.za	Fax:	

Project Title:	Construction and Operation of a switching station and evacuation powerlines at the Greefspan PV Power Plant No.2 on the Remainder of Portion 1 of the Farm Kwartelspan No.25 Douglas
Project Description:	The development will have a footprint of approximately 3200m2 and will include the following components: (a) A switching station and associated facilities and infrastructure, with a footprint of approximately 3200m2; and (b) less than 200m of evacuation line 33kV-132kV in a loop-in loop-out configuration".
Farm name:	De Rust Remaining Extent of Portion 1 of the Farm Kwartelspan No. 25
Physical address where authorised activity will take place:	De Rust on the R357, Douglas, Northern Cape Province (situated between Douglas and Prieska)
Magisterial District or Town:	Douglas, Northern Cape
DEA reference number of the previous environmental authorisation in respect of which an amendment is applied for:	DEA Ref. No.: 14/12/16/3/3/2/249 (12/12/20/2645) NEAS Ref. No.: DEA/EIA/UP_DG/0000017/2012
Date of issue of environmental authorisation:	6 September 2012
Activity/ies for which authorisation was granted:	GN R. 544 Item 10

Should this report be used as a reference, it should be cited as follows:
Van Zyl Environmental Consultants, 2017. **Draft Amended Environmental Impact Assessment Report & Environmental Management Program in terms of the S. 32 Amendment Application for the Construction & Operation of a Switching Station & Evacuation Powerlines at the Greefspan PV Power Plant No. 2, Pixley ka Seme District Municipality, Northern Cape Province.** Upington

PUBLIC PARTICIPATION PROCESS

INVITATION TO COMMENT ON THE AMENDED ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAM

The amended EIA report & EMPr is available for review at the office of Van Zyl Environmental Consultants.

The availability of the report will be communicated to all potential & registered I&APs. The report will be available for review **until 20 November 2017.**

Please submit your written comments, including a declaration of any business, financial, personal or other interest you may have in the approval or rejection of this application, via email, facsimile, or post to:

FOR ATTENTION:	**Irmé van Zyl**
Mobile:	**072 222 6194**
Telephone:	**054 338 0722**
Facsimile:	**086 624 0306**
Email:	**ibvanzyl@telkomsa.net**
Address:	**P.O. Box 567** **UPINGTON** **8800**

Always cite the DEA reference number in order to ensure that your comments are allocated correctly.

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DEFINITIONS

Alien species – Plants and animals which do not arrive naturally in an area - they are brought in by humans. Alien plants often force indigenous species out of the area. Mesquite is a good example of an alien species in the Northern Cape.

Alternative – A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. Alternatives considered in the EIA process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives.

Aspect – Element of an organisation's activities, products or services that can interact with the environment.

Auditing – A systematic, documented, periodic and objective evaluation of how well the Environmental Management Program is performing. Auditing aims to help safeguard the environment by facilitating management control, including compliance with regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems.

Aquifer - a geological formation of porous rock, such as sandstone, that has the ability to store water and may yield water to wells and springs

Biodiversity – The rich variety of plants and animals that live in their own environment. The Succulent Karoo is a good example of rich biodiversity in the Northern Cape.

Built environment – Physical surroundings created by human activity, e.g. buildings, houses, roads, bridges and harbours.

Conservation – Protecting, saving and using resources wisely, especially the biodiversity found in an area.

Contamination – Polluting something or making it impure.

Corrective (or remedial) action – Response required to address an environmental problem that is in conflict with the requirements of the EMPR. The need for corrective action may be determined through monitoring, audits or management review.

Cumulative Impact - an impact that is not necessarily significant in itself, but which may become significant when considered in addition to the existing and potential impacts of other similar or diverse activities in the area

Degradation – The lowering of the quality of the environment through human activities, e.g. river degradation and soil degradation.

Direct Impact - A generally obvious and quantifiable impact, usually associated with the construction, operation or maintenance of an activity, which is caused directly by the activity and generally occurs at the time and place of the activity.

'Do-Nothing' Alternative - The option of not undertaking the proposed activity or any of its alternatives, which provides the baseline against which the impacts of other alternatives should be compared.

Ecology – The scientific study of the relationship between living things (animals, plants and humans) and their environment.

Ecosystem – The relationship and interaction between plants, animals and the non-living environment.

Endangered Species - Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating, including taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic - Having a distribution restricted to a particular area or region.

Environment – Our surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and humans. The environment also refers to our social and economic surroundings, and our effect on our surroundings.

Environmental Impact - An environmental change caused by a human activity.

Environmental Impact Assessment (EIA) – An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives, recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts, and proposed monitoring measures.

Environmental Management - Addressing environmental concerns in all stages of development, in order to ensure that the development is sustainable and does not exceed the carrying capacity of the environment.

Environmental Management System (EMS) – Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The ISO14001 EMS standard has been developed by the International Standards Organisation.

Environmental Management Program - An operational plan that organises and coordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Environmental policy – Statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.

Force Majeure – An Event of Force Majeure means any circumstance which is beyond the control of the aggrieved party and is not reasonably foreseeable by the same, such as but not limited to: acts of God, orders of the authority, change of laws, etc.

1. An Event of Force Majeure can be:
(a) drought, hail, heavy or torrential rain meaning precipitation of more than 40 mm per hour, floods, tornados, fires, landslides or other adverse natural phenomena except lightning strikes, which prevent the Contractor to perform the Works, get access to the Site or otherwise perform any of its obligations under this Agreement;
(b) epidemics, quarantine restrictions, war or civil conflicts,
(c) national, territorial or sector strikes (other than strikes limited to the Contractor's or its subcontractors' business);
(d) sabotage, terrorism, acts of vandalism, embargoes;
(e) explosions, archaeological finds;
(f) changes in applicable legislation, the revocation or suspension of any authorisation, permit or license or any other decision or act of any authority which cannot be ascribed to the party affected by the force majeure event;
(g) climate conditions that exceed those for which the plant was designed and that are detailed in the respective technical specifications of the plant;
(h) climate or meteorological conditions that, according to health and safety laws and regulations, make the access to the site and/or the execution of the works unsafe or, otherwise, unviable.
2. For the sake of clarity, lightning strikes do not constitute an Event of Force Majeure.

Habitat – The physical environment that is home to plants and animals in an area, where they live, feed and reproduce.

Hazardous waste – Waste, even in small amounts, that can cause damage to plants, animals, their habitat and the well-being of human beings, e.g. waste from factories, detergents, pesticides, hydrocarbons, etc.

Homogeneous - of the same nature; uniform

Hydrology - The science encompassing the behaviour of atmospheric, surface and ground water.

Indirect Impact - An impact that occurs at a different time or place to the activity that causes it.

Impact – A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Indigenous - Having occurred naturally in the area in question before the year 1800.

Indigenous species – Plants and animals that are naturally found in an area.

Infrastructure – The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage.

Integrated – Mixing or combining all useful information and factors into a joint or unified whole. See Integrated Environmental Management.

Integrated Environmental Management (IEM) – A way of managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.

Interested and Affected Party (I&AP) - a person, group or organisation interested in or affected by a proposed activity, and any organ of state that may have jurisdiction over any aspect of the activity.

Land use – The use of land for human activities, e.g. residential, commercial, industrial use.

Laydown area - An area that has been cleared for the temporary storage of equipment and supplies. Laydown areas are usually covered with rock and/or gravel to ensure accessibility and safe manoeuvrability for transport and off-loading of vehicles.

Mitigation – Measures designed to avoid, reduce or remedy adverse impacts.

Natural environment – Our physical surroundings, including plants and animals, when they are unspoiled by human activities.

Over-utilisation – Over-using resources - this affects their future use as well as the environment.

Parameter - a set of measurable factors such as temperature, pressure and pH that define a system and determine its behaviour.

Photovoltaic Cell - A cell that converts solar energy into electrical energy.

Photovoltaic Effect - the effect attained when the electrons within a photovoltaic cell are excited by solar radiation.

Photovoltaic Module - a packaged unit consisting of interconnected photovoltaic cells or development.

Policy – A set of aims, guidelines and procedures to assist in the decision-making and management of an organisation or structure. Policies are based on people's values and goals.

Process – Development usually happens through a process – a number of planned steps or stages.

Proponent – Developer or entity applying for environmental approval and ultimately accountable for compliance with conditions stipulated in the Environmental Authorisation (EA) and requirements of the EMPr.

Public Participation Process - a process of involving the public in order to identify needs, address concerns, choose options, plan and monitor in terms of a proposed project, programme

Recycling – Collecting, cleaning and reusing materials.

Red Data Species - a species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or the South African Red Data List

Resources – Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

Scoping - a procedure for determining the extent of and approach to an EIA, used to focus the EIA to ensure that only the significant issues and reasonable alternatives are examined

Scoping Report – A report presenting the findings of the scoping phase of the EIA. This report is primarily aimed at reaching closure on the issues and alternatives to be addressed in the EIA (in the case of a full EIA process).

Significant Impact - an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment

Sky glow - Illumination of the night sky when light reflects off particles in the atmosphere such as moisture, dust, or smog.

Stakeholders – A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, authorities and all interested and affected parties.

Storm water management – Strategies implemented to control the surface flow of storm water in such a way as to mitigate erosion, sedimentation and pollution of surface and groundwater resources in the immediate and surrounding environments. This is specifically important during the construction and decommissioning phases of a project.

Sustainable development – Development that is planned to meet the needs of present and future generations, e.g. the need for basic environmental, social and economic services. Sustainable development includes using and maintaining resources responsibly.

Sustainability – Being able to meet the needs of present and future generations.

Topography - graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations

Waste Management – Classifying, recycling, treatment and disposal of waste generated during construction and decommissioning activities.

Wetlands – An area of land with water mostly at or near the surface, resulting in a waterlogged habitat containing characteristic vegetation species and soil types e.g. vleis, swamps.

Zoning – The control of land use by only allowing a specific type of development in fixed areas or zones

ABBREVIATIONS

BEE	Black Economic Empowerment
BID	Background Information Document
CE	Consulting Engineer
CLO	Community Liaison Officer
CSP	Concentrated Solar Power
DAFF	Department of Agriculture, Fisheries and Forestry
DENC	Department of Environment and Nature Conservation
DEA	Department of Environmental Affairs
DM	District Municipality
DNI	Direct Normal Irradiation
DoE	Department of Energy
DR&PW	Provincial Department of Roads and Public Works, Northern Cape
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMC	Electromagnetic Conformance
EMF	Environmental Management Framework
EMPr	Environmental Management Program
EO	Environmental Officer
EPWP	Expanded Public Works Programme
ESO	Environmental Site Officer
ESS	Environmental Scoping Study
FIT	Feed-in Tariff
GDP	Gross Domestic Product
GG	Government Gazette
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GN	Government Notice
GPS	Global Positioning System
GWh	Gigawatt Hour
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolt
LED	Local Economic Development
MAR	Mean Annual Rainfall
MW	Megawatt
NEMA	National Environmental Management Act
NEM:WA	National Environmental Management: Waste Act
NERSA	National Energy Regulator of South Africa
NWA	National Water Act
O&M	Operations and Maintenance
POL	Petrochemicals, Oils and Lubricants
PPE	Personal Protective Equipment
PV	Photovoltaic
REFIT	Renewable Energy Feed-In Tariff
RFQ	Request for Qualification
RFP	Request for Proposal
RoD	Record of Decision
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SMMEs	Small, Medium and Micro Enterprises
RE	Residential Engineer

TDS	Total Dissolved Solids
ToR	Terms of Reference
UV	Ultraviolet
VAC	Visual Absorption Capacity
WMA	Water Management Area

1. SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Greefspan PV Power Plant No 2 (RF) (Pty) Ltd is the permit holder of the environmental authorisation for the construction of a 55MW commercial photovoltaic (PV) power plant and associated infrastructure, situated on a part of the Remainder of Portion 1 of the Farm, Kwartelspan No 25, District Hopetown, Pixley Ka Seme District Municipality, Northern Cape Province. (Appendix L)

The total development will have a footprint of approximately 160 ha and infrastructure associated with this facility includes:

- lighting protection systems, including masts of up to 25m;
- any equipment and upgrades or expansions required to the substation;
- internal service roads (5m) and where required an access road;
- small administrative, control and security buildings (300-400m^2);
- ablution facilities;
- workshops, storerooms and laydown areas;
- perimeter fencing and security systems 10m from nearest PV modules;
- area lighting (movement activated);
- small parking area;
- a 132kV evacuation line of less than 200m; and
- internal reticulation approximately 500mm below ground.

Note: Only the underlined points will be applicable to the EA for the switching station.

This EIA Report for the switching station is conducted for a section of the substation that includes specifically the switching station component and the 132 kV overhead evacuation power lines of less than 200m that will connect the switching station to the national grid.

The Greefspan PV Power Plant No. 2 environmental authorisation (EA) includes an onsite substation. However, once construction is complete it will be necessary to hand over a portion of the substation (specifically the switching station component) to Eskom, together with the overhead power lines (evacuation lines) that will connect the switching station to the national grid. The ownership of this grid connection infrastructure (switching station and evacuation lines) as well as the EA for this infrastructure must be ceded to Eskom after construction is complete. As such, it is necessary to remove the evacuation lines and switching station from the current EA and place this infrastructure into a separate EA that can be ceded to Eskom i.e. it is necessary to split the EA into two authorisations. The description, location and extent of the authorised development will not change, and the nature and significance of the impacts associated with the development will remain unchanged – it is simply that the existing EA will be split into two separate EAs.

The area required for both the project and Eskom components of the substation would total approximately 9 600 m^2 i.e. less than 1 ha. Separately the areas required are approximately 6 400 m^2 for the project component and 3 200 m^2 for the Eskom component. The separation of the two components into separate EA's does not increase the footprint of the substation. The EA currently includes the onsite substation (project and Eskom portions) and 132 kV grid connection/ evacuation line (a double circuit line that will loop in and out of the existing Eskom lines).

Therefore an amended EIA report & EMPr is conducted for the grid connection infrastructure, according to the following:

Project title: "*Construction and Operation of a switching station and evacuation powerlines at the Greefspan PV Power Plant No.2 on the Remainder of Portion 1 of the Farm Kwartelspan No.25 Douglas".*

Project Description: *"The development will have a footprint of approximately 3200m^2 and will include the following components: (a) A switching station and associated facilities and infrastructure, with a footprint of approximately 3200m^2; and (b) less than 200m of evacuation line 33kV-132kV in a loop-in loop-out configuration".*

Note that the property, land owner and Applicant details would be identical to that in the current Environmental Authorisation.

The reasons and/or motivation for the application for amendment:

The Greefspan PV Power Plant No. 2 grid connection (evacuation lines) and Eskom substation component (switching station) will be constructed by the project developer (the Applicant), then handed over at commencement of operation to Eskom. The project developer will retain the ownership of the project site as well as the project substation component. After construction, Eskom will become the owner of the grid connection infrastructure (evacuation lines and switching station) and will assume all responsibilities for the operation, maintenance and management of the grid connection infrastructure. To ensure that the permits and the ensuing operational and environmental management obligations associated with the grid connection infrastructure can be handed over to Eskom, it is important that the different activities be split into separate EAs.

The Project has been awarded Preferred Bidder status under the Department of Energy's Renewable Energy Power Producer Procurement Programme. This means that the Project will sign a power purchase agreement with Eskom Holdings SOC Limited ("Eskom"). The Project is currently waiting for Eskom to finalise the agreements and cannot construct prior to this.

No change in ownership has occurred. The ownership of the connecting lines and switching station (Eskom substation component) would only become Eskom's property after construction, at which point it will be necessary to apply for a change in ownership of the EA.

1.1. Summary of Environmental Impacts due to Amendment Application

Any negative environmental impacts that may occur if the application for amendment is granted, amongst others information on any increases in air emissions, waste generation, discharges to water and impacts of the natural or cultural environment is described and assessed.

The requested amendments would not change the scope of the proposed development; nor increase the level or nature of the impact, which impact was initially assessed and considered when application was made for the environmental authorisation.

Any negative environmental impacts that may occur if the application for amendment is not granted is described and assessed.

If the request to split the grid connection infrastructure into a separate EA is not granted, it will not be possible to cede this portion of the development to Eskom, and the project company would not be able to fulfil Eskom's requirements to connect to the national grid. As such, the development would not be allowed to operate and hence the project and its associated positive impacts such as job creation, local expenditure, and the generation of energy from a clean, renewable source etc. would not occur.

Any positive environmental impacts that may occur if the application for amendment is granted, amongst others the ecological footprint, air emissions, waste generation and discharges to water is described and assessed.

The requested amendments would not change the scope of the proposed development; nor decrease the level or nature of the impact, which impact was initially assessed and considered when application was made for the environmental authorisation. The requested amendments will help to ensure that the authorised Greefspan PV Power Plant No. 2 will proceed, and that all of the positive socio-economic benefits associated with the PV Power Plant will be realised.

The split of the EA will not necessitate an amendment to the lease agreements in place with the landowner.

1.2 Background to the Study

On 28 September 2011 the DEA and the National Energy Regulator of South Africa (NERSA) have issued an environmental authorisation to Greefspan PV Power Plant No. 1 for the construction and operation of a 10MW PV power plant consisting of one axis tracker systems and associated infrastructure on an area of approximately 44 ha to the south of the Greefspan substation (Appendix B). This plant is now operational. The size of the study area for this application was approximately 150 ha that was much larger than the eventual footprint of the development.

The Greefspan PV Power Plant No. 2 submitted an application for authorisation and downscaling on the remainder of the area of approximately 100 ha already studied to generate 40MW in accordance with the EIA Regulations, 2010 that was accepted by the Department of Environment Affairs. A basic EIA process was then followed.

On 6 September 2012 an Environmental Authorisation was issued to the Greefspan PV Power Plant No. 2 that would be located on the remainder of the area of approximately 100 ha studied to generate 40MW that would tie into the network on the transmission level. (Appendix L)

The Greefspan PV Power Plant No. 2 then submitted an application for amendment to change the area and power generated from 40MW with a footprint of approximately 100 ha to 55MW with a footprint of approximately 160 ha. DEA requested that additional information be submitted and public participation be conducted. This was conducted as per the EIA Regulations, 2010. The DEA authorised the first amendment of the EA issued on 12 March 2013. (Appendix L)

The authorised environmental impact assessment study and amendment identified and evaluated potential environmental impacts associated with all aspects of the project for detailed study, including specialist studies, on the study area. It contained a detailed description of the nature and extent of the PV power plant. Information and input from the proponent, specialists, the authorities and Interested and Affected Parties (I&APs) were used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project. No environmental fatal flaws were identified.

Due to the technical and economical requirements of a PV power plant, close proximity to a substation is essential and therefore only one possible site has been identified for the development. The Eskom Greefspan Substation is located on the farm De Rust, a part of the remainder of Portion 1 of the farm Kwartelspan No. 25 in the Northern Cape. The farm is situated approximately 60 km south of Douglas on the R357. This site was selected as it conformed to the criteria for the development of a PV power plant.

Environmental, technical and economic feasibility must be taken into account and therefore factors such as meteorology, land availability and land use capability, costs and grid connection capacity have been considered by the permit holder.

The second amendment to the EA dated 6 September 2012 was an administrative amendment and was authorised by DEA on 17 August 2015. The holder of the EA and the validity period was amended. (Appendix L)

The third amendment to the EA dated 6 September 2012 was also an administrative amendment and entailed the amendment of the validity period of authorised activities to commence, amendment of the authorised coordinates of the substation to the coordinates of the site centre point, and to change details of the EA holder (Appendix L). This was authorised by DEA on 6 September 2017.

1.3 Legislative Matters

A fourth amendment application (this application) has been submitted and DEA stipulated in its response letter dated 4 September 2017 that this fourth application for amendment falls within the ambit of amendments to be applied for in terms of Part 02 of Chapter 5 of NEMA, EIA Regulations, 2014 (as amended). It also stipulates that separate reports, EMPr and Layout Plans be compiled and submitted as per proposed split. The reports must specify the conditions of the original EA and subsequent amendments that apply to the relevant split.

1.3.1 Conditions of EA dated 6 September 2012

The holder of the EA currently complies with the stipulations of the EA stipulated below.

Scope of Authorisation

1. Proposed 40MW Greefspan PV Power Station of fixed or tracking system and associated infrastructure at the Greefspan Substation is approved[1]. Eskom Greefspan Substation is located on the farm De Rust, Remaining Extent of Portion 1 of the farm Kwartelspan No. 25 in the Northern Cape. The proposed PV power station will tie into the network on the transmission level, which is from 33kV to 132kV.
2. Authorisation of the activity is subject to the conditions contained in the authorisation, which form part of the EA and are binding on the holder of the authorisation.
3. The holder of the authorisation is responsible for ensuring compliance with the conditions contained in the EA. This includes any person acting on the holder's behalf, including but not limited to, an agent, servant, contractor, sub-contractor, employee, consultant or any person rendering a service to the holder of the authorisation.
4. The activities authorised may only be carried out at the property as described above.
5. Any changes to, or deviations from, the project description set out in this authorisation must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.
6. This activity must commence within a period of three years from the date of issue of this authorisation. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.
7. Commencement with an activity listed in terms of this EA constitutes commencement of all authorised activities.
8. The holder of an EA must notify the competent authority of any alienation, transfer and change of ownership rights in the property on which the activity is to take place.

Notification of Authorisation and Right to Appeal[2]

9. The holder of the EA must notify every registered I&AP, in writing and within twelve calendar days of the date of this EA, of the decision to authorise the activity.
10. The notification referred to must specify the date on which the authorisation was issued; inform the I&AP of the appeal procedure provided for in Chapter 7 of the EIA Regulations, 2010; advise the I&AP that a copy of the EA will be furnished on request; and give the reasons of the competent authority for the decision.
11. The holder of the EA must publish a notice informing I&APs of the decision; informing I&APs where the decision can be accessed; and drawing the attention of I&APs to the fact that an appeal may be lodged against this decision in the newspaper contemplated and used in terms of regulation 54(2)(c) and (d) and which newspaper was used for the placing of advertisements as part of the public participation process.

Management of the Activity

12. The Environmental Management Program (EMPr) submitted as part of the application for EA is hereby approved. This EMPr must be implemented and adhered to.

[1] The first sentence of this condition is to be changed to: *"Construction and Operation of a switching station and evacuation powerlines at the Greefspan PV Power Plant No.2 on the Remainder of Portion 1 of the Farm Kwartelspan No.25 Douglas"*

[2] Note that the conditions within this section should be amended to align with the EIA Regulations, 2014. The stipulations of notification of previous regulations differ to that of the EIA Regulations, 2014.

Monitoring

13. The applicant must appoint a suitably experienced ECO for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.
    13.1 The ECO shall be appointed before commencement of any authorised activities.
    13.2 Once appointed, the name and contact details of the ECO must be submitted to the *Director: Compliance Monitoring* of the DEA.
    13.3 The ECO shall keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.
    13.4 The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.
    13.5 Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Recording and Reporting to the DEA

14. All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the DEA in terms of this EA, must be submitted to the *Director: Compliance Monitoring* at the DEA.
15. The holder of the EA must submit an environmental audit report to the DEA within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
16. The environmental audit report must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the EA conditions as well as the requirements of the EMPr.
17. Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Commencement of the Activity

18. The authorised activity shall not commence within twenty days of the date of signature of the EA.
19. An appeal under section 43 of the NEMA does not suspend an EA or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.
20. Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.

Notification to Authorities

21. Fourteen days written notice must be given to the DEA that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence, as well as a reference number. This notification period may coincide with the notice of intent to appeal period.

Operation of the Activity

22. Fourteen days written notice must be given to the DEA that the activity operational phase will commence.

Site Closure and Decommissioning

23. Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

Specific Conditions

24. The PV power station must be located 60 m from the R 357[3].
25. If an electrical fence is used, the electric fence contractor must consult an ecologist to discuss the configurations of the fence.
26. No activities shall be allowed to encroach into a water resource without a Water Use License Authorisation (WULA) being in place from the Department of Water Affairs (now Department of Water and Sanitation).
27. The applicant must obtain a wayleave from the Department of Roads and Public Works prior to construction.
28. Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors. The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged.
29. A permit must be obtained from all relevant provincial nature conservation agencies for the removal or destruction of indigenous protected and endangered plant and animal species.
30. Copies of permits in respect of condition 29 above required must be submitted to the Department for record keeping.
31. No exotic plants may be used for rehabilitation purposes. Only indigenous plants of the area may be utilised.
32. Vegetation clearing must be kept to an absolute minimum. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species.
33. Construction must include appropriate design measures that allow surface and sub-surface movement of water along drainage lines so as not to impede natural surface and sub-surface flows. Drainage measures must promote the dissipation of storm water run-off.
34. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-sue and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).

General

35. A copy of this authorisation and the approved EMPr must be kept at the property where the activity will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.
36. The holder of the authorisation must notify both the *Director: Integrated Environmental Authorisations* and the *Director: Compliance Monitoring* at the DEA, in writing and within 48 (forty eight) hours, if any conditions of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.
37. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily stopped for reasons of non-compliance by the applicant with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.

[3] This condition should state: *"The switching station and evacuation powerlines should not be located within 60m from the R357."*

Reasons for the Decision taken by DEA

1. Information Considered in Making the Decision

In reaching its decision, the DEA took, inter alia, the following into consideration:

a) The information contained in the BAR dated 05 June 2012;
b) The comments received from the Department of Water Affairs, Siyancuma Local Municipality, SAHRA, Telkom, DAFF (Forestry) and Rockwell Diamonds and I&APs as included in the BAR dated o5 June 2012;
c) Mitigation measures as proposed in the BAR dated 05 June 2012 and the EMPr;
d) The information contained in the specialist studies contained within Appendix D of the BAR; and
e) The objectives and requirements of relevant legislation, policies and guidelines, including section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998).

2. Key factors considered in making the decision

All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues which, in the Department's view, were of the most significance is set out below:

a) The findings of all the specialist studies conducted and their recommended mitigation measures.
b) PV technology exploits the most abundant source of free power from the sun and has potential to meet almost all of mankind's energy needs.
c) The Siyancuma Local Municipality confirmed that there is water available for the construction of the Greefspan PV Power Station and associated infrastructure.
d) The study areas for the Greefspan PV Power Station falls within a vegetation type categorised as least threatened.
e) The construction of the Greefspan PV Power Station has been approved by Eskom in terms of Section 22 of the Electronic Communications Act, No. 36 of 2005.
f) The BAR dated 05 June 2012 identified all legislation and guidelines that have been considered in the preparation of the BAR dated 05 June 2012.
g) The methodology used in assessing the potential impacts identified in the BAR dated 05 June 2012 and the specialist studies have been adequately indicated.
h) A sufficient public participation process was undertaken and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulations, 2010 for public involvement.

3. Findings

After consideration of the information and factors listed above, the DEA mad the following findings:

a) The identification and assessment of impacts are detailed in the BAR dated 05 June 2012 and sufficient assessment of the key identified issues and impacts have been completed.
b) If properly maintained the PV Power Station is expected to have a lifespan of approximately 25 years.
c) The proposed project will be situated in close proximity to the Greefspan Substation.
d) The site can be accessed via the R357 provincial road through the already authorised Greefspan 1 roads (12/12/20/1942 & DEAT/EIA/12807/2011).[4]
e) The Eskom Greefpan substation has the grid capacity to accept the electricity that will be generated by the Greefspan PV Power Station.
f) The environmental impact associated with the integration of the new power station to the existing distribution network as the length of the evacuation lines to the Greefspan substation would be less than 200m and would follow the existing servitude of the existing Eskom transmission lines to the Greefspan substation.
g) The Procedure followed for impact assessment is adequate for the decision-making process.
h) The proposed mitigation of impacts identified and assessed adequately curtails the identified impacts.

[4] This stipulation should be amended as the site will be accessed directly from the R 357 and not through the already authorised Greefspan PV1 access road.

i) The information contained in the BAR dated 05 June 2012 is accurate and credible.
j) EMPr measures for the pre-construction, construction and rehabilitation phases of the development were proposed and included in the BAR and will be implemented to manage the identified environmental impacts during the construction phase.

In the view of the above, the DEA is satisfied that, subject to compliance with the conditions contained in the EA, the proposed activity will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated to acceptable levels. The application was accordingly granted.

1.3.2 Conditions of Amendment 1 dated 12 March 2013

The Greefspan PV Power Plant No. 2 submitted an application for amendment to change the area and power generated from 40MW with a footprint of approximately 100 ha to 55MW with a footprint of approximately 160 ha. DEA requested that additional information be submitted and public participation be conducted. This was conducted as per the EIA Regulations, 2010. The DEA authorised the first amendment of the EA on 12 March 2013 (Appendix L).

The condition was that the amendment must be read in conjunction with the EA dated 06 September 2012 and that all registered I&APs be notified in writing of the DEA's decision in respect of the amendment made as well as the provisions regarding the submission of appeals in the EIA Regulations, 2010.

This was done. The permit holder complies with this stipulation.

1.3.3 Conditions of Amendment 2 dated 17 August 2015

The second amendment to the EA dated 6 September 2012 was an administrative amendment and was authorised by DEA on 17 August 2015. The holder of the EA and the validity period was amended. (Appendix L)

The condition was that the amendment must be read in conjunction with the EA dated 06 September 2012 as amended and that all registered I&APs be notified in writing of the DEA's decision in respect of the amendment made as well as the provisions regarding the submission of appeals in the EIA Regulations, 2014.

Furthermore, a shapefile of the approved development layout/footprint must be submitted to the DEA within two months from the date of the EA. The shapefile must be created using the Hartebeesthoek 94 Datum and the data should be in Decimal Degree format using the WGS 84 Spheroid. Data must be mapped at a scale of 1:10 000. The metadata must include a description of the base data used for digitizing. The shapefile must be submitted in a zip file using the EIA application reference number as the title.

The permit holder complies with these stipulations. Find attached the proof of the submission of the shapefile (Appendix K).

1.3.4 Conditions of Amendment 3 dated 6 September 2017

The third amendment to the EA dated 6 September 2012 was an administrative amendment and entailed the amendment of the validity period of authorised activities to commence, amendment of the authorised coordinates of the substation to the coordinates of the site centre point, and to change details of the EA holder (Appendix L). This was authorised by DEA on 6 September 2017.

The condition was that the amendment must be read in conjunction with the EA dated 06 September 2012 and that all registered I&APs be notified in writing of the DEA's decision in respect of the amendment made as well as the provisions regarding the submission of appeals in the EIA Regulations, 2014.

The permit holder complies with this stipulation.

1.4 Listed Activities in terms of EIA Regulations, 2014

Since the EA was issued on 6 September 2012, the EIA Regulations, 2010 has been repealed and replaced with the EIA Regulations, 2014 (as amended). It is therefore required to list the similar listed activities of these regulations to ensure that the relevant activities are still listed and if any additional activities should be listed that was not within the EIA Regulations, 2010 but became relevant with the promulgation of the EIA Regulations, 2014 (as amended).

Table 1: Similar Listings: EIA Regulations, 2010 vs. EIA Regulations, 2014 (as amended)

EIA Regulations, 2010			EIA Regulations, 2014 (as amended)			
Notice No	**Activity**	**Description EIA Regulations, 2010**	**Notice No**	**Activity**	**Description EIA Regulations, 2014**	**Project Description:**
R544, 18 June 2010	10 (i)	The construction of facilities or infrastructure for the transmission and distribution of electricity - outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts	R 983, 4 December 2014 (as	11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity - outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts	The proposed PV power plant will tie into the network on the transmission level, which is from 36 kV to 132 kV.

The EIA Regulations, 2014 transitional arrangements and commencement is applicable. Section 52 "Continuation of Actions Undertaken and Authorisations Issued Under Previous NEMA Regulations" S 52 (1) states that any actions undertaken in terms of the previous NEMA regulations and which can be undertaken in terms of a provision of these Regulations must be regarded as having been undertaken in terms of the provision of these Regulations.

S 52 (2) states that any authorisation issued in terms of the previous NEMA Regulations must be regarded to be an environmental authorisation issued in terms of these Regulations.

1.5 Other Applicable Legislation and Policies

In terms of the **National Heritage Resources Act, Act No. 25 of 1999**, any person who intends to undertake "*any development or other activity which will change the character of a site – exceeding 5 000 m² in extent*" and "*the construction of a …linear development or barrier exceeding 300 m in length*" must at the very earliest stages of initiating the development notify the responsible heritage resources authority, *viz.* the Northern Cape Provincial Heritage Resources Agency (NCPHRA) and/or the South African Heritage Resources Agency (SAHRA), as well as the Northern Cape Department of Sports, Arts and Culture.

The amended EIA Report will be uploaded to the SAHRIS web portal to enable SAHRA to comment on it. The archaeological impact assessment and palaeontological assessment are attached in Appendices E and F. Find SAHRA's comment attached in Appendix N.

Section 5 of the **Conservation of Agricultural Resources Act, Act No. 43 of 1983**, prohibits the spreading of weeds and Section 6 and Regulation 15 and 15 E of GN R 1048 address the implementation of control measures for alien and invasive plant species. This aspect has been addressed in the Environmental Management Program (Appendix I). This act also makes provision for the conservation of agricultural land.

Subdivision of Agricultural Land Act, Act 70 of 1970 control the subdivision and, in connection therewith, the use of agricultural land. It also controls long term leases over portions of agricultural land.

National Forests Act, Act No. 84 of 1998 and Regulations, Section 7: No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under Section 7(4) or Section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette. Sections 12-16 deal with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. In terms of Section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.

DAFF also administer the **National Veld and Forest Fire Act, Act No. 101 of 1998**.

Section 17 of the **Fencing Act, Act No. 31 of 1963,** states that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.

Sections 9-11 of the **National Environmental Management: Air Quality act, Act No. 39 of 2004,** regulates national, provincial and local ambient air quality standards. Activities are addressed in Section 21. Section 22 addresses atmospheric emissions licenses. Dust control measures are also applicable.

The **National Environmental Management: Biodiversity Act, Act No. 10 of 2004** provides for the MEC/Minister to list ecosystems that are threatened and in need of protection (Section 52) and to identify any process or activity in such a listed ecosystem as a threatening process (Section 53). A list of threatened and protected species has been published in terms of Section 56 (1) GG 29657 GN R 151 and GN R 152, Threatened or Protected Species Regulations.

The act also deals with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to listed invasive species.

The **National Environmental Management Waste Act, Act No. 59 of 2008** reforms the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

In terms of the definitions contained in Section 1 of the **National Water Act, Act No. 36 of 1998**, a "water resource" includes a watercourse, surface water, estuary, or aquifer. "Aquifer" means a geological formation which has

structures or textures that hold water or permit appreciable water movement through them. "Watercourse" means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

Furthermore, in terms of the definitions contained in Section 1 of the National Water Act, waste "includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted".

The Minister of Water and Environmental Affairs is allowed to regulate activities which have a detrimental impact on water resources by declaring them to be controlled activities. No person may undertake a controlled activity unless such person is authorised to do so by or under this Act.

Duty of Care to prevent and remedy the effects of pollution to water resources is addressed in Section 19. Section 20 addresses the procedures to be followed, as well as control of emergency incidents which may impact on a water resource.

Recognised water uses are addressed in terms of Section 21 and the requirements for registration of water uses are stipulated in Section 26 and Section 34.

Siyancuma Local Municipality confirmed that they will be able to supply the water for the duration of the project.

Section 25 of the **Environment Conservation Act, Act No. 73 of 1989,** as well as the National Noise Control Regulations GN R 154 dated 10 January 1992, regarding noise, vibration and shock, is applicable.

Section 8 of the **Atmospheric Pollution Prevention Act, Act No. 45 of 1965**, regulating controlled areas, as well as Section 27, with regard to dust control, is still applicable.

Section 28 of the **National Environmental Management Act, Act No. 107 of 1998** requires duty of care where reasonable measures are taken to prevent pollution or degradation from occurring, continuing or recurring, or, where this is not possible, to minimise and rectify pollution or degradation of the environment. Section 29 addresses the protection of workers refusing to do environmentally hazardous work. Section 30 addresses procedures to be followed in the event of an emergency incident which may impact on the environment. Access to environmental information and protection of whistle blowers are addressed in Section 31.

The **Occupational Health and Safety Act, Act No. 85 of 1993** GN. R. 2281 of 1987 – 10-16: Environmental Regulations for Workplaces are applicable.

The **Northern Cape Nature Conservation Act, Act No. 9 of 2009** addresses protected species in the Northern Cape and the permit application processes related thereto.

Fauna and flora permits have been issued for this planned development (Appendix J).

The **South African Civil Aviation Regulation Act, Act 13 of 2009** controls markings of structures that may influence aviation through the Civil Aviation Technical Standard, SA-CATS-AH 139.01.33 Obstacle Limitations and Markings outside Aerodrome or Heliports.

It states that any structure exceeding 45 m above ground level, or structures where the top of the structure exceeds 150 m above the MEAN ground level, like on top of a hill, the mean ground level considered to be the lowest point in a 3 km radius around such structure. Structures lower than 45 m, which are considered as a danger or a potential danger to aviation, shall be marked as such when specified. Overhead wires, cables, etc., crossing a river, valley or major roads shall be marked and in addition, their supporting towers marked and lighted if an aeronautical study indicates that it could constitute a hazard to aircraft.

The highest structures that would be constructed at the proposed development would be the lightning conductors, which would have a height of 25 m.

National Environmental Management: Protected Areas Act, Act 57 of 2003 and its Regulations are applicable. The EAP is not aware at the time of report writing of any protected areas situated within a 10 km radius of the planned development.

The **Advertising on Roads and Ribbon Development Ac, Act No 21 of 1940** is administered by the Department of Roads and Public Works.

The **Promotion of Access to Information Act, Act No. 2 of 2000** and the **Promotion of Administrative Justice Act, Act No. 3 of 2000** is applicable to all government departments.

The **White Paper on Renewable Energy (2003**) with national targets for renewable energy generation is applicable.

1.6 Terms of Reference

Van Zyl Environmental Consultants has been appointed by the permit holder as well as applicant, Greefspan PV Power Plant No. 2 (RF) (Pty) Ltd, as the independent environmental assessment practitioner (EAP) to manage the amendment application process to amend the EIA and EMPr and conduct the public participation process as stipulated in the EIA Regulations 2014, in terms of the National Environmental Management Act, Act No 107 of 1998 (as amended) for the proposed project. Neither Van Zyl Environmental Consultants nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to Greefspan PV Power Plant No. 2 (RF) (Pty) Ltd. Van Zyl Environmental Consultants does not have any interest in secondary developments that may arise from the authorisation of the proposed amendment.

1.7 Details of the Environmental Assessment Practitioner and Expertise to Conduct the EIA

Van Zyl Environmental Consultants is an environmental consulting firm providing environmental management services, including environmental impact assessments and planning to evaluate risk and ensure environmental compliance of proposed developments, as well as the implementation of environmental management tools.

Irmé van Zyl is the sole member of Van Zyl Environmental Consultants and is fulfilling the duties as EAP.

Irmé van Zyl has been working in the environmental management field for almost 19 years. She has experience in environmental impact assessments in terms of the NEMA, NEM:WA, MPRDA, water use licences in terms of NWA, environmental risk assessments, compilation of EMPr's, environmental management, public participation processes, environmental rectification applications and the implementation thereof, acted as environmental control officer during implementation of projects, conducted independent environmental compliance audits, fauna and flora permit and licence applications, and has been involved in environmental studies for a variety of projects throughout the Northern Cape.

These include a butchery, a meat processing plant, residential developments, establishment of a new cemetery and closure of an old cemetery (including management plans for cemeteries), bridges, tourism industry (caravan parks, chalets etc.), wastewater treatment works, a medical care waste treatment facility, illegal disposal of medical waste, a waste site, PV power plants, a runway, pipelines, borrow pits, roads, a reverse osmosis water purification and brine treatment plant as well as an eco-estate development. (Appendix P)

1.8 Specialist Studies

Specialist studies were conducted on the entire study area of 150 ha. It comprised of:

- Biophysical assessment of the proposed Greefspan PV Power Station (Appendix C)
- Biota study by Mr. B.H. Erasmus (Appendix C);
- Avifaunal and bat desktop specialist report by Ms Beryl Wilson (Appendix D);
- Phase 1 archaeological impact study by Mr. David Morris (Appendix E);
- Palaeontological impact study by Dr. John Almond (Appendix F);
- Visual Impact Assessment by Mr Gerhard Griesel (AXIS Landscape Architecture) (Appendix G);
- Agricultural Impact Assessment including a soil potential survey by Mr Christo Lubbe (Appendix H).

2. ACTIVITY DESCRIPTION

The development will have a footprint of approximately 3200m^2 and will include the following components: (a) A switching station and associated facilities and infrastructure, with a footprint of approximately 3200m^2; and (b) less than 200m of evacuation line 33kV-132kV in a loop-in loop-out configuration.

2.1 Construction Phase Activities

2.1.1 Surveys

Before construction can commence, a number of surveys might be required including, but not limited to, a geotechnical survey, a site survey to confirm the micro footprint, a survey of the Greefspan Substation where the evacuation line would tie into, and a survey of the evacuation power line corridor/servitude.

2.1.2 Construction of Access Roads to the Site and Internal Roads

The site where the PV power plant is proposed to be developed lies to the northwest of the R357 with Douglas to the north and Prieska to the south from where the development will gain access (Appendix A). A gate will be implemented in the farmer's fence to access to the site.

Internal or service roads would be needed within the site for the construction as well as the operation and maintenance phases. The construction of these tracks would comprise gravel for filling and higher quality surfacing on top. Should this be needed, the gravel is to be sourced from a permitted borrow pit. The strength and durability of the in situ rock strata at the proposed site are currently unknown and are to be assessed via a geotechnical study to be conducted by the project proponent if necessary. The results of this study would indicate whether the vegetation and ground surface could be stripped, and the exposed formation levelled, compacted and used as an access track surface.

2.1.3 Site Preparation and Construction Laydown Areas

Activities would include the removal of vegetation and levelling of the laydown and storage areas for the construction equipment as well as the footprint of each project component. The topsoil would be stripped and stockpiled, backfilled and/or spread on the site. Areas where construction would take place would be levelled. A construction camp and offices, as well as an area for the storage and use of petrochemicals, oils and lubricants (POL), and a storage area for construction equipment and infrastructure, machinery and vehicles would be established. The construction camp and offices would be fenced with 1,8m fencing. Temporary ablution facilities for workers on site will be implemented and a waste storage area will be implemented with bins for recyclable and non-recyclable materials to be removed weekly.

2.1.4 Transportation of Equipment, Infrastructure and Materials to Site

Equipment and materials required for the construction of the switching station and evacuation line would be transported to the study area by means of national and provincial roads as well as the proposed internal access road.

Civil construction equipment would need to be brought to the site. These could include, among other types of equipment, excavators, trucks, graders, compaction equipment, and cement trucks as well as equipment needed to establish the evacuation power lines and tie into the substation.

2.1.5 Ancillary Infrastructure

Vegetation will be cleared and areas of the site will be levelled. Excavation and laying of foundations of buildings and other structures will be done.

The perimeter fence and security system will be implemented. Holes would be dug up to 600mm and 2,4m fence poles would be concreted into place. The fence would then be erected according to specifications and electrified. Electricity would be supplied underground to the fence and buildings. The type of fencing to be used would be a fence of 2,4m.

A concrete batching plant could be erected on site or pre-mixed concrete obtained from an external supplier.

Potable water would be supplied via trucks or small trailers where personnel are working.

The water will be sourced from the Siyancuma Local Municipality for construction and operation (Appendix M), or possibly from groundwater subject to the necessary authorisation from DWS, subject to landowner consent.

During the construction period chemical toilets will be available on site.

During the construction phase generators will be used for power supply.

General and emergency maintenance of infrastructure, vehicles and machinery would be done on site. Vehicles and machinery would be moved to the nearest workshop to be repaired.

2.1.6 Construction of Evacuation Line

Vegetation would be cleared and areas levelled where pylons would be located for the line of less than 200 m. The holes for pylons would be dug and pylons concreted into place. Electrical reticulation would be done on the pylons and connections at the transmission centre and substation.

2.2 Decommissioning of Construction Areas after Completion of Construction Work

All the clean and solid construction waste would be used in backfill or onsite landscaping where possible. This is a use/reuse matter and is usually the most cost-effective as well. Construction waste that is not appropriate for backfill or for landscaping would be disposed of at the closest municipal waste site.

Construction rubble and other waste would be removed to nearest general waste site. The construction camp, infrastructure, equipment, machinery and vehicles that would not be used during the operation and maintenance phase would be removed. Compacted areas would be ripped where necessary. Topsoil would be replaced in areas where the operational phase would not continue and rehabilitated where practical and reasonable.

2.3 Operational & Maintenance Phase Activities

Electricity would be generated by the PV modules, transferred to the concentration boxes and transformation centres and then to the distribution centre. It would then be transferred via the evacuation power line to the substation from where it would be fed into the Eskom transmission network.

Electrical and mechanical maintenance of the infrastructure will take place as and when necessary.

2.4 Decommissioning Phase Activities

If properly maintained, the PV power plant is expected to have a lifespan of approximately 25 years. Should it be upgraded at the end of this period, its lifespan might possibly be extended to 50 years. The infrastructure would only be decommissioned once it has reached the end of its economic life.

3. FEASIBLE AND REASONABLE ALTERNATIVES

3.1 Planning and Design Phase Alternatives

3.1.1 Infrastructure, Technology & Process

Transformation Centre

The transformation centre would be a prefabricated concrete structure built to house the transformer and the associated protection devices. In the transformer, the voltage level would be transformed from 0.38 kV to 36 kV.

Distribution Centre

The distribution centre is where all the medium voltage (MV) lines, coming from the various transformers, are collected. The distribution centre is housed in either a prefabricated or a steel structure. A MV line runs from here to the substation. Power is then transmitted into the national grid via the switching station and evacuation lines.

3.1.2 Electrical Grouping Configuration

Depending on the power of the transformer (800 kVA or 630 kVA), four to five groups is connected to each transformation centre (TC).

The transformation centres (TC) are connected to the distribution centre (DC) using line routes of two or three transformation centres (TC), depending on the layout and power.

3.1.3 Electrical Reticulation

The connection from the distribution centre to the Eskom substation depends on Eskom's requirements. This line could be overhead or underground. The Greefspan sub-station was chosen because of the capacity of the grid to accept electricity being fed in at this point.

3.1.4 Ancillary Facilities

Access Roads

This Greefspan 2 site will get access from the R357 provincial road to Douglas to the north and Prieska to the south. A gate would be implemented in the farmer's fence to access the site. This access road would be less than 100 meters long and would be designed and constructed according to the standards set by the Dept. of Roads and Public Works. The road surface would be either tar or paving. A width of 10 m is allowed for the access road reserve. (Appendix B)

Sufficient space would be allowed at the access point and security control to ensure that vehicles do not back up on the road while being processed through security.

The width of the access road would allow the circulation of two trucks in opposite directions at the same time during construction and operation phase.

Service and Perimeter Road

The internal service road would be needed within the site for the construction as well as the operation and maintenance phases. The construction of this track would comprise gravel for filling and higher quality surfacing on top. Should this be needed, the gravel is to be sourced from a permitted borrow pit. The strength and durability of the in situ rock strata at the proposed site are currently unknown and are to be assessed via a geotechnical study to be conducted by the project proponent if necessary. The results of this study would indicate whether the vegetation and ground surface could be stripped, and the exposed formation levelled, compacted and used as an access track surface.

Vegetative ground cover reduces dust. Rehabilitation and regrowth of the ground cover is thus important and it would be sensible to minimise disruption of the existing vegetative ground cover.

During the operational phase access around the site is generally only required for security and routine inspection.

Fencing

Due to the high material value and risk of theft associated with electrical cabling it is imperative that the perimeter fences and security systems get installed and commissioned as soon as practical. The proposed perimeter fence is a non-lethal electrified fence with a height of 2.4 m. This type of fencing is very similar to the fencing around many game farms in the area.

Lightning Protection System

To protect the switching station from lightning, a lightning protection system composed of masts and surge arresters would be installed. This system would be designed by a specialist and would comply with the relevant South African laws and standards. Provision has been made for up to 25 m high masts.

3.1.5 Activity/Land Use

The applicable Remaining Extent of Portion 1 of the Farm Kwartelspan no. 25, Hopetown District is zoned for agricultural use. The development would be legally bound to the EMPr (Appendix I) which would be enforced by an independent ECO, in consultation with the different government departments such as the DAFF, DEA and DENC.

It is stipulated that vegetation shall be disturbed as little as possible, and this condition would be enforced by the ECO.

In order to prevent soil erosion and dust a suitable ground cover should be introduced such as gravel.

A rezoning application has been conducted for this development. A "Special Use" zoning has been granted in terms of the Northern Cape Planning and Development Act (Act 7 of 1988) from the Siyancuma Municipality (Appendix M). The Special Use zoning is a zoning to be used where the proposed land use does not fall under their other categories of zonings. The intended use is then defined in the application and approval. The Special Use zoning is defined as a mixed use for Agriculture and PV power plant, with a temporary validity that is only for the generation license period.

3.1.6 'Do Nothing' Alternative

If the requested amendment is not granted, it will not be possible to transfer the ownership of the grid connection infrastructure to Eskom, as required by Eskom in terms of the agreements between the Applicant and Eskom. If Eskom's requirements are not met, Eskom may not be able to assume the operation and long-term maintenance of the grid connection infrastructure, which may result in the PV Project being unable to connect to the national grid, in which case the PV Project may not proceed.

Deciding not to grant the amendment application would have a negative impact on the socio-economic development of the area. The job creation and poverty alleviation that would have occurred due to the development, would not take place.

In 2006 South Africa sourced approximately 90% of its energy from fossil fuels (coal, oil, gas). Coal, which is the main contributor to the country's carbon dioxide emissions, is the major primary energy supplier with a contribution of 65.9% to the total primary energy supply in 2006. (Subramoney et. al., 2009) Carbon dioxide is the main greenhouse gas connected with climate change. Hydro and renewable energy supply has seen little change since 2004; hydro supply had an increase of about 0.1% since 2004 while renewable supply declined by 0.4% (Subramoney et. al., 2009).

In order to develop sustainably whilst preparing for growing energy demands, South Africa's future energy supply must therefore be diversified with regard to power generation sources. This is also important in the light of the country's commitment under the Copenhagen Accord to reduce its carbon dioxide emissions by 34% below the "business as usual" level by 2020.

The generation of electricity from renewable energy resources offers many potential socio-economic and environmental benefits for South Africa. It can ensure increased energy security, which is highlighted by the current

electricity crisis in South Africa, as well as resource saving, as conventional coal-fired plants are major consumers of water during the cooling process.

The energy demand at the Eskom Greefspan Substation grew at a rate of approximately 419kVA per annum from 2007 to 2010 (Du Plessis, 2010).

The development of small-scale, evenly distributed renewable energy supply schemes, such as the one proposed at Eskom Greefspan Substation, is strategically important for the diversification of domestic energy supplies and for avoiding possible energy imports in the future.

Without the implementation of this development, renewable options for future power supply would be compromised and fossil fuel-based energy would possibly be used to supply for the growing demand. This could have significant negative environmental and social impacts.

The 'do nothing' alternative is not a preferred alternative in this application.

3.2 Construction Phase Activities

Pre-construction phase activities would include surveys such as a geotechnical survey, as well as a land survey to confirm the micro footprint of the infrastructure and associated infrastructure.

The construction phase includes all the varied activities and operations needed to develop a fully operational switching station. (Appendix B)

Construction phase activities would include but not be limited to:

- site clearing as necessary, which must be kept to a minimum to avoid dust;
- site preparation and construction laydown areas;
- temporary fencing of the construction yard site;
- installation of the perimeter fence;
- construction of access roads to the site and internal service road;
- delivery of construction materials and equipment;
- foundation excavation;
- installation of foundations;
- installation of electrical reticulation;
- installation of the lightning system;
- setting up of electrical equipment;
- construction of a 33-132 kV evacuation line of less than 200 m;
- installation of the security system; and
- commissioning tests.

3.2.1 Lay Down Area

The laydown area is the area where different materials such as electrical devices, tubes for wires, transformers, switchgears and prefabricated structures would be received.

3.2.2 Workshop

General and emergency maintenance of infrastructure, vehicles and machinery would be done on site. Vehicles and machinery would be moved to the nearest workshop to be repaired.

3.2.3 Spoil and Concrete Batching

Borrow pit areas would not be needed as gravel, stone and sand would be sourced from commercial sources surrounding Douglas or Prieska. Only a small amount of gravel is needed for concrete production for cross-road trenches, building foundations and the switching station. This gravel can be obtained from commercial sources in Douglas and transported by truck to the sites. Given that there are no significant earthworks in the construction

process, the only spoil envisaged would be material excavated from the trenches or holes that is considered unsuitable to be used as backfilling. These should be relatively insignificant volumes and could be spread on site if possible. These would be covered with topsoil and vegetated.

3.2.4 Water Usage

For the authorised projects the water for construction and operation would be sourced from the Siyancuma Local Municipality who are a registered Water Service Provider. (Appendix M). Alternately, water may be sourced from groundwater resources, subject to the necessary authorisation from the DWS and landowner consent.

3.2.5 Ablution Facilities and Sewage

The contractor would be responsible for providing and maintaining chemical toilets on site during the construction period, as well as for the removal of sewage to the municipal sewage works.

3.2.6 Electricity Use

During the construction phase generators would most likely be used for power supply, or electricity may be obtained directly from the existing Greefspan substation subject to agreement with Eskom.

3.2.7 General and Hazardous Waste

The contractor would be responsible for the weekly or more frequent removal of general waste to the municipal waste site. Waste generated on the site should be disposed of in closed bins, which would be located within an enclosed area in the site camp, from where it would be removed to the municipal waste site.

Hazardous waste would be disposed of in impervious, closed bins and kept in a secure area at the site camp until safely removed by a suitably certified company. Proof of safe disposal must be kept on file.

3.3 Decommissioning of Construction Areas after Completion of Construction Work

All the clean and solid construction waste would be used in backfill or onsite landscaping where possible. Remaining construction waste would be used for infilling towards the rehabilitation of the nearest possible abandoned old quarry pit, provided that the owner of the quarry and/or the land approves of such infilling. This is a use/reuse matter and is usually the most cost-effective as well. Construction waste that is not appropriate for backfill or for landscaping would be disposed of at the closest municipal waste site where it can be used as cover material for waste.

The construction camp, infrastructure, equipment, machinery and vehicles that would not be used during the operation and maintenance phase would be removed. Compacted areas would be ripped where necessary. Topsoil would be replaced in areas that would not be utilised during the operational phase and would be rehabilitated where practical and reasonable.

3.4 Operational & Maintenance Phase Activities

Electricity would be generated by the PV modules, converted from DC to AC by the inverters, and transferred to the concentrator boxes and transformation centres, from where it would be transferred to the distribution centre. It would then be transferred via the switching station and 36-132 kV evacuation power line to the existing Greefspan substation, from where it would be fed into the Eskom transmission network.

The operational phase includes all operations that are necessary to maintain the switching station, evacuation powerlines and associated infrastructure in a fully operational mode, to ensure that the electricity generated by the Greefspan 2 PV Power Plant is fed into the Eskom distribution network. (Figure 12)

Activities occurring during the operational phase include but are not limited to:

- verification of the electricity production;
- routine inspection of all equipment and systems; and
- periodic maintenance.

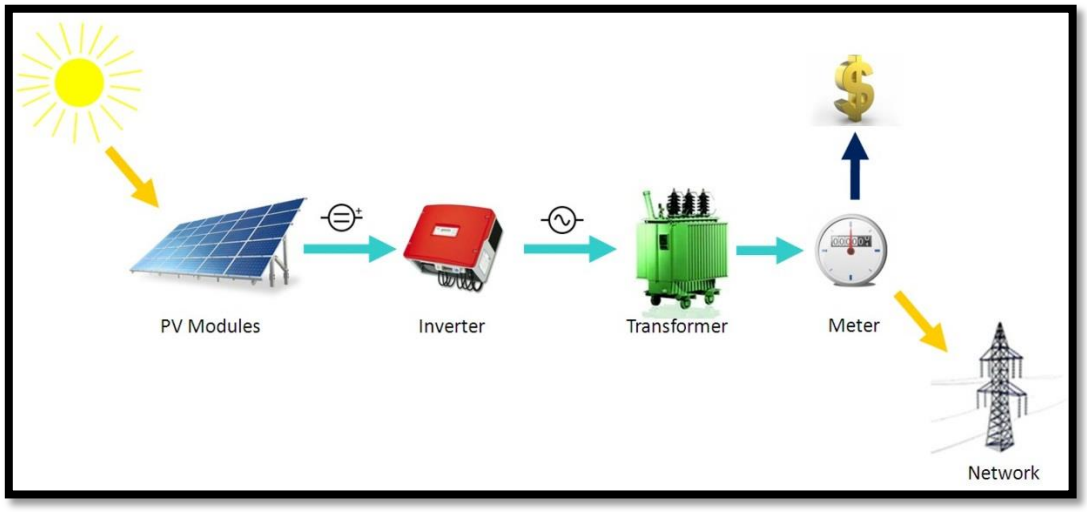

Figure 12: Energy flow in a PV power plant

3.5 Decommissioning Phase Activities

After 25 years of operation, the PV plant would either be upgraded or decommissioned.

Upgrading the PV power plant would possibly also necessitate the upgrade of the switching station and evacuation powerlines with new technology.

If the plant is to be decommissioned, the site should be returned to a state close to its original state. All of the components of a switching station and evacuation powerlines, except for the concrete, have an intrinsic value either for reuse or recycling.

This value would cover the cost of decommissioning the plant and rehabilitating the site (AE-AMD, 2011):

- The transformers and electrical control devices would either be reused, with or without reconditioning, or sold as scrap after removal of the fluids.
- The electrical power management and conditioning equipment would be recycled or sold as scrap.
- The steel in the support structures has high scrap value and the structures would therefore be dismantled and removed to be sold as scrap.
- The steel support structure piles can be removed and sold as scrap. Alternatively the steel or concrete piles can be cut off just below ground level and abandoned.
- The gravel or aggregate on the access road, onsite service roads, electrical substations, transformer pads, and building foundations could be removed and recycled for use in other fill operations if not abandoned.
- The buildings can be taken over by the farmer for his operations. Alternatively, all the reusable material can be removed, the shells demolished and the rubble taken away to a municipal waste site.

Disturbed land areas can be rehabilitated, the rubble removed, the soil scarified and reseeded or replanted with indigenous vegetation.

As part of the decommissioning and rehabilitation process, the soil would be inspected for industrial wastes from minor spills or leaks. Such occurrences would be documented and decontaminated as necessary. Soil testing would be conducted after decommissioning if deemed necessary.

Transportation activities during site decommissioning would be similar to but less than those during site development and construction.

4 PUBLIC PARTICIPATION

Refer to page ii of this amended EIA report

The proof of public participation will be attached to the final amended EIA report that will be submitted to the DEA.

4.1 Advertisement

The EAP conducting a public participation process will take into account any guidelines applicable to public participation as contemplated in Chapter 6 of the EIA Regulations, 2014 and will give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board at the entrance gate to the Greefspan Substation, next to the R 357 between Douglas and Prieska, conspicuous to the public at the boundary of—
  (i) the site where the activity to which the application relates is or is to be undertaken;
(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the **occupiers** of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity;
  (vii) any other party as required by the competent authority; and
  (viii) the competent authority where the application for amendment was lodged.
(c) placing advertisements (Afrikaans and English) in—
  (i) one local newspaper **(Crazy Ads)**; and
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

4.2 Content of Advertisements and Notices

The notice board, advertisement or notices:
(a) indicate the details of the application which is subjected to public participation; and
(b) state—
  (i) that the application has been submitted to the competent authority in terms of these Regulations,
  (ii) applied to the application, in the case of an application for environmental authorisation;
  (iii) the nature and location of the activity to which the application relates;
  (iv) where further information on the application or activity can be obtained; and
  (iv) the manner in which and the person to whom representations in respect of the application may be made.

4.3 Placement of Advertisements and Notices

It is not foreseen that the proposed PV power plant would have any regional impact beyond the district municipal area of Pixley ka Seme. An advert will be placed, according to stipulations in regulations, in the Crazy Adds, a local newspaper in the area. (Appendix to be attached in final report)

4.4 Determination of Appropriate Measures

During the previous scoping and EIA done for the 10MW PV power plant authorised by DEA at Greefspan Substation, a public meeting was held. Interest was very weak and/or the public accept PV power as energy resource. Stakeholders and registered I&APs did not raise any serious issues during that process nor during subsequent EIA applications and amendments conducted for the Greefspan PV Power Plant No. 2. A public meeting would not add any value during this process. . Therefore a public meeting will not be conducted during this process.

Information of the proposed development is being sent to the ward councillor of the area. Ratepayers associations and traditional authorities are not functioning in the surrounding area.

4.5 Comments and Response Report

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and will be attached to the final report. The comments and response report must be attached to the report. Appendix will be attached in the final report.

4.6 Authority Participation

Complete list with contact particulars will be attached to the final report.

List of authorities informed:

- *National Government Representatives*:
    - Department of Environmental Affairs;
    - Department of Agriculture, Forestry and Fisheries;
- *Provincial Government Representatives (Northern Cape)*:
    - Department of Environment and Nature Conservation;
    - Department of Agriculture, Land Reform and Rural Development;
    - Department of Forestry (DAFF);
    - Department of Roads and Public Works;
    - Department of Water Affairs;
    - Department of Mineral Resources;
    - Department of Energy;
    - Department of Labour; and
    - Department of Sports, Arts and Culture;
- *Local and District Authorities*:
    - Pixley ka Seme District Municipality;
    - Siyancuma Local Municipality and Ward Councillor; and
- *Other authorities*:
    - South African Heritage Resources Agency;
    - Northern Cape Provincial Heritage Resources Agency; and
    - South African Civil Aviation Authority;
- *Environmental Non-Governmental Organisations*:
    - Endangered Wildlife Trust; and
    - Wildlife and Environment Society of South Africa (Northern Cape)
- *Parastatals*:
    - Eskom; and
    - Telkom;
- *Community-based organisations*:
    - Northern Cape Chamber of Commerce and Industry;
    - Orange Vaal Water Users' Association; and
- *Surrounding landowners*.

5. IMPACT ASSESSMENT

The requested amendment would not change the scope of the proposed development; nor increase the level or nature of the impact, which impact was initially assessed and considered when application was made for the environmental authorisation.

The impact assessment conducted during the initial EIA study and first amendment would therefore remain the same.

An environmental impact matrix was used during the first EIA process to identify possible positive and negative environmental issues for the planning, construction, operation and maintenance, and decommissioning phases. The following aspects were identified:

- water resources;
- soil and agricultural potential (risk of erosion linked to topography of area, land use potential and restriction of land use);
- ecology and biodiversity (impacts on ecology, flora and fauna and especially avifauna);
- social aspects on the macro-, meso-, and microlevel;
- visual quality and aesthetics;
- economic impacts (mostly positive);
- traffic impacts (construction, upgrading and decommissioning phases);
- noise (construction, upgrading and decommissioning phases);
- air quality;
- heritage resources; and
- tourism activities.

Regulatory and mitigatory measures with regard to these impacts have also been stipulated in the Environmental Management Program (EMPr) (Appendix I), which forms part of the amended report.

5.1 Construction and Operational Phase Impacts

Many impacts associated with the project would only be effected during the construction phase and would thus be temporary in duration. However, actions performed during the construction phase may cause pollution that would have longer lasting effects on the environment. Construction phase impacts are therefore investigated further during this phase, especially with a view to limit and mitigate lasting effects.

5.1.1 Water Resources

The water use alternatives/options that were considered included groundwater and potable water obtained from the local authority.

For the authorised projects the water for construction and operation would be sourced from the Siyancuma Local Municipality (Appendix M), or potentially from groundwater resources, subject to the receipt of the necessary authorisation from DWS and landowner consent.

Mitigation Measures

Mitigation measures pertaining to water resources are contained in the Environmental Management Program (Appendix M)

5.1.2 Soil and Agriculture

Soils

Soil pollution could take place due to spillage of hazardous chemicals such as petrochemicals that would be stored and used on the construction site.

Soil degradation takes place through the removal, alteration or damage to soil and soil forming processes by land clearing, dust suppression and compaction of soil at roads and development footprints. The direct impacts of degradation and accelerated wind erosion of soil during and after the land clearing activities have been considered.

The potential for soil to erode is the likelihood that erosion will take place when soils are exposed to water and/or wind due to construction activities. The potential for erosion is increased in areas with low-plasticity, fine-grained soils such as in this study area. Due to the flat gradient, percentage of vegetation cover and geology/soil composition of the site, the Erosion Susceptibility Map for South Africa rates this area as potentially a low erodibility area (Breedlove, 2000).

The proposed activities would cause dust nuisance and limit visibility near farm residences and in areas next to the R357. Dust suppression will suffice as a mitigation measure during the construction phase.

After the rehabilitation of construction areas at the onset of the operational phase the potential for wind erosion would be high due to the low precipitation of this area, but as rehabilitation and the establishment and succession of the plant communities commence, the potential for erosion would be lowered accordingly.

Agriculture

A specialist agricultural study has been conducted and is included in Appendix H. The site was found unsuitable for commercial cultivation due to limiting factors such as shallow soil depth and hard setting carbonate horizons below surface. The low clay percentage results in low water holding capacity and low nutrient availability. Severe climatic conditions further limit commercial cultivation.

The proposed project area could be and is utilised as grazing for game, sheep and cattle.

The construction and operation of a PV Power plant & associated infrastructure such as the switching station and evacuation powerlines should have no high impacts on the agricultural potential of the identified site, except for increasing the possibility of erosion where soil is disturbed, for which mitigation measures were recommended in the report. Commercial agricultural activities can continue normally in the surrounding areas.

Mitigation Measures

List of impact descriptions and mitigation measures recommended (Appendix H):

Land loss for grazing: Although low in potential, some of the areas are currently used for grazing. It is recommended that any vegetation removed during construction is re-established once the power station is commissioned

Storm water: Should runoff directions be disturbed by construction activities or by the footprint of the power plant, the necessary control measures should be implemented to prevent erosion.

Water erosion: Should soil and gradient be disturbed and vegetation removed during construction, soil should be compacted and vegetation re-established.

Wind erosion: Should soil and gradient be disturbed and vegetation removed during construction, soil should be compacted and vegetation re-established. Windblown dust should be prevented by watering down the working areas.

Construction rubble and other waste may spill into rivers or be carried onto neighbouring agricultural land by runoff water. Rubble and waste should be removed from the construction site regularly.

Degradation of roads (used by farmers) due to heavy construction vehicles: Maintenance of roads should be undertaken throughout the construction and operational phases.

Increased heavy vehicle traffic due to construction: Truck drivers and other heavy machinery operators should be made aware of pedestrians, stray animals and stock herders on the roads.

Loss of farm labour to construction: The proponent should refrain from employing farm labourers for construction purposes. It should be explained to such applicants that they would exchange permanent jobs for temporary jobs.

Security risks: All possible measures should be implemented to prevent construction workers from entering neighbouring farms.

Risk of injury to people and animals: The construction site should be fenced in to prevent children and animals entering the site and getting injured.

Potential third party tampering: Permanent security fencing should be erected to prevent ignorant and innocent tampering by third parties.

Depletion of groundwater resources used for stock watering, due to construction activities: It is recommended that a proper study of the needs for the construction is compared with the needs of local stock farmers and the available groundwater.

5.1.3 Ecology and Biodiversity

Dr Van Rooyen, the ecologist, made the following concluding remarks (Appendix C):

- Twelve specially protected or protected plant species according to the NCNCA, NFA, CITES and NEM:BA were recorded on the site;
- The species richness of the plant communities is relatively high compared to the mean species richness of plant communities along the Orange River westwards, where the mean annual rainfall is lower;
- The threatened status of the vegetation type in the area (Northern Upper Karoo) is considered as 'least threatened';
- The site is not located in any protected area;
- There is one individual of a Protected Tree species on the site;
- There are no Red List plant species with a status higher than 'least concern' on the site;
- No GWC endemic plant species were recorded on the site;
- One Kalahari endemic species (*Acacia haematoxylon*) was recorded on site;
- The Greefspan extended site is bordered on the west and north by other proposed Solar Facility sites, and on the south by the main R357 tar road. Therefore dispersal of fauna could only take place north-east and eastwards and jackal-proof fences could be removed to allow for animal dispersal;
- Any overhead power line should be clearly marked with 'flappers' to prevent bird collisions;
- There are no sensitive habitats such as quartzite ridges, dunes or wetlands on the site;
- The erosion potential of the soils is low;
- The fragmentation of the habitats is considered to be low;
- The sensitivity of the different plant communities is rated as low;
- The significance of impacts on the site is rated as low; and
- Biodiversity offset is not required regarding this proposed development.

Mitigation measures:

Development should be contained within the proposed footprint and unnecessary disturbance adjacent to the site should be avoided.

Dust control measures should be implemented during construction.

The denuded and disturbed areas on site due to construction should be revegetated (e.g. with grasses) as soon as possible.

Establish a monitoring program for the early detection and control of alien invasive plant species.

No alien plant species should be used in landscaping or gardens around the site.

During the pre-construction phase detailed on site surveys and delineation need to be conducted by a suitably qualified land surveyor that will include an assessment of the site specific topography, the micro siting footprint of the switching station as well as all associated infrastructure. This will be done in collaboration with a suitably qualified ecologist that will ensure that any environmental sensitive aspects identified during the EIA investigation is taken into consideration.

Fauna

The site does not provide a critical habitat for wildlife and no threatened or endangered species are known to occur on the site. No Red Data Book (RDB) species were recorded. (Erasmus, 2010) (Appendix C)

Habitat destruction and fragmentation and the loss of land capability are the main negative impacts on vertebrate species, while contamination of the genetic integrity of species and an increase in predator-prey interaction are considered lesser impacts. (Erasmus, 2010) (Appendix C)

None of the encountered vertebrate species at the study area are unique to the Northern Cape Province and the power generation will only have a medium-term effect on the vertebrate faunal component at the site. The power generation will not impact negatively on the ultimate survival or dynamics of the encountered taxa. (Erasmus, 2010) (Appendix C)

While animals generally avoid contact with humans and human structures, they do grow accustomed to structures, and some species even to humans, after some time.

As the development would be fenced, specific impacts that would result from the type of fencing should be considered.

Mitigation Measures

Electrification of fences for the restriction of crawling animals is discouraged as this kills many non-target animals such as tortoises and pangolin. If such a fence is considered, the electrical fence contractor must discuss the configuration of the fence with an ecologist. (Erasmus, 2010 (a))

Herpetofauna

An approximate total of 37 reptile and seven amphibian species, none of which appear in the current Red Data Book for “Endangered species”, may be encountered at the study area. No amphibian species were recorded and it is doubtful whether they would ever occur because no open water is found on site. No reptiles were observed either, but some are sure to be recorded in summer months. All tortoise species currently enjoy protected status. (Erasmus, 2010 (a))

Avifauna and Chiroptera

The surrounding areas around Farm De Rust (portion 1 of Kwartelspan No 25) were considered in the findings in the original specialist report and an additional investigation is therefore unnecessary (Appendix D). (Wilson, 2012)

Farm De Rust (portion 1 of Kwartelspan No 25) is unlikely to constitute critically important habitat or resources for any bird or bat species. The cumulative impact of the additional project development in unlikely to add significantly to the already reported on impacts. (Wilson, 2012)

The specialist’s mitigation and management proposals for this development will essentially remain the same as those in the original report and no additions or amendments will be necessary. (Wilson, 2012)

An avifaunal specialist study has been undertaken by Ms Beryl Wilson to assess the potential impacts on local avifauna (birds) and Chiroptera (bats) associated with the development. (Appendix D)

The results indicated an approximate total of 20 bird and four bat species of potential conservation significance that may occur in the general area of which none were considered to be permanently resident. Since birds and bats are

highly mobile and often only transient out of breeding season, it is not envisaged that the majority of species expected to be present would be directly and negatively influenced by the development. (Wilson, 2010)

It should be noted that the Blue Crane and all the Vulture species are listed as Vulnerable in the RDB, but also as Endangered in the ToPS. (Wilson, 2010)

Loss of habitat, displacement and disturbance of fauna, and interactions with various electrical infrastructures were the main identified impacts that were taken into consideration with regard to management proposals. (Wilson, 2010)

With any proposed project it is likely that there would be a number of direct and indirect impacts on the fauna occurring in the area. While direct impacts include the death of individuals, removal/destruction of nests, nesting or roosting sites etc., this would be largely experienced at the construction phase and then later during routine monitoring to remove problem species (e.g. semi- or permanently nesting or roosting on the structures). (Wilson, 2010)

The extent to which the electrical infrastructure has already impacted on the resident birds in terms of collisions and electrocutions is indeterminable. Indirect effects such as disturbance and displacement may be less significant, and probably limited to common species in the area. No complete localized extinctions of avifauna or bats are predicted. However, evidence suggests that displaced individuals do suffer a much greater mortality rate. (Wilson, 2010)

Although these factors that could negatively impact on avifaunal species were identified and discussed, the investigated area is not unique in terms of species diversity and ecostatus within the region as a whole. Development of this specific site would not have significant impact on the overall distribution, the survival or dynamics of the encountered avifaunal or Chiroptera species. (Wilson, 2010)

Mitigation Measures

Feasible and practical management proposals include (Wilson, 2010):

- reducing the impact on the ecology of the area with appropriate management practices as recommended by ecological specialists;
- preventing the unnecessary destruction of vegetation in areas prone to soil erosion;
- monitoring the area and associated ecosystems for significant negative changes such as pollution, erosion etc. and taking immediate action to rectify these changes;
- minimising and limiting the destruction or disturbance of vegetation within the areas of activity, as well as in the surrounding areas, thus circumventing the need for an offset area;
- staying clear of drainage areas and sensitive areas and maintaining an appropriate buffer zone between these areas and the erected structures;
- reducing noise, air, soil and water pollution as far as possible;
- prohibiting the intentional killing of birds and bats through onsite supervision and worksite rules;
- educating employees to minimise accidental killings of birds and bats during routine construction and maintenance activities;
- monitoring all electrical infrastructures weekly for bird mortalities (collisions and electrocutions)
- modifying any bird-unsafe electrical pylon structures to insulate dangerous live components, cutting a gap in the earth wire and installing perch deterrents can also be installed to keep birds away from the dangerous areas on the structure;
- minimising bird collisions on newly constructed electrical features by implementing the standard anti-collision devices and diverters currently in use by Eskom
- giving preference and consideration to underground cabling rather than any new overhead structures;
- discouraging nesting, either by removing nests as they are built, or by supplying suitable alternative structures, and by avoiding infrastructure construction designs such as flat or trellised surfaces near key structures; and
- discouraging roosting bats by closing any roosting sites at night once the bats have left for foraging, and by avoiding infrastructures that encourage roosting.

The management proposals listed here are aimed at preventing unnecessary habitat destruction and the subsequent disturbance and displacement of birds and bats in the area, and maintaining suitable habitat and resources where possible. Passive and active discouragement measures are suggested. Emphasis is placed on the safety of conservation-worthy species regarding possible interactions with the various types of electrical infrastructure. Many of the bird species are in fact on the Red Data List due to these fatal contacts. (Wilson, 2010)

Relocation and rescue measures of existing avifauna and Chiroptera are considered unnecessary. (Wilson, 2010)

Despite the use of anti-collision devices and bird diverters, and insulated wires, there can be no guarantee that isolated avifaunal incidents can be totally avoided. With adequate monitoring, these incidents can be identified and remedied as far as possible. (Wilson, 2010)

5.1.4 Social Environment

The main social challenges experienced within the district include:

- low economic growth rate that limits the material needs of communities;
- negative population growth rate due to urbanisation;
- lack of job creation and training institutions in the province resulting in high unemployment rates;
- primary education;
- a desperate need for social activities, services, and youth development; and
- lack of basic services including sanitation.

The sphere of influence of the proposed development has been assessed within the microsystem.

Microlevel Impacts

The physical presence of the switching station and evacuation line, construction and operational phase activities associated with it will have an insignificant impact on area immediately surrounding the study area.

Mitigation Measures

Mitigation measures pertaining to the social environment are contained in the following sections of the Environmental Management Program (Appendix I).

5.1.5 Economic Impacts

Potential impacts associated with the construction phase include:

- financial and economic impacts;
- stakeholder interest;
- business risk/benefit; and
- damage to property (landowner and developer).

Positive economic and financial impacts have been sufficiently addressed in the social environment section.

Mitigation Measures

Mitigation measures have been addressed in the following sections of the Environmental Management Program (Appendix I):

- Preconstruction phase
  - Project contract and programme
  - Appointments and duties of project team
- Construction and operational phase
  - Crime, safety and security.

5.1.6 Traffic Impacts

Infrastructure needed for the proposed development, such as switching station, masts for lightning conduction, evacuation lines as well as machinery must be transported to the study area.

During the operational phase traffic would be insignificant, with trucks only needed intermittently to transport infrastructure to the study area during the maintenance and upgrading phases. The O&M of the switching station and evacuation powerlines would have an insignificantly low impact on the traffic volumes on the condition of the R357.

Mitigation of traffic impacts would not be necessary during the operational phase. When upgrades or expansions are to be conducted on a large scale, activities and associated mitigation would revert back to the construction phase.

Possible impacts of traffic on the immediate communities have been discussed in the social environment section and traffic noise etc. will be discussed in the section on noise that is to follow.

Mitigation Measures

Mitigation measures are stipulated in the the EMPr.

5.1.7 Noise

The impact of noise during the operational phase would be negligible, involving possible humming from transformers, wind whistling from overhead evacuation lines and across the PV modules, and guards' radios.

Noise associated with the proposed development would mostly be generated during the construction phase and, to a lesser extent, during the decommissioning phase, and would be limited to noise levels generally associated with construction. The development would be situated next to the provincial road carrying low traffic volumes within a sparsely populated area; noise generated by the development during the operational phase is not expected to have a significant impact on the noise receptors in the area.

Mitigation Measures

Mitigation measures pertaining to the noise impacts are contained in the construction and operational phase noise section of the Environmental Management Program (Appendix I).

5.1.8 Air Quality

Impacts on air quality would mostly occur during the construction and decommissioning phases and will involve a dust nuisance. Air quality impacts during the operational phase will be insignificant and limited to vehicle emissions. Mitigation measures are included in the dust section of the construction and operational phase section of the EMPr.

5.1.9 Visual and Aesthetical Impacts

Axis Landscape Architects evaluated all possible visual and cumulative impacts of the proposed layout and extended footprint of Greefspan 2 in relation to original visual impacts of the Greefspan 1 PV power plant.

The cumulative visual impact of the extended Greefspan 2 power plant will be moderate due to the enlarged footprint and will contribute to the proposed visual impact of Greefspan 1.

Construction-related activities would have an immediate and obvious impact on the visual and aesthetical aspects of the study area and surrounding areas. Impacts on observers close to the study area, especially those travelling along the R357 directly adjacent to the study area, as well as impacts on potentially sensitive receptors such as landowners and homesteads located within areas of potential visual exposure, have been considered by Axis Landscape Architecture cc (Appendix G). The expected sudden increase in heavy vehicles utilising the roads to the study area might also cause a visual nuisance to other road users and landowners in the area. Dust nuisance would add to the visual impact during construction.

Potential impacts associated with the construction and operational phases include:

- visual impacts;
- reduction in aesthetic properties;
- littering and housekeeping on the construction site;
- light pollution; and
- dust nuisance and other impacts related to the construction phase.

The highest structures that would be constructed at the proposed development would be the lightning conductors, which would have a height of 25 m. Cabling would not cross any rivers, valleys or major roads.

The area is not densely populated and the possible impacts due to lighting are expected to be negligible. Security and after-hours operational lighting would not cause any sky glow. Security lighting would be activated by motion detectors and would not be on through the night.

Mitigation Measures

Mitigation measures pertaining to the visual impacts are contained in the Environmental Management Program (Appendix I).

5.1.10 Heritage Resources

Archaeological Aspects

A Phase 1 Archaeological Impact Assessment was conducted by Dr David Morris of the McGregor Museum, Kimberley in June 2010 and January 2011 (Appendix E). (Morris, 2011)

The specialist's finding was that, while stone tools were noted across the entire site, they occurred in very low densities and their occurrence there was not of high significance. There were no colonial era built structures in the areas examined and no artefacts of this period (e.g. porcelain, metal) were noted. The substrate exposed on the hill slope appeared to consist of tillite and no shales were noted. (Morris, 2011)

The Phase 1 Archaeological Impact Assessments are attached in Appendix E of this report.

Palaeontological Aspects

The Palaeontological Impact Assessment: Desktop Study was conducted by Dr John Almond (Appendix F).

Significant impacts on fossil heritage resources are not anticipated. Given the generally low palaeontological sensitivity of the near-surface rocks in the study region, the cumulative impact is assessed as low. Pending the discovery of new fossil material on site, further palaeontological studies or mitigation for this project is not considered necessary. (Almond, 2010)

Mitigation measures pertaining to the heritage impacts are contained in the construction and operational phase heritage section of the Environmental Management Program (Appendix I).

6. ENVIRONMENTAL IMPACT STATEMENT

Impacts that might potentially be associated with the switching station and evacuation powerlines include cumulative impacts on soil and agricultural potential (risk of erosion linked to topography of area, land use potential and restriction of land use); ecology and biodiversity (impacts on ecology, flora and fauna, and especially avifauna); and visual quality and aesthetics.

Most of the potential impacts identified are anticipated to be site-specific. No environmental fatal flaws were identified and no 'no-go' areas have been identified.

6.1 No-go alternative

The 'do nothing' alternative is the option of not undertaking the development.

The identified site, at a local level, would not be impacted on from an environmental perspective and would continue to be utilised for agricultural activities on marginal agricultural land.

Deciding not to proceed with the development would have a negative impact on the socio-economic development of Douglas and Prieska. The job creation and poverty alleviation that would have occurred due to the development, would not take place. If the switching station and evacuation powerlines are not developed, it will not be possible to connect the authorised Greefspan 2 PV Power Plant to the national grid and the development of the PV Plant would not proceed, and all socio-economic benefits associated with the PV Plant would be foregone (including provision of renewable energy, significant job creation, creation of a Community Trust to fund local socio-economic development initiatives etc.)

The generation of electricity from renewable energy resources offers many potential socio-economic and environmental benefits for South Africa. It can ensure increased energy security, which is highlighted by the past electricity crisis in South Africa, as well as resource saving, as conventional coal-fired plants are major consumers of water during the cooling process.

The 'do nothing' alternative is not a preferred alternative in this application.

7. RECOMMENDATION OF PRACTITIONER

The requested amendments would not change the scope of the proposed development; nor increase the level or nature of the impact, which impact was initially assessed and considered when application was made for the environmental authorisation dated 6 September 2012.

The requested amendments would not change the scope of the proposed development; nor decrease the level or nature of the impact, which impact was initially assessed and considered when application was made for the environmental authorisation. The requested amendments will help to ensure that the developments will proceed, and that all of the positive socio-economic benefits associated with the PV power plant will be realised.

The split of the EA may necessitate an amendment to the lease agreements in place with the landowner; however these negotiations will be resolved in a manner acceptable to all parties concerned.

The information contained in this amended report and the documentation attached hereto is sufficient to enable the competent authority to make a decision in respect of the amendment to the EA applied for.

All recommendations and mitigation measures that should be included in the authorisation is addressed in the Environmental Management Program. Should the amended EIA report and EMPr be accepted and authorised, all aspects that have been discussed within the report and program would be addressed.

It is imperative that the EMPr be implemented during pre-construction, construction and operational phase and continued compliance to it be ensured. This would be possible by stipulating that the EMPr should form part of all contracts with businesses, contractors and sub-contractors, as well as the work force.

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APPENDICES

Appendix A: Site plan(s) - GIS Maps of Greefspan Study Area
- Figure 1: Locality Map
- Figure 2: Status Quo
- Figure 3.1: Regional Topographic Map
- Figure 3.2: Regional Cadastral Map
- Figure 3.3: Regional Land Types Map
- Figure 3.4: Regional Vegetation Map
- Figure 4.1: Digital Elevation Model
- Figure 4.2: Slope Analysis
- Figure 4.3: Visibility Analysis

Appendix B: Site Layout Plan
Site Photographs dated 14 October 2017

Appendix C: Letter Ecotrust – June 2016
Botanical Report – Ecotrust (Van Rooyen) – 5 October 2012
Ecological Report – Ecotrust (Van Rooyen) – 9 October 2012
Localities of Protected Plants – Ecotrust (Van Rooyen) - 2012
ToR Ecology – Erasmus – January 2012
Letter from the Specialist – Erasmus – 9 February 2012
Ecological Impact Assessment: Initial Area – Erasmus – June 2010
Ecological Impact Assessment: Expanded Area – Erasmus - 2010
CV: B.H. Erasmus

Appendix D: Avifauna Review Letter – 30 November 2012
ToR Avifauna and Chiroptera – January 2012
Letter from the Specialist – 2 February 2012
Avifauna and Chiroptera (Zoology) Study – November 2010
CV Beryl Wilson

Appendix E: ToR AIA – January 2012
Letter from the Specialist – 8 March 2012
Phase 1 AIA – June 2010
Phase 1 AIA Expansion – January 2011
Phase 1 AIA Further Expansion – November 2012

Appendix F: Statement Palaeontologist – December 2012
ToR Palaeontology – January 2012
Statement Palaeontologist – February 2012
Palaeontological Desktop Study – July 2010

Appendix G: Letter from VIA Specialist – 23 November 2012
ToR VIA – January 2012
Letter from VIA Specialist – 9 February 2012
Visual Impact Assessment – March 2011
CV Gerhard Griesel

Appendix H: Letter from Soil Specialist – 20 November 2012
ToR Agriculture – January 2012
Letter from the Specialist – 31 January 2012
Agricultural Impact Assessment – March 2011
CV C.R. Lubbe

Appendix I: Environmental Management Program (EMPr)

Appendix J: Permits DENC – Fauna & Flora

Appendix K: Proof of Submission of Shapefiles

Appendix L: Environmental Authorisation & Amendments

Appendix M: Rezoning Authorisation - Siyancuma Local Municipality
Water Use Authorisation – Siyancuma Local Municipality
SACAA Authorisation

Appendix N: SAHRA Final Comment

Appendix O: Title Deed Information

Appendix P: Curriculum Vitae – I.B. van Zyl / Company Profile of Van Zyl Environmental Consultants

Appendix A:

Site Plans

GIS Maps of Greefspan Study Area

- Figure 1: Locality Map
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Appendix B:

Site Layout Plan
Site Photographs dated 14 October 2017

Appendix C:

Fauna & Flora Studies

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Appendix G:

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ToR VIA – January 2012
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Visual Impact Assessment – March 2011
CV Gerhard Griesel

Appendix H:

Agricultural Impact Assessment

Letter from Agriculture/Soil Specialist – 20 November 2012
ToR Agriculture – January 2012
Letter from the Specialist – 31 January 2012
Agricultural Impact Assessment – March 2011
CV C.R. Lubbe

Appendix I:

Environmental Management Program

Appendix J:

Licence DAFF (Forestry) Removal of Protected Tree Permits DENC – Fauna & Flora

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