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SPATIAL & DEVELOPMENT PLANNERS & ECONOMISTS
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Head of the Department
Department Cooperative Governance and Traditional Affairs: Free State Province
Spatial Planning Directorate
PO Box 211
Bloemfontein
9300

For attention: Mr E Scott

Dear Sir

PHYSICAL PLANNING ACT, 1967 (ACT NO 88 OF 1967):

APPLICATION TO OBTAIN A PERMIT FOR THE **BOUNDARY** SOLAR ENERGY
FACILITY SITUATED ON AGRICULTURAL LAND IN THE FREE STATE

I refer to the meeting with Messrs E Scott (Department of Cooperative Governance and Development Planning (Cogta)), I Venter, J Engelbrecht and Ms N Ndmo (all three from the provincial Department of Agriculture) on 17 April 2014.

We are pleased to submit this application in terms of the Physical Planning Act, 1967 (Act 88 of 1967) for consideration of land use rights to construct a solar energy facility on a property in the Registration Division Boshof, Free State Province.

This application constitutes the following:

To obtain a permit for the Boundary Solar Energy Facility, (SEF) situated on agricultural land, in terms of the Physical Planning Act, 1967 (Act 88 of 1967).

The completed application form, i.e. Application for a permit to change the use of land in a controlled area in terms of Section 6 of the Physical Planning Act, 1967 (Act NO 88 of 1967), is attached as **Annexure 3**. The Power of Attorney is attached as **Annexure 1**.

If you have any questions or require clarity on any of the issues, please do not hesitate to contact me.

B P Rode Pr. Pln

Town and Regional Planner @ Rode & Associates (Pty) Ltd

June 2014

PHYSICAL PLANNING ACT, 1967

(ACT NO 88 OF 1967)

Permit application

Solar Energy Facility

Location

Farm Karreeboom 1716,

Registration Division Boshof, Free State

Applicant

Rodicon Trading and Investments (Pty) Ltd

Assisted by:

Rode & Associates

Date:

June 2014

Applicant:

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Contact person: Mr B Rode

Relevant department

Department Cooperative Governance and Traditional Affairs: Free State Province
Spatial Planning Directorate
PO Box 211
Bloemfontein
9300

Contact persons: Mr E Scott / Ms S van Heerden

Tel: 051 407 6816

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Please see comment below regarding '**Appendix B: Additional information required for the issuing of permits for renewable energy situated on agricultural land in the Free State**'.

1. Application form – see **Annexure 3**
2. Power of Attorney - see **Annexure 1**
3. Title Deed – see **Annexure 2**
4. Detailed motivation report – this document
5. NERSA recommendation – see **Annexures 17, 18, 19** and **20**; Eskom will not provide a binding commitment of any sorts until the project is awarded a preferred bidder status by the Department of Energy. The Cost Estimate Letter required for bid compliance is the only non-binding confirmation one receives from Eskom that clearly outlines the proposed technical grid connection solution and associated cost. This letter would be provided upon receipt
6. Geo-technical Report – see **Annexure 23**
7. Environmental Authorisation (EA) – the EA will be provided upon receipt
8. Services report – A Service Level Agreement (SLA) will be negotiated with the Tokologo Municipality; see **Annexures 21** and **22**
9. Flood line Study – see **Annexure 24**
10. Water licence – see **Annexure 24** and a qualified statement in this regard would be provided upon receipt, and
11. Site Development Plan – see **Annexure 4**.

Executive summary

Rodicon Trading and Investments (Pty) Ltd proposes the establishment of the Boundary Solar Energy Facility and associated onsite infrastructure approximately 15km east of Kimberley and 45km south-west of Boshof in the Free State Province¹.

The proposed 75MW solar energy facility will be constructed on a portion of a privately-owned property that borders on the provincial boundary between the Northern Cape and Free State Province. The property does not straddle this boundary and is located within the jurisdiction areas of the Tokologo Municipality and the Lejweleputswa District Municipality.

This renewable energy development complements and strengthens government objectives on renewable energy generation.

Project site and proposal

The preferred location for the **Boundary Solar Energy Facility** is on a property 'zoned' for agricultural use, viz. Farm Karreeboom No. 1716, in the Registration Division Boshof, Free State Province.

The solar energy facility is to be constructed on a portion, viz. about 260 ha in the western section (hereafter referred to as the project site) of the property which is 1584.23 ha in extent. The property straddles the R64, i.e. the regional road connecting Kimberley and Boshof, and is adjacent to the secondary road S141 (Rietpan road) that runs parallel to the south-western boundary. The segment of the property north of the R64 is bordered by the Camelot settlement that lies in the Northern Cape. The Eskom Boundary Substation, adjacent and to the south of the R64, is enveloped by the subject property and there are a number of essential service infrastructure elements present in the vicinity of the project site, including a number of existing Eskom power lines crossing the subject property. The project site is south-west of the Boundary Substation, south of the R64 and north-west of the secondary road with approximate central coordinates of 28° 44' 26.74" S and 24° 51' 22.01" E.

Rodicon Trading and Investments (Pty) Ltd has secured the use of the land through an option to enter into a long-term leasehold agreement.

The key components of the proposed solar energy facility include several arrays photovoltaic solar panels with a generating capacity of 75MW, appropriate mounting structures, cabling between the project components, to be laid underground where practical, a new on-site substation and overhead power line to evacuate the power from the facility to the Eskom grid at the adjacent Boundary Substation, internal access roads and fencing and workshop area for maintenance, storage, and offices.

Environmental Impact Assessment (EIA)

An environmental impact assessment in terms of the 2010 EIA Regulations R.543, R.544, R.545 and R.546 under the National Environmental Management Act, 1998 (Act No. 107 of 1998, with amendments) (NEMA), is in progress. The project has been registered with the National Department of Environmental Affairs under reference number 14/12/16/3/3/2/555.

¹ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

The study area of the environmental impact assessment is the entire property known as Farm Karreeboom, No 1716.

As part of the EIA process, registered Interested and Affected Parties were invited to review and provide comment on the final EIA Report. The Draft EIA Report was released for a 30-day public review period from 17 February 2014 – 18 March 2014. The comments received from I&APs have been captured within a Comments and Response Report. The Final EIA Report was made available for public review for an additional 21 days. Comments received from I&APs will be captured within a Comments and Response Report, for submission to the authorities for decision-making. The final EIA, as amended, was submitted to the national Department of Environmental Affairs on 10 April 2014.

In the context of a plethora of obligatory authorisations, and permitting and licensing requirements for a solar energy facility, we believe the environmental authorisation must pave the way for other decision-making milestones to be achieved. In this regard, we acknowledge that a decision on the land use would not be taken before the environmental authorisation has been issued.

Land use rights

The development proposal of a solar energy facility implies a non-conforming land use on agricultural land. Hence, as provided for in Section 6 of the Physical Planning Act, 1967 (Act 88 of 1967) a permit application is made to add the land use of renewable energy to the current 'zoning' of the property.

This permit application also includes the authorisation of all grid connection infrastructure to be located on the property.

In its role as the guardian of agricultural land, the national Department of Agriculture, Forestry and Fisheries has in the recent past, supported on merit and informed by relevant planning legislation, the use of land to accommodate renewable energy generation facilities. Please note that this permit application includes a leasehold agreement with the land-owner in respect of the whole of the land-owner's land. This long term lease will be notarially executed and registered against the property's title deed at the Deeds Office, for which ministerial approval in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970) is not required. In the context of this permit application, the authority of the national Department of Agriculture is that of a commenting authority in terms of Act 88 of 1967.

Site selection

The proposed project site (and subject property) is considered suitable and favourable for the construction of a solar PV facility from an environmental and technical perspective owing to, *inter alia*, the following site characteristics: climatic conditions, topographic conditions, extent of the site and close proximity to an existing Eskom substation. However, it is precisely at this planning level, i.e. site-specific that there is a vacuum in spatial guidelines regarding the desired land(landscape) configuration to include/exclude renewable energy as a land use. Hence, the responsibility is with the developer to source spatial and land use directives at local, regional and (even) provincial level. In this regard, renewable energy (solar) as a land use that is sensitively placed, is supported in the Tokologo Spatial Development Framework.

At a broader scale of spatial planning, i.e. provincial, the subject property is located within the solar and carbon credit area as demarcated in the Provincial Spatial Development Framework. We can also mention that the national Department of Environmental Affairs has appointed the CSIR to conduct a preliminary identification of focus areas best suited for the roll-out of wind and solar photovoltaic (PV) energy projects in South Africa. In this regard, the proposed Boundary Solar Energy Facility falls within the identified focus areas most suitable for the roll-out of the development of solar energy projects within the Free State Province. Hence, we believe the proposed development is compatible with the already 'scarred' rural landscape and conforms to past and current land-use conversion initiatives in the area, i.e. agricultural land to be used for renewable energy generation. In this regard, the proposed development will be a continuation of on-site and surrounding land uses.

Solar energy facility layout

Through the EIA process which included input from various stakeholders and specialists, a number of issues relating to the design and layout of the Boundary Solar Energy Facility have been identified and considered. This has led to a number of layout alternatives in order to balance the technical and financial objectives of maximising the output of the proposed facility with the critical environmental and social constraints.

It is important to note that the layout provided for the purposes of this application may be subject to amendment as determined by the Environmental Authorization (EA) under the NEMA legislation. In this regard, an iteration process is inevitably part of the permit application.

Benefits of the proposed development

The Boundary Solar Energy Facility is proposed as part of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The REIPPPP initiative is intended to promote the use of renewable energy. In addition to the electricity-related benefits, the development of a solar energy facility contributes to other benefits, e.g. employment creation and income generation.

This project can serve as an example of how solar energy can be generated through economically viable means and fed into the national grid. The project might also encourage investment in more such projects. There would be employment opportunities during the construction phase and operational phase of the project. Indirect and induced jobs would also result.

Development parameters

We believe that this kind of renewable energy facility is complex in application and requires specialist knowledge and insight to best determine and adjudicate build and operational restrictions/parameters.

Desirability

Even within the context of pre-determined targets and time-frames, the assessment of renewable energy generation initiatives demands of Government a wider than normal perspective on long-term structural changes, e.g. climate change, energy security and other shifts. Impacts are certain to happen. Planners must become aware of the need to take a broader look at spatial planning and land use management. However, in the end, much will depend on the way authorities address the sometimes conflicting goals of biodiversity conservation,

renewable energy generation, economic growth, poverty alleviation, land reform and food security.

The proposed development will be the continuation of existing site-specific and surrounding land uses. In this regard, it is foreseen that the impact on on-site and adjacent land use as a result of the proposed solar energy facility, is very low if mitigating measures are applied. When applying the principles of economy of scale and highest and best use of land, the rationale for renewable energy on the site becomes clear. In this regard, the proposed development blends with the particular type of land(scape), promotes the (better) economic use of land and conforms to the outcome of socio-political interaction.

Section I – Preamble

1. Introduction

Current national policy and implementation regarding renewable energy, provides for an unprecedented optimism amongst investors and the public alike, concerning the Government's commitment towards finding and supporting credible solutions. However, the target-setting for renewable energy output was not accompanied by guidelines on the preferred geographical distribution of the to-be-constructed power-generating facilities. In order to address this inefficiency, the national Department of Environmental Affairs has recently started to identify geographical areas best suited for the roll-out of wind and solar PV energy projects and the supporting electricity grid network, i.e. to complete a Strategic Environmental Assessment. Even so, it seems that the emphasis on sustainable resource use was not supported by performance criteria on prioritising territorial investments. It is now up to each investor to source spatial directives for preferred locations at local and regional (and sometimes provincial) level through spatial planning, land use management and environmental processes.

In this regard, Rodicon Trading and Investments (Pty) Ltd proposes the establishment of the Boundary Solar Energy Facility and associated onsite infrastructure approximately 15km east of Kimberley and 45km south-west of Boshof in the Free State Province². It is proposed that a 75MW solar energy facility be constructed on a portion, viz. the western section of a privately-owned property that borders the provincial boundary between the Northern Cape and Free State Province. The subject property does not straddle this boundary and is located within the jurisdiction areas of the Tokologo Municipality and the Lejweleputswa District Municipality.

2. Project proponent

Ventusa Energy (Pty) Ltd is a project developer in the renewable energy space that to date, has secured three preferred bidder projects – two solar PV projects and one wind energy project. The intention is to submit a bid for the proposed 75 MW Boundary Solar Energy Facility during Round 4 of the national Department of Energy's Renewable Energy Independent Power Producer Procurement Programme, currently communicated as being 18 August 2014.

3. Development proposal

The preferred location for the solar energy facility involves one property known as Farm Karreeboom No 1716, in the Registration Division Boshof, Free State Province. This property is 1584.23ha in extent and the proposed Boundary Solar Energy Facility occupies only a portion thereof, i.e. 260 ha.

² Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

The subject property straddles the R64, i.e. the regional road connecting Kimberley and Boshof, and is adjacent to the secondary road S141 (Rietpan road) that runs parallel to the south-western boundary. The segment of the property north of the R64 is bordered, to the west, by the Camelot settlement that lies in the Northern Cape. The Eskom Boundary Substation, adjacent and to the south of the R64, is enveloped by the subject property and there are a number of essential service infrastructure elements present in the vicinity of the project site, including a number of existing Eskom power lines crossing the subject property.

The preferred on-site location of the facility is a portion, viz. the western section of the property known as Farm Karreeboom No. 1716. The project site with an approximate development footprint of 260 ha³, is south-west of the Boundary Substation, south of the R64 and north-west of the secondary road. The approximate central coordinates of the project site are 28° 44' 26.74" S and 24° 51' 22.01" E (see **Figure 1**).

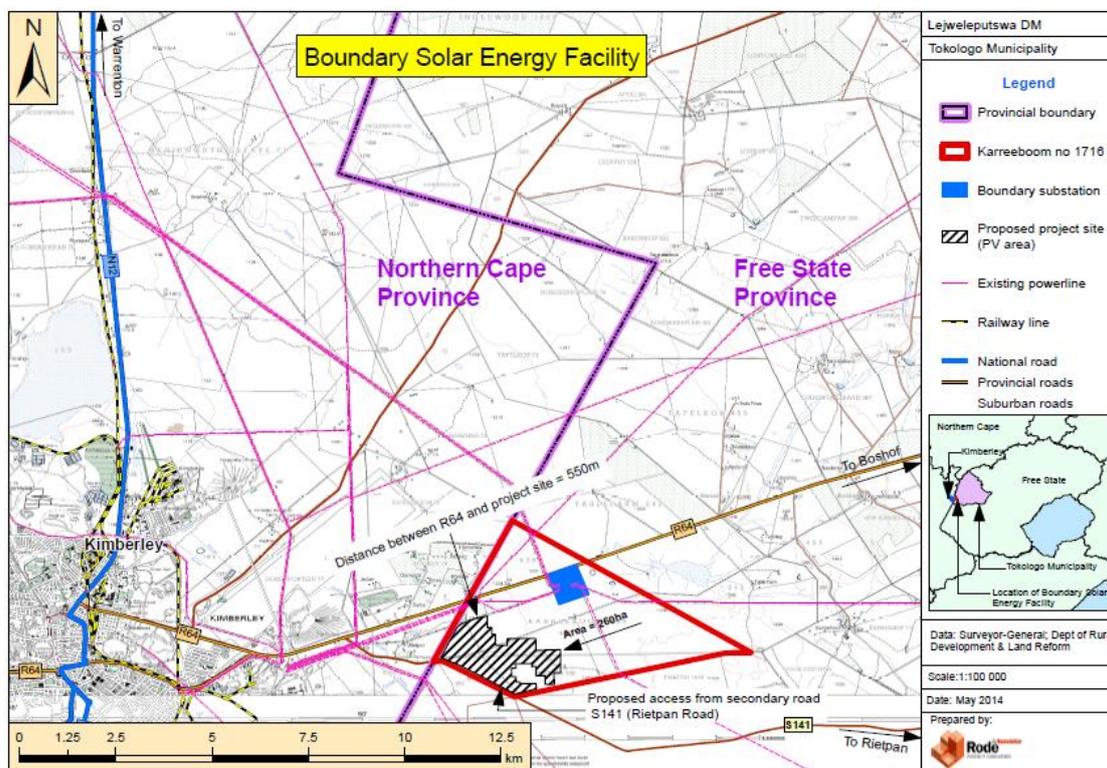


Figure 1: Locality map

Figure 2 depicts the preferred layout (also see **Annexures 4** and **5**). The location of the to-be-disturbed area was chosen to balance the technical and financial objectives of maximising the output of the proposed facility with the critical environmental and social constraints.

The proposed Boundary Solar Energy Facility includes several arrays photovoltaic solar panels with a generating capacity of 75MW, appropriate mounting structures, cabling between the project components, to be laid underground where practical, a new on-site substation and overhead power line to evacuate the power from the facility to the Eskom grid at the adjacent Boundary Substation, internal access roads and fencing and workshop area for

³ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

maintenance, storage, and offices. The generated capacity of renewable energy would be fed into the national transmission grid.

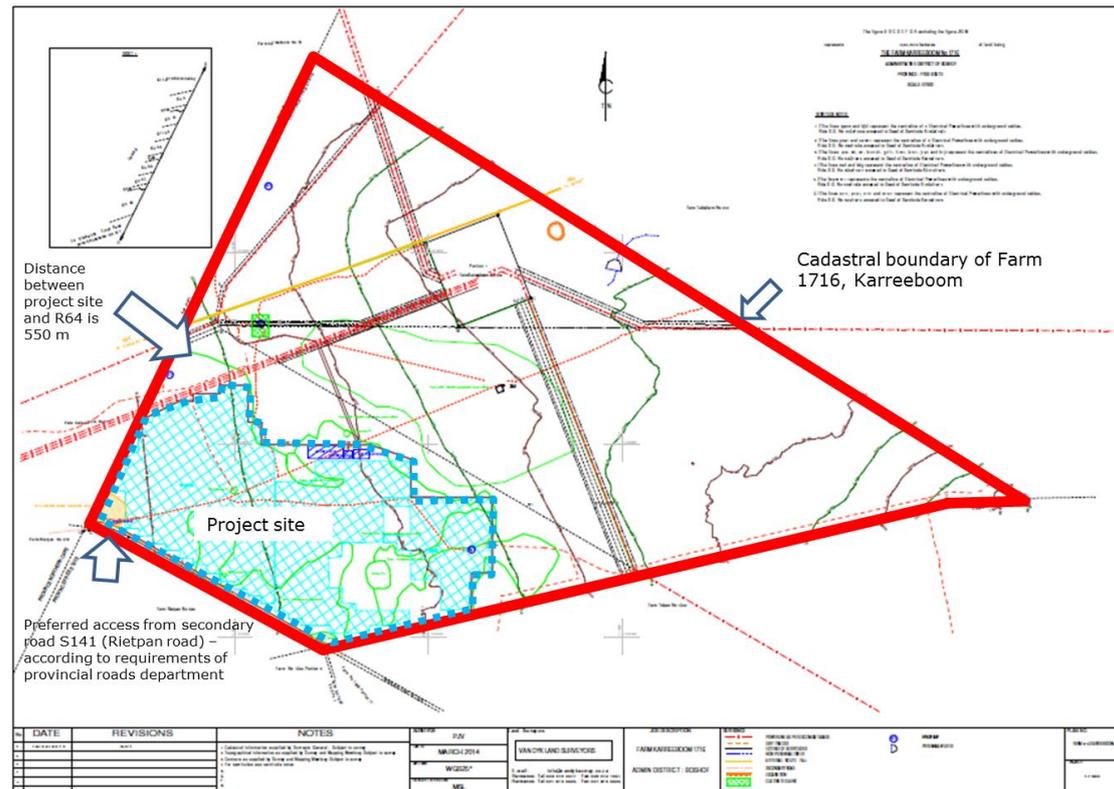


Figure 2: Layout of Boundary Solar Energy Facility

The technical detail of the Boundary Solar Energy Facility is listed below⁴:

Table 1: Technical detail of the Boundary Solar Energy Facility

Component	Description/ Dimensions
Extent of the proposed development footprint	~ 260ha
Extent of site available for development	~1626 ha
Site access	Site can be accessed via the Rietpan road running south-west of the site boundary or alternatively directly off the R64 regional road between Kimberley and Boshof (also see Figure 6)
Generating capacity	75 MW
Proposed technology	Ground-mounted photovoltaic panels utilising static or tracking technology
Cabling	Cabling between the projects components is to be laid underground between 2 – 4 meters deep where practical.
Panel Spec (installed capacity)	86.25 MW
Panel Dimensions	± 1m x 2m
Number of Panels	± 350 000
Number of inverters and Height	± 60 inverter stations/mini substations at a height of ± 3m
Main Transformer capacity	Varies according to detailed design and client requirement, 1 x 80 MVA transformation capacity is typical
Final Height of installed panels from ground level	3.5m
Width and length of internal roads	Width: ~5 m Length: 5000m
Construction camp &	Associated buildings including a workshop area for maintenance, storage,

⁴ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

laydown area	and control facility with basic services such as water and electricity (approximate footprint (\pm 200m x 150m)
Substation	A new 132 kV on-site substation (120m X 70m in extent) to evacuate the power from the facility into the Eskom grid
Power line connection	» Servitude width – 32 m » Servitude length – 1700m » Height of towers – 31-40m
Mounting Structure	Mounting structure (up to 3.5m in height) to be either rammed steel piles or piles with premanufactured concrete footings, ground screws to support the PV panels
Services required	» Sewage and Refuse material disposal – all sewage and refuse material generated during the establishment of the proposed site will be collected by a contractor and is to be disposed of at a licensed waste disposal site » Water and electricity – water will be obtained from the municipality or a licence will be obtained from DWA for extracting water from local boreholes. Electricity will be generated from generators for any electrical work on site.
Infilling or depositing material	Any infilling material that may be required for project development will be obtained from: » Option 1: Cut and fill material from construction activities on the site (i.e. from the Farm Karreeboom 1716). » Option 2: Material from existing borrow pits on site (i.e. from the Farm Karreeboom 1716). » Option 3: Contractor to source suitable grade material from an approved/registered borrow pit in the broader Kimberley region. Any excess/spoil material will be disposed of at a licensed landfill site.

4. Renewable energy rationale

Although the South African economy — founded upon and maintained by the burning of fossil fuels — grew by an average of 3.8 per cent a year between 1994 to 2008, we are confronted with, *inter alia*, an ever-increasing unemployment rate, continued reliance on fossil fuel and the need for social infrastructure, e.g. housing. The ability of Government to meet these economic, environmental and social challenges is, at best, allaying imminent fears of non-delivery but in the face of widening inequalities and construction of more fossil-fuel power stations. It is stated by many international stakeholders as well as the South African Government that by including extensive renewable energy technologies in our power mix, great opportunities are offered for local job creation and for making the best use of our natural resource base.⁵ Government's response through well documented policy frameworks is appropriately focused and in doing so, Government honours international commitments, ambitions and reporting initiatives, e.g. Millennium Development Goals.

One of the national development indicators is to reduce greenhouse gas emissions in line with international protocols. It is stated that South Africa's greenhouse gas emissions have been increasing along with higher economic growth. South Africa's greenhouse gas emissions per capita are similar to those of industrialised countries: 11 tonnes a person a year; this is partly because of SA's strong reliance on coal. To be carbon neutral by 2050, emissions in South Africa need to be one tonne per person per annum. Long-term mitigation scenario projections suggest that this trend may continue for the next few decades if there are no massive interventions.

Quoting from a publication⁶ it becomes clear that the opportune time for considering renewables as energy resource is now: "Never in the history of humankind has a single generation been handed the responsibility and

⁵ WWF, Review, 2010: 50% by 2030, Renewable energy in a just transition to sustainable electricity supply, 2010.

⁶ WWF, Review, 2010. *op.cit.*

opportunity to so dramatically change course, to evolve the way we work and live in ways that will wrest our fragile planet, and all who depend upon her, from certain disaster. The changes we can and need to make in breaking our addiction to fossil fuels will carry benefits well beyond averting a climate catastrophe. Prioritising renewable energy will boost jobs, stimulate local industry, enable increased access to modern energy services through decentralised development and, in the long term, provide us with electricity at a cheaper rate”.

Procurement of independent power producers

Government’s Integrated Resource Plan (IRP2010), approved on 17 March 2011, proposes that about 3 800 MW of wind energy be introduced into South Africa's power generation system by 2019. It further proposes that an additional 7 200 MW of renewable energies (wind, solar, landfill and biomass) be brought on stream between 2020 and 2030. The Department of Energy hopes that 30% of energy will come from renewable sources by 2025.

However, since the promulgation of the Integrated Resource Plan (IRP) 2010-30 there have been a number of developments in the energy sector in South and Southern Africa. In addition, the electricity demand outlook has changed markedly from that expected in 2010. This notwithstanding, one of the recommendations in the updated IRP⁷ for the next two to three years, is to continue with the current renewable bid programme with additional annual rounds (of 1000 MW PV capacity; 1000 MW wind capacity and 200 MW CSP capacity), with the potential for small hydro and land-fill gas at competitive rates.

The national Department of Energy (DoE) will make allocations to preferred bidders as part of the REIPPPP across a total of 5 bidding windows. The first bidding window closed on 4 November 2011 and resulted in the allocation of 633.9 MW (representing 34.3% of the total wind energy allocation) across a total of 8 wind energy projects; while the second bidding window which closed on 5 March 2012 resulted in the allocation of a further 562.5 MW (representing 30.4% of the total wind energy allocation) across a total of 7 wind energy projects.

In the third bidding window, i.e. August 2013, an exceptionally high number of submissions were received from industry players in the solar, wind, biomass and landfill gas industries vying for the much sought after preferred bidder status. A total of 93 bids, representing 6032 MW of potential capacity, were received by the August 2013 submission date. However, the available megawatts for allocation for the third bid submission round were only 1165 MW and only 17 preferred bidders were selected. These preferred bidders had a collective installed capacity of 1 471.5 MW. The combined allocation was shared between seven onshore wind bidders (787 MW), six solar photovoltaic (PV) projects (450 MW), a 16.5 MW biomass project, a 18 MW landfill-gas bidder and two concentrated solar power (CSP) bidders (200 MW).

The fourth bid submission date is 18 August 2014 and it is the intention of Rodicon Trading and Investments (Pty) Ltd to enter the Boundary Solar Energy Facility in this bidding window. Please note that the possession of land use rights for a proposed renewable energy project is not a gate-keeping criterion for the next round of procurement. However, the possession of the land use approval is a pre-requisite for financial close, once the project has been selected as Preferred Bidder.

⁷ http://www.doe-irp.co.za/content/IRP2010_updatea.pdf, viewed on 25 May 2014.

5. Objectives

The objective of this application is to obtain a permit in terms of the Physical Planning Act, 1967 (Act 88 of 1967) for the Boundary Solar Energy Facility, situated on the property known as Farm Karreeboom No 1716 and now mainly used for agricultural.

Two 'application' forms were considered as part of the permit application, i.e. Application for a permit to change the use of and in a controlled area, Section 6 of the Physical Planning Act, 1967 (Act 88 of 1967) and Appendix B: Additional information required in terms of the Physical Planning Act, 1967 (Act 88 of 1967), for the issuing of permits for renewable energy situated on agricultural land in the Free State (solar power, wind and hydro-electricity). The completed permit application form is attached as **Annexure 3**.

The **subdivision** of the land unit is not considered.

This document must also serve as **information document** for Interested and Affected Parties.

Project description

The proposed Boundary Solar Energy Facility would be located on Farm Karreeboom No 1716 with the preferred on-site location, viz. the western section of the property south of the R64. The facility would include several arrays photovoltaic solar panels with a generating capacity of 75MW, appropriate mounting structures, cabling between the project components, to be lain underground where practical, a new on-site substation and overhead power line to evacuate the power from the facility to the Eskom grid at the adjacent Boundary Substation, internal access roads and fencing and workshop area for maintenance, storage, and offices. The generated capacity of renewable energy would be fed into the national transmission grid.

6. Preparatory work

Rode & Associates was appointed on 18 March 2014, to compile and submit a permit application in terms of Physical Planning Act, 1967 (Act 88 of 1967) to the relevant authority.

As service provider for Ventusa Energy (Pty) Ltd, Mr Rode completed a site visit on 16 April 2014. He also consulted with Mr Nthuse (Tokologo Municipality) on the same day and with Ms S van Heerden and Mr E Scott (both from the Department of Cooperative Governance and Development Planning (Cogta)), Messrs I Venter and J Engelbrecht and Ms N Ndmo (all three from the provincial Department of Agriculture) on 17 April 2014. In this regard, the outcomes of the meeting can be summarised as follows:

- The applicable planning legislation, viz. Physical Planning Act, 1967 (Act 88 of 1967) would dictate the application regarding land use rights on the property; please note that the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) could influence the Act 88 of 1967 process as described;

however, it was agreed that the application process would be in terms of Act 88 of 1967 despite a change in regulations from 1 September 2014 onwards

- The application would be to obtain land use rights for the use of agricultural land to construct a solar energy facility and to generate 75MW of electricity
- That the public participation process be completed by the Department of Cooperative Governance and Traditional Affairs, Free State Province; this process will include Cogta requesting comment on the permit application from Interested and Affected Parties (I&APs), as identified by them, with the provincial Department of Agriculture regarded as an important I&AP
- That the permit application could be submitted (and processed) without the Environmental Authorisation (EA), but the approved EA was to be provided to Cogta before any report would be forwarded to the MEC, i.e. to consider the issuing of the permit
- That the permit would be considered for a solar energy facility on a specific development footprint, and only for 25 years
- That the eventual provincial decision regarding the permit application could include the following suspensive conditions:
 - That the applicant obtain all legislative authorisations required to construct and operate the proposed Renewable Energy Facility, before commencement of the project, and
 - That approval of building plans can only be considered (and approved) by the relevant local authority.

7. Fees

It was indicated that the permit application is not subject to the payment of any fees.⁸

8. Advertising process

Mr Rode was informed that public participation could entail the following:

- Obtain comment from Interested and Affected Parties
- Place advertisements in the media, and
- Notify adjacent property owners of the submitted application.

It was agreed that the Department of Cooperative Governance and Traditional Affairs would be responsible for notifying (and advertising) this application as required.

9. Report structure

This report is structured to firstly introduce the application process as well as the development proposal in the context of a rationale for renewable energy. Section II then describes the legal framework and Section III the spatial directives as parameters for the establishment of the renewable energy facility. Section IV refers to the NEMA application. Sections V and VI interpret the receiving environment and provide detailed specifics of the development proposal.

⁸ Discussion with Ms van Heerden on 17 April 2014.

Section VII provides information about the public participation process and we conclude, in Section VIII, by providing clarity on the wording of the land use change and desirability. Section IX includes reference to the annexures.

10. List of tables and figures

- Table 1: Technical detail of the Boundary Solar Energy Facility
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Section II – Legislative and development framework

11. Land use legislation

11.1 Physical Planning Act, 1967 (Act 88 of 1967)⁹

The development proposal of a solar energy facility implies a non-conforming land use on agricultural land. Hence, as provided for in Section 8 (1)(a)(iii) of the Physical Planning Act, 1967 (Act 88 of 1967) a permit application is made for the land use of renewable energy in an area mainly used for agriculture. This permit application includes the authorisation of the use of land for all grid connection infrastructure located on the property.

Unfortunately, there is not a national directive regarding a standard procedure and land-use category to make possible the development of commercial solar energy facilities. Hence, this application has been structured according to provincial directives and local consultation. In this regard, it was mentioned that the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) could influence the Act 88 of 1967 process, but it was agreed that the permit application process would be completed in terms of Act 88 of 1967 despite a change in regulations from 1 September 2014, onwards.

In its role as the guardian of agricultural land, the national Department of Agriculture, Forestry and Fisheries has in the recent past, supported on merit and informed by relevant planning legislation, the use of land to accommodate renewable energy generation facilities. Please note that this permit application includes the option for a leasehold agreement with the land-owner in respect of the whole of the land-owner's land. This long-term lease will be notarially executed and registered against the property's title deed at the Deeds Office, for which ministerial approval in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970) is not required. In the context of this permit application, the authority of the national Department of Agriculture is that of a commenting authority in terms of Act 88 of 1967.

11. Land use legislation (continued)

11.2 Other relevant legislation (in the context of this application)

National Spatial Development Perspective, 2006

The purpose of the National Spatial Development Perspective (NSDP) is, *inter alia*, to focus Government and the private sector on investments that will have the maximum social and economic impact and address spatial integration. This is in line with a spatial development vision that supports Government's growth and development objectives. One clear directive is to foster local development on the basis of local potential.

Development Facilitation Act, 1995

⁹ Meeting with Messrs E Scott (Department of Cooperative Governance and Development Planning (Cogta)), I Venter, J Engelbrecht and Ms N Ndmo (all three from the provincial Department of Agriculture) on 17 April 2014.

The Development Facilitation Act (DFA) introduced the following general principles that apply specifically to land development in that the policy, administrative practice and laws should:

- Promote the integration of the social, economic, institutional and physical aspects of land development;
- Promote integrated land development in rural and urban areas in support of each other;
- Promote the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimise the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Promote a diverse combination of land uses, also at the level of individual erven or subdivisions of land;
- Discourage the phenomenon of "urban sprawl" in urban areas and contribute to the development of more compact towns and cities;
- Contribute to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs; and
- Encourage environmentally sustainable land development practices and processes.

Land Use Management Bill, 2001

The main objective of this Bill is to provide a legislative and policy framework that enables local government to formulate policies, plans and strategies for land use and development in order to address spatial, economic, social and environmental issues. It attempts to provide uniform land use management in the Republic of South Africa.

The Land Use Bill is based on the general principle that spatial planning, land use management and land development must:

- Be environmentally friendly
- Enhance equality
- Be efficient
- Be integrated, and
- Be based on fair and good governance.

Spatial Planning and Land Use Management Act, 2013

The new Spatial Planning and Land Use Management Act (SPLUMA) was enacted in 2013 and certain sections of the Act will come into operation this year. SPLUMA is a framework Act for all spatial planning and land use management legislation in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in this field. The biggest point of departure from older planning legislation, is that municipalities will be solely responsible for processing and dealing with land use applications and the appeals relating thereto. It is also envisaged that municipalities will establish Municipal Planning Tribunals to decide on cases, with the Municipal Council dealing with appeals on decisions made by the Municipal Planning Tribunal.

National Environmental Management Act, 1998 (Act 107 of 1998)

See **Section IV** (Environmental impact assessment) for the status of the NEMA application.

National Heritage Resource Act, 1999 (Act 25 of 1999)

To be considered in the EIA process.

12. Policy guidelines 12.1 National, provincial and district

National

National Government's New Growth Path¹⁰

The New Growth Path (NGP) reflects Government's commitment to prioritising employment creation in all economic policies and lays out strategies to enable South Africa to grow in a more equitable and inclusive manner in the future, fulfilling the promise of our democracy.

The centrepiece of the NGP is a massive investment in infrastructure and people through skills development, together with smart government and better coordination with the private sector and organised labour so that we can achieve our national goals. Infrastructure development is identified as a critical driver of jobs across the economy. The document identifies investments in five key physical and social infrastructure areas, namely **energy**, transport, communication, water and housing. The sustaining of high levels of public investment in these areas would create jobs in construction, operation and maintenance of infrastructure.

The green economy is one area for which the NGP sets out an ambitious programme to create jobs, through a series of partnerships between the state and the private sector. This includes expansions in construction and the production of technologies for solar, wind and biofuels that is supported by the draft plan for electricity (IRP 2010). Clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

The document recognises the need for a coordinated set of actions across a broad front and identifies a "development package" consisting of macroeconomic strategies, microeconomic measures and stakeholder commitments to drive employment and economic growth.

These actions include, *inter alia*, the following:

- A broad pact between business, labour and the government aimed at fostering employment creation whilst enhancing competitiveness and social equity and development goals
- Measures to strengthen the capacity of the state and enhance the performance of the private sector to achieve the employment and growth goals, e.g. slashing unnecessary red tape, improving competition in the economy and stepping up skills development, and
- Enhancing rural employment through the finalisation of a spatial perspective that sets out the opportunities available and the choices that we must make in order to lay the basis for aligning government spending,

¹⁰ <http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page71654?>, viewed on 20 March 2012.

infrastructure and housing investment and economic development initiatives.

National Development Plan

The National Development Plan (NDP) is a wide-ranging document that hopes to set the tone for government thinking over the next two decades.

In the context of renewable energy, it is unclear how the NDP will relate to the New Growth Path, the industrial policy action plan, the electricity expansion plan / integrated resource plan or IRP 2010 and other plans.¹¹ A major concern is that the NDP does not take seriously the limits to growth and only parts of the NDP follow sustainability thinking and redefine development.¹²

In terms of immediate action, the NDP does not mention the flagship programmes of the White Paper¹³ but includes some concrete targets – notably 20 GW of renewables by 2030.¹⁴ It is believed that greater specifics on how 20 000 MW will be implemented would be important – and this can build significantly on existing initiatives such as the renewable energy independent power producers programme and the South African Renewables Initiative.

Integrated Resource Plan for Electricity, 2010 Revision 2¹⁵

The primary objective of the Integrated Resource Plan (IRP 2010) is to determine the long-term electricity demand and to detail how this demand should be met in terms of generating capacity, type, timing and cost. However, the IRP 2010 also serves as input to other planning functions, *inter alia* economic development, funding, environmental and social policy formulation.

The plan supports a GDP growth trajectory of on average 4.6% over the next 20 years. It requires 52248 MW of new capacity in order to meet the projected demand and to provide adequate reserves.

Given the rapid changes in generation technologies and pricing, especially for “clean” energy sources, the IRP will have to be reviewed on a regular basis, for instance every two years, in order to ensure that South Africa takes advantage of cutting-edge technologies as they emerge. This may result in adjustments to the energy mix set out in the balanced revised scenario within the target for total system capacity. In this regard, the IRP was open to comment as part of a draft update, due for closure on 7 February 2014 and submission by March 2014, and has downgraded the projected reliance on nuclear, coal and wind technologies while increasing solar photovoltaic (PV) and gas.¹⁶

Please note that there has been a downward revision of electricity capacity required in South Africa by 2030 as stated by the integrated resource plan update released by the country’s department of energy. It has projected a downward revision in demand from 454 TWh in 2030 used in the original Integrated Resource Plan (IRP2010) to a range of 345 TWh to 416 TWh. This translates into 6,600 MW less capacity required, based on the upper range of this prediction.

¹¹ University of Cape Town, Initial comments on the National Development Plan 2011, February 2012.

¹² *ibid.*

¹³ National Climate Change Response White Paper

¹⁴ *ibid.*

¹⁵ Department of Energy, *Executive Summary of the Draft Integrated Electricity Resource Plan for South Africa - 2010 to 2030*, 22 October 2010.

¹⁶ <http://www.esi-africa.com/south-africas-integrated-resource-plan-irp-needs-a-smarter-grid/>, viewed on 3 March 2014.

This assumes the achievement of South Africa's aspirational economic growth rate of 5.4% a year based on its National Development Plan.¹⁷ In this regard, one of the recommendations in the updated IRP¹⁸ for the next two to three years, is to continue with the current renewable bid programme with additional annual rounds (of 1000 MW PV capacity; 1000 MW wind capacity and 200 MW CSP capacity), with the potential for small hydro and land-fill gas at competitive rates.

The Presidency's strategic national plan

The national strategic plan that was developed by the Presidency as a response to the national strategic agenda 2009-2014, includes a set of **12 outcomes**. These outcomes reflect the desired development impacts Government seeks to achieve, given Government's strategic priorities. Each outcome is clearly articulated in terms of measurable outputs and key activities to achieve the outputs.

In this context two outcomes are of particular relevance to renewable energy generation, namely:

- Outcome 4: Decent employment through inclusive economic growth — this includes growth and development of the green economy, and
- Outcome 6: An efficient, competitive and responsive economic infrastructure network — with a key output to ensure reliable generation, distribution and transmission of electricity.

Provincial

Free State Growth and Development Strategy, Free State Vision 2030¹⁹

The FSGDS is guided by the national policy thrusts identified for the millennium. It seeks to achieve balanced development of economic sectors and spatial localities in accordance with the needs and aspirations of the people. It is also aimed at targeted investments in the province, with the aim of offering opportunities to the people in skills development, employment and the improved quality of life. Based on the social and economic development challenges of the province, the Free State province has identified the following as primary development objectives:

- Stimulate economic development
- Develop and enhance infrastructure for economic growth and social development.
- Reduce poverty through human and social development
- Stimulate economic development.
- Ensure a safe and secure environment for all people of the province
- Promote effective and efficient governance and administration

It is stated that three environmental concerns need to be addressed in the Free State, i.e. water availability and quality, climate change and its expected effects, and land use and biodiversity conservation. In the context of mitigating the causes and effects of climate change, it is proposed to adopt and integrate alternative energy approaches (solar, wind, hydro and biofuels) to reduce the carbon footprint of the Province's energy requirements. In addition it is stated that the landscape of the province allows massive opportunities for the harvesting

¹⁷ <http://www.esi-africa.com/south-africas-irp-update-adds-flexibility/>, viewed on 5 March 2014.

¹⁸ http://www.doe-irp.co.za/content/IRP2010_updateea.pdf, viewed on 25 May 2014.

¹⁹ Draft Provincial Growth and Development Strategy, Free State Vision 2030, May 2012.

of solar energy, which could be used for household consumption and use in facilities such as schools and clinics.

Local

Lejweleputswa District Municipality Integrated Development Plan²⁰

The LDM IDP is informed by and aligned with the Free State Provincial Growth and Development Strategy (FSGDS) and other governmental programmes and policies. In this regard the FSGDS identified four key priority areas, two of which are relevant to the proposed solar energy facility project, namely:

- Economic development, employment and investment, and
- Social and Human Development.

The IDP identifies a number of priority areas, of which the following are regarded as relevant:

- Local Economic Development, and
- Basic Service Delivery and Infrastructure Investment.

The proposed solar energy facility will contribute towards the above-mentioned priority areas through local economic upliftment and job creation.

Tokologo Local Municipality Integrated Development Plan 2014/2015

Tokologo Local Municipality (TLM) has always upheld the principles of sustainable development. The vision for the TLM is "a progressive municipality, which through co-operative governance, creates conditions for economic growth and social development and meets the basic needs of the community and improves the quality of life of all residents".

A Community Needs Assessment undertaken as part of the IDP revision, lists a number of needs that are relevant to the proposed project, including job-creation, up-grading of community facilities and infrastructure, support for local economic development and SMMEs, and bursaries for learners. The need to protect the natural environment is also identified as a key objective in the IDP. The IDP also notes that the bulk electrical network in the TLM is well established. However, development has been hampered by the quality/ stability of the supply.

13. Investment directives

The Free State, South Africa's most centrally situated province, borders on six of the eight other provinces in South Africa and also shares a border with Lesotho. The province is actively driving new investments and job creation initiatives through its economic development agency, the Free State Development Corporation (FDC).²¹ In this regard, the FDC is keen to find investors in the renewable energy sector.

Investment priorities

²⁰ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

²¹ <http://www.neweuropeaneconomy.com/home-mainmenu-51/fdi-mainmenu-59/589-invest-in-the-heart-of-south-africa-the-free-state-province>, viewed on 14 April 2014.

South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has, to date, attracted over R150bn in foreign direct investment.²² Investment in renewable energy is important to add to the current energy supply in South Africa.²³ In this regard, the provincial government has approved, *inter alia*, the Xhariep Solar Energy Park solar farming project to harness the high solar energy index of the Xhariep district in the south of the province for large-scale solar farms to feed into the national power grid and to position it for other solar technologies. Another project that has been approved is the 66MW Boshof Solar Energy Facility. Hence, investors are now positioning themselves to make the most of the Free State's consistently sunny climate.

In March 2012, the MEC of DETEA in the Free State stated that *we will strive to ensure an increasing bias towards the 'Green Economy Everything' we must reduce our carbon footprint and be environmentally sustainable.....To this end, we are engaging with various independent power producers particularly in relation to renewable energy technology.*

Investment geography

In the context of this application, spatial guidelines directing investment should be provided in the Free State Spatial Development Framework and/or local policy directives. See **Section 17** for a more detailed discussion in this regard.

14. Project response

We structure our response to the section on the regulatory environment by firstly addressing the national and provincial objectives regarding renewable energy generation and secondly the land use management issue. In **§18** we deal with the regional and local site selection criteria.

We believe that the proposed project promotes and supports all relevant legislative requirements, policy guidelines and development objectives/targets as formulated by the government in respect of renewable energy generation. There is a high level of support for these directives in local policy. However, this support has only partially been transformed into guidelines to direct local investment, development and spatial preferences. As such, we believe that the area to the east of Kimberley, lends itself to renewable energy generation.

Land is a finite resource and the way it is used is one of the principal drivers of environmental change, with significant impacts on quality of life and ecosystems as well as on the management of infrastructure.²⁴ The use of land is influenced by a number of important drivers, *inter alia*, demography, economic development, resource availability, environmental conditions, development costs, transport infrastructure and regional and local planning policies. In this regard, land users and/or owners, continually decide on the quantum, quality and location of space required to meet, *inter alia*, specific (economic) objectives. Government's goals and regulatory mechanisms also influence the incentive to develop or use land, i.e target-setting for biodiversity conservation, land reform, renewable energy generation, economic growth and poverty alleviation.

²² <http://www.news24.com/Green/News/SA-renewable-energy-attracts-investment-20131104>.

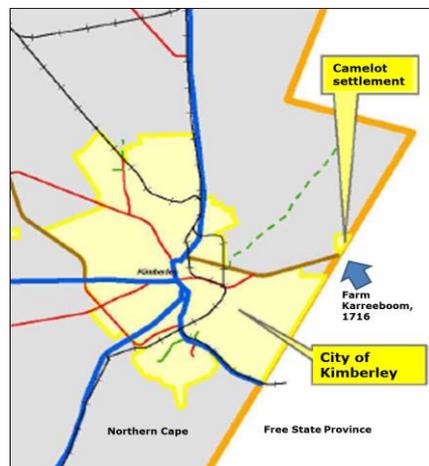
²³ <http://www.neweuropeaneconomy.com/home-mainmenu-51/fdi-mainmenu-59/589-invest-in-the-heart-of-south-africa-the-free-state-province>, viewed on 14 April 2014.

²⁴ <http://www.eea.europa.eu/highlights/data-and-maps/indicators/land-take-2/assessment#toc-4>

Each one of the mentioned drivers (and targets) merits detailed research and analysis but in the interests of brevity, we discuss only some of them as well as the land-use denominator of highest and best use²⁵. We have already referred to the need for more detailed regional and local planning directives to guide decision-making regarding the further inclusion and/or exclusion of renewable energy facilities into the (rural) landscape. In this regard, the proposed development will be the continuation of an existing land use. Hence, we believe the proposed development is compatible with the already 'scarred' rural landscape and conforms to past and current land-use conversion initiatives in the area, i.e. agricultural land to be used for renewable energy generation. It is foreseen that the impact on on-site and adjacent land use as a result of the proposed solar energy facility, would be very low if mitigating measures were to be applied.

It is known that land uses generally conform to a regular, predictable pattern and that the conversion of land use reflects changing relations / configurations within, *inter alia*, a rural setting. This locational condition ensures the highest and best use of land. The current highest and best use for large tracts of (rural) land in the area east of Kimberley, is extensive agriculture. Please note that a change in one or more of the mentioned drivers, e.g. economic and environmental conditions, can put an end to or dampen the use of extensive agriculture; signifying a volatile (economic) situation. Hence, current economic (as well as environmental) conditions and investment priorities point to alternative investment opportunities, i.e. electricity generating infrastructure as highest and best use of certain land parcels in this region; also because of urban energy demands. Furthermore, the closeness of the subject property to Kimberley ensures the availability of excellent road infrastructure. This would benefit the establishment of a renewable energy facility that has specific transport requirements.

We also refer to the anomaly regarding spatial planning for the areas to the west (Greater Kimberley) and east (hinterland of Kimberley) of the provincial boundary (see map opposite). In this regard, the boundary serves as a planning barrier in that the Sol Plaatje Municipality Spatial Development Framework does not consider the hinterland to the east of the boundary. For example, the spatially demarcated settlement areas of Kimberley and Camelot, both located in the Northern Cape, border the subject property to the west, but there is no reference in the Sol Plaatje Spatial Development Framework, to connectivity, linkages and/or future land use of the areas on the other side of the administrative boundary.



This notwithstanding, when applying the principles of economy of scale and highest and best use of land, the rationale for renewable energy on the subject property is clear. In this regard, the proposed development conforms to a predictable pattern, blends with the particular type of land(landscape), promotes the economic use of land and conforms to the outcome of socio-political interaction.

²⁵ The most probable use of a property that is physically possible, appropriately justified, legally permissible, financially feasible and which results in the highest value of the property being valued. (Source: International Valuation Standards Committee, 2003).

Section III – Spatial directives

15. Spatial rationale

We have already referred to the possibility of changing relations / configurations within a rural setting; as well as the influence that Government's goals (can) have on the incentive to develop or use land. In this regard, political decision-making is often regarded as the fore-runner to these changed relations. However, Government has not, as was the case with land reform, allocated geographic target-ratios per province. This complicates decisions on the placement of renewable energy plants, more so for investors than for Government as it tends to thwart attempts by private-sector developers to prepare feasibility studies for potential projects. In this regard, one specific concern — on a macro scale — regarding location is the question of available baseload capacity in case the natural resource is temporarily 'unavailable'.

The proximity to the existing grid — the result of political decision-making regarding power infrastructure — is a key consideration in the placement of any renewable energy project. Such proximity to the grid is important, because any extension of the transmission system, as well as the related environmental impact assessments (EIAs) for new transmission lines and sub-stations, could take as long as five years to finalise. This notwithstanding, the question of what determines the optimum location of a renewable energy facility, remains.

In this regard, commentators maintain that a **geographical diversification of renewable energy connections** would be an important future consideration. Until this (macro) geographical diversification of renewable energy connections has been finalized — as is intended with the CSIR study — the identification and evaluation of construction sites at site-specific level will have to rely on local guidelines, preferences and processes.

16. Spatial Development Frameworks

Free State Province Provincial Spatial Development Framework, February 2014

The Free State Province Provincial Spatial Development Framework (PSDF) has a pivotal role in giving effect to the Free State Vision 2030 by means of contextualizing international and national imperatives applicable to the Free State and bringing them to fruition within the realities and site-specific characteristics of the Free State.²⁶ The PSDF aims to ensure that the use and allocation of the province's resources, both renewable and non-renewable, are based upon pre-determined pillars and drivers and that they are informed by a set of integrated and coordinated policies, objectives, implementation strategies, programmes and projects.²⁷

²⁶ Free State Province Provincial Spatial Development Framework, February 2014, p.8.

²⁷ Free State Province Provincial Spatial Development Framework, February 2014, p.33.

In the interests of brevity, we only refer to statements in the PSDF regarding renewable (solar) energy. In this regard, it is stated that the Free State has significant potential to harvest solar energy, and to invest a meaningful share of the proceeds from the use of non-renewable resources in social and human-made capital in order to maintain the capacity to meet the needs of future generations. As part of the Spatial Planning Categories, a solar and carbon credit area was demarcated as spatial footprint of harvesting solar energy in the province.

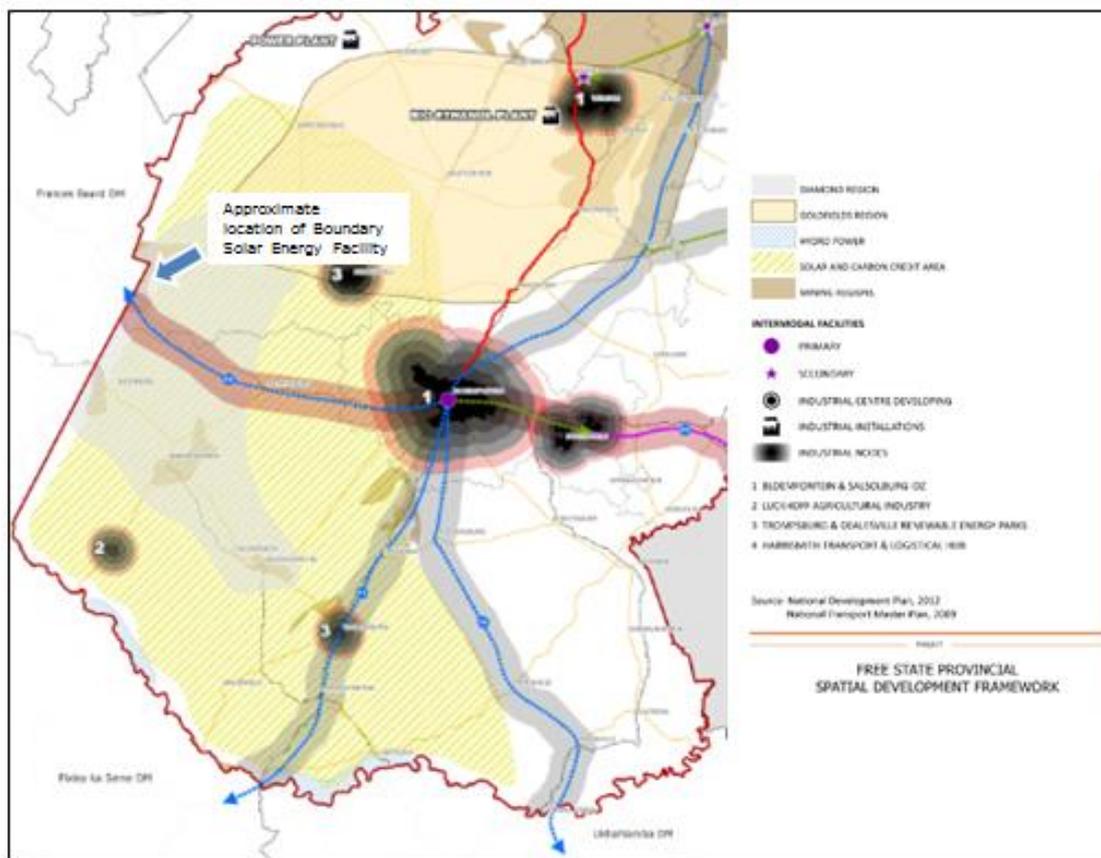


Figure 3: Solar and carbon credit area (Source: Free State Province Provincial Spatial Development Framework, February 2014)

Please note that the need for a provincial Renewable Energy Strategy is acknowledged in the PSDF.

Tokologo Local Municipality Spatial Development Framework, January 2013

It is stated in the Spatial Development Framework of the Tokologo Local Municipality that the area receives good levels of solar radiation estimated at between 8001 – 8500MJ/m². This provides opportunity for solar energy generation. Hence, the spatial proposal that solar energy generation should be explored as a sustainable source of energy, owing to the location of the municipal area. Unfortunately, as mentioned before, local planning initiatives do not provide any guidelines and/or criteria to be used in the selection of sites to establish renewable energy facilities.

17. Project response: Site selection

There are no (local) spatial planning guidelines regarding the placement of renewable energy (as a land use) in the desired land(landscape) configuration. Hence, the responsibility is with the developer to source spatial and land use directives at local, regional and (even) provincial level.

At a broader scale of spatial planning, i.e. provincial, the subject property is located within the solar and carbon credit area as demarcated in the Provincial Spatial Development Framework. We can also mention that the national Department of Environmental Affairs has appointed the CSIR to conduct a preliminary identification of focus areas best suited for the roll-out of wind and solar photovoltaic (PV) energy projects in South Africa. In this regard, the proposed Boundary Solar Energy Facility falls within the identified focus areas most suitable for the roll-out of the development of solar energy projects within the Free State Province.

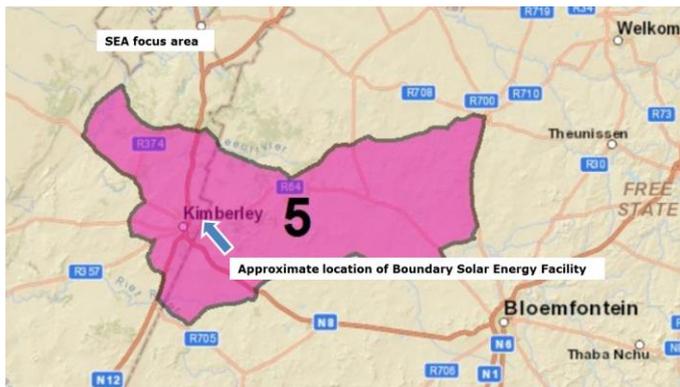


Figure 3: Extract from: National wind and solar PV SEA focus areas (source: http://www.csir.co.za/nationalwindsolaresea/images/5_Wind%20&%20Solar_SEA_Focus%20Areas.jpg, viewed on 11.4.2014)

Hence, we believe that the proposed development is compatible with the already 'scarred' rural landscape and that it conforms to past and current land-use conversion initiatives in the area, i.e. agricultural land to be used for renewable energy generation. In this regard, the proposed development will be a continuation of on-site and surrounding land uses.

The proposed project site is considered suitable and favourable for the construction of a solar PV facility from an environmental and technical perspective owing to, *inter alia*, the following site characteristics: climatic conditions, topographic conditions, extent of the site and close proximity to an existing Eskom substation. In addition, the following issues were considered in identifying a suitable site:

- Proximity to a demand centre so as to reduce the losses associated with power transmission
- Sufficient space for the full extent of the proposed project within the area under consideration
- The proposed development site is accessible directly off the R64; alternatively the site can be accessed via a main road (Rietpan road) running south-west of the site boundary
- The proposed Boundary site is situated on a level plain with a gentle slope of approximately 1% at a westerly aspect across the site
- Sourcing of local labour (and associated training, housing etc. requirements)
- Minimum technical constraints from a construction and technical perspective
- There is no arable land in the studied area or directly adjacent to it, which could be impacted upon by the proposed development, and

- The current land-use on the site is agriculture (cattle grazing). The development of the Boundary Solar Energy Facility will allow current livestock grazing to continue on areas of the farm portions which will not be occupied by solar panels and associated infrastructure. Therefore the current land-use will be retained on much of the site (i.e. 85% of the site), while also generating renewable energy from the sun. The grazing capacity on the affected portion, i.e. 260 ha is classified as between 14 and 17 hectares that translates into a loss of about 16 large stock unit opportunities.

Section IV – NEMA application

18. Environmental impact assessment

An environmental impact assessment in terms of the 2010 EIA Regulations R.543, R.544, R.545 and R.546 under the National Environmental Management Act, 1998 (Act No. 107 of 1998, with amendments) (NEMA), is in progress. The project has been registered with the National Department of Environmental Affairs under reference number 14/12/16/3/3/2/555. The study area of the environmental impact assessment is the entire property known as Farm Karreeboom, No 1716.

As part of the EIA process, registered Interested and Affected Parties were invited to review and provide comment on the final EIA Report. The Draft EIA Report was released for a 30-day public review period from 17 February 2014 – 18 March 2014. The Final EIA Report was made available for public review for an additional 21 days. Comments received from I&APs have been captured within a Comments and Response Report, for submission to the authorities for decision-making. The final EIA, as amended, was submitted to the national Department of Environmental Affairs on 10 April 2014.

See **Annexures 6 to 14** for more detail regarding the NEMA process.

It is worth mentioning that in the EIA process, the only real concern mentioned by Interested and Affected Parties, was the issue of availability of water (also see **Table 1** in this regard).

Section V – Development context

19. Receiving environment 19.1. Regional and local context

The subject property, viz. Farm 1716, Karreeboom is located in the Free State in the jurisdiction area of the Tokologo Municipality with Lejweleputswa District Municipality the category-C municipality. It is approximately 15km south-east of Kimberley and 40km south-west of Boshof. The farm portions cover an area of 1584.23 ha.

However, it would not be accurate to provide a description of the regional context by focusing on the Tokologo municipal area, owing to the location of the project site in the extreme west of this municipal area. Hence, we decided to rather focus on the hinterland of Kimberley that envelops the subject property although the latter is located in a different province.

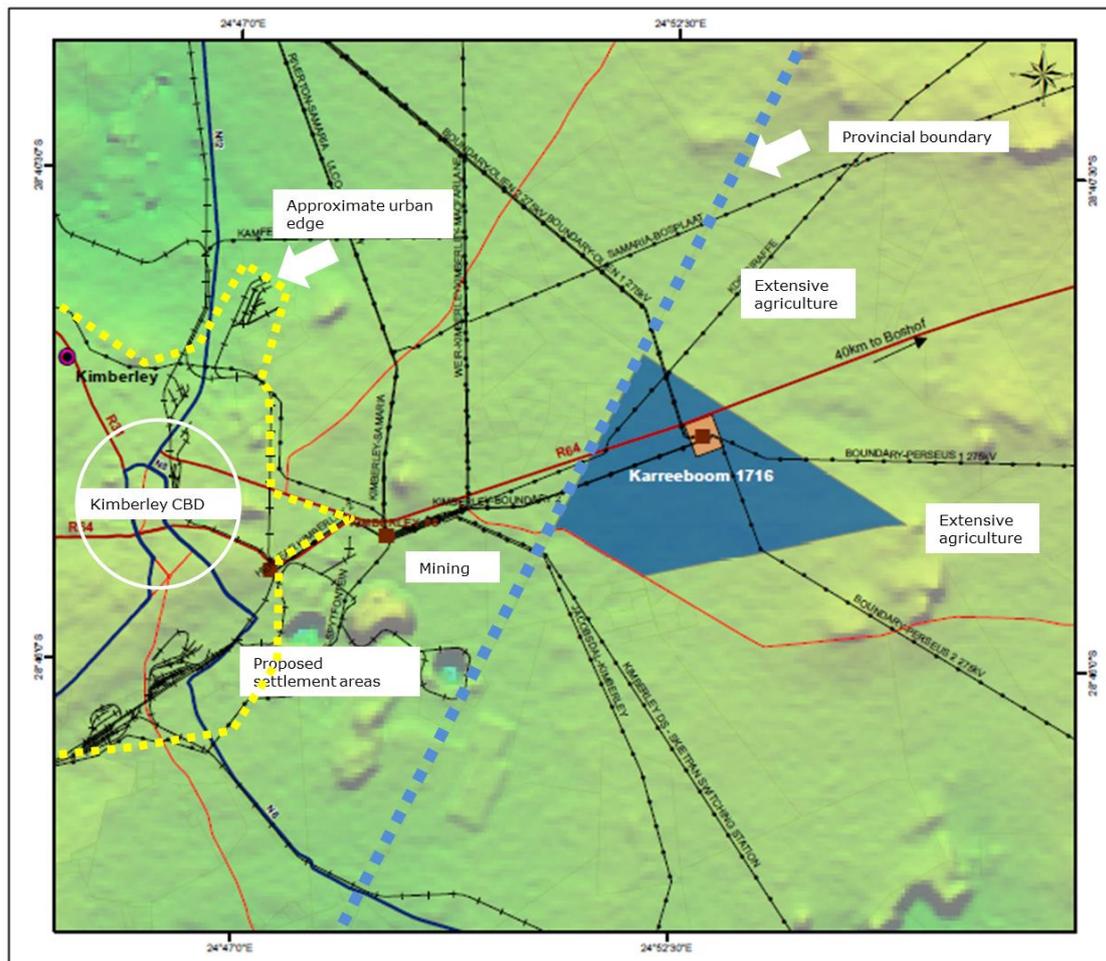


Figure 4: District location and land use

The proposed project site is surrounded by land that is mainly used for agriculture, i.e. grazing. Hence, it is located in a rural setting but with apparent intrusive non-agriculture land uses on-site, and surrounding the project site. The main spatial structuring elements of land use are the administrative context, road

network and electricity infrastructure. There are no natural features that limit or restrict the placement of renewable energy facilities. The non-agricultural land uses in the vicinity of the site are roads, mining, electricity generation and housing. It is stated that any new developments in either the north or south of the Sol Plaatje municipal area would require the provision of additional power substations as the capacity of the current bulk infrastructure is already under stress.

20. Development specifics

20.1. Site information²⁸

The preferred location for the **Boundary Solar Energy Facility** is on a property, viz. Farm Karreeboom No. 1716, in the Registration Division Boshof in the Free State Province. It is to be constructed on a portion, viz. the western section of the property which is 1584.23 ha in extent. Please note that the project site (read: footprint) will be significantly less than the property area.

The property straddles the R64, i.e. the regional road connecting Kimberley and Boshof, and is adjacent to the secondary road S141 (Rietpan road) that runs parallel to the south-western boundary. The segment of the property north of the R64 is bordered by the Camelot settlement that lies in the Northern Cape. The Eskom Boundary Substation, adjacent and to the south of the R64, is enveloped by the subject property and there are a number of essential service infrastructure elements present in the vicinity of the project site, including a number of existing Eskom power lines crossing the subject property. The project site is south-west of the Boundary Substation, south of the R64 and north-west of the secondary road with approximate central coordinates of 28° 44' 26.74" S and 24° 51' 22.01" E.

In the following paragraphs, we provide a description of some of the site attributes. Please note that this information has reference to the EIA project area – a much larger area than the proposed project site. Also see **Annexure 6** for a more detailed description of all the site attributes.

Topography: The terrain consists of level to slightly undulating plains, sloping slightly in a south-westerly direction. The proposed site is on a level plain with a gentle slope of approximately 1% at a westerly facing across the site. The site slopes from the east at about 1260m above sea level (asl), down to the west at 1215 to 1220m asl. 'Olifantsrug' (1280m asl) is the highest point locally, and lies to the immediate east of the site.

Geology: The area in question is underlain by sediments of widely different geological ages. From oldest to youngest, the geology in and around the affected area is made up of Permian Ecca shales (Tierberg Formation, Pt), Jurassic dolerite intrusions (Jd, Karoo Dolerite Suite), Quaternary calcretes, surface limestones, calcified pandunes (Qc) and aeolian sands (Qs) (Kalahari Group). The windblown sands represent the latest geological phase and are made up of the characteristically red-brown Kalahari sands (Hutton sands).

Climate: The area receives approximately 400 - 450 mm of rain on average per year. From May to September, rainfall is minimal with most of it occurring from November to April, peaking between January and March. Temperatures in summer peak during December and January at a daily average of 33°C to 37°C,

²⁸ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

with an average of 17°C to 20°C for June. During July, night temperatures are on average -4°C to 2°C, with frost being a common winter occurrence.

Land cover: The farming area along the R64 between Boshof and Kimberley is used for commercial and game farming operations. Beef cattle is the main farming activity. Sheep and goats are also farmed on a smaller scale. There are also a number of established commercial hunting lodges / farms located in the area, such as Bonnievale, Amakulu and Tarentaalrand). Owing to the proximity of the site to the town of Kimberley there are also a number of small holdings and lifestyle type estates in the vicinity of the site, such as Camelot, Night Breeze and New Klippiesspan properties adjacent to the subject property. The current land-use for the proposed development site is cattle farming. No farm houses are located on the property. A small shed and two pre-fabricated asbestos houses are located ~250 m south of the R64 and west of the substation. Only one of the structures is inhabited and accommodates the only labourer living on the farm. Farming infrastructure is minimal and consists of fencing, kraals and borehole watering points. A farm dam is located on the portion of the property north of the R64. The land uses on the adjacent properties consist of livestock farming, commercial game farming and hunting and rural residential estates/ smallholdings. The Petra Diamond mine is located 3km away from the site. A race course with other recreational uses is located within 2km of the site, a small residential area attached to Wesselton Mine known as Wesselton Village is located 3.5km away to the south-west of the site. Existing Eskom power lines cross the farm from the south (Boundary- Perseus 2 275kV), east (Boundary-Perseus 1 275kV) and west (Kimberley- Boundary 132kV), connecting to the Boundary Substation on the farm.

Access: The R64 between Kimberley and Boshof traverses the northern corner of the farm. Direct access to the site can be obtained from this road. In addition, a district gravel road (Rietpan road) runs in close proximity to the south-west corner of the proposed site. Within the site itself, there are several existing tracks and Eskom line maintenance tracks that can be used for internal access roads.

Flora: The study area is situated in the Savannah biome, Eastern Kalahari Bushveld. The vegetation unit covering the study area is Kimberley Thornveld. The vegetation type is considered as of least conservation concern, but within the larger vegetation type more sensitive vegetation associations, habitats and species of conservation concern have been found to be present. The tree and shrub layer is well developed, albeit occurring in a very patchy mosaic. Tree species dominating within this vegetation unit are *Boscia albitrunca*, *Acacia erioloba*, (both species protected by the NFA), *A. tortilis*, and *A. karroo*. Dominant shrubs include *Tarchonanthus camphoratus* and *A. mellifera* subsp. *detinens*. Both these shrub species may increase significantly once the herbaceous layer is weakened, with the possibility of forming impenetrable thickets. The grass layer can be patchy and open with large areas of uncovered soil during the dry season. *Eragrostis lehmanniana* is considered the most dominant grass species of this vegetation type, with *Digitaria eriantha* and *Themeda triandra* the most valuable grasses for grazing (Mucina & Rutherford 2006).

Soils: There are three land types across the site, namely Ae15, Ae45 and Fb1. Ae15 occupies the majority of the site, with Ae45 and Fb1 occurring only on a smaller portion, along the western margin. The field data shows that the depth limitations across the site are rock and hardpan carbonate horizons. According to the current South African soil classification system; the soils are classified predominantly as Hutton, Coega and Plooyburg forms. Land capability is the combination of soil suitability and climate factors. Most of the site (land type Ae15) has a land capability classification, on the 8 category scale, of class 7 –

non-arable, low potential grazing land. The remaining two land types have a land capability classification of class 5 – non-arable, moderate potential grazing land. The most important limitations are shallow soils limited in depth by rock and calcrete, and aridity. The land on site has a low to moderate susceptibility to water erosion, and is classified as class 5 water erosion hazard (on an 8 class scale). It is classified as susceptible to wind erosion.

Agricultural potential: One of the primary activities in the region is farming with the current land-use for the proposed development site being cattle farming. The grazing capacity on most of the site is classified as between 14 and 17 hectares per large stock unit, but a portion in the east is classified higher (between 11 and 13 hectares per large stock unit). The grazing capacity on the affected portion, i.e. 260 ha is classified as between 14 and 17 hectares that translates into a loss of about 16 large stock unit opportunities.

The proposed site is on land of limited agricultural potential that is only suitable as non-arable, moderate to low potential grazing land. No agriculturally sensitive areas occur within the development footprint. Agricultural potential is fairly uniform across the farm and the choice of placement of the facility on the farm therefore has minimal influence on the significance of agricultural impacts. The site does not currently accommodate any centre pivots, irrigation schemes or active agricultural fields. There is no arable land in the studied area or directly adjacent to it, which could be impacted upon by the proposed development.

20. Development specifics (continued)

20.2. Leasehold area information

Solar farms internationally, and in South Africa, are built for an initial 25-30 year cycle of operation before upgrading and/or replacement are required. Because solar farms are large infrastructure projects, large sums of investment capital are needed. Hence, to achieve an investor's long-term goals, assurance of land use rights for at least a 25-year return-on-investment period is needed. This is not exceptional, it is the tried and tested feasible method whereby the vast bulk of solar farms are brought to operation.

The prime site for the Boundary Solar Energy Facility involves one farm, which has been secured through an option for a leasehold agreement with the owner. The details of the land parcel, farm name and owner are tabled below.

Table 2: The farm parcel and owner of the property earmarked for the Boundary Solar Energy Facility

Farm name	Number	Size (ha)	Title deed	Owner
Karreeboom	1716	1584.23	T14820/2013	KALAHARI LAND & CATTLE CO PTY LTD

20. Development specifics (continued)

20.3 Solar energy facility layout

Through the EIA process, which included input from various stakeholders and specialists, a number of issues relating to design and layout of the Boundary

Solar Energy Facility were identified and considered. This resulted in an iterative process in which a number of layouts were drafted.

Annexure 4 and the figure below, includes the most up-to-date layout of the Boundary Solar Energy Facility.

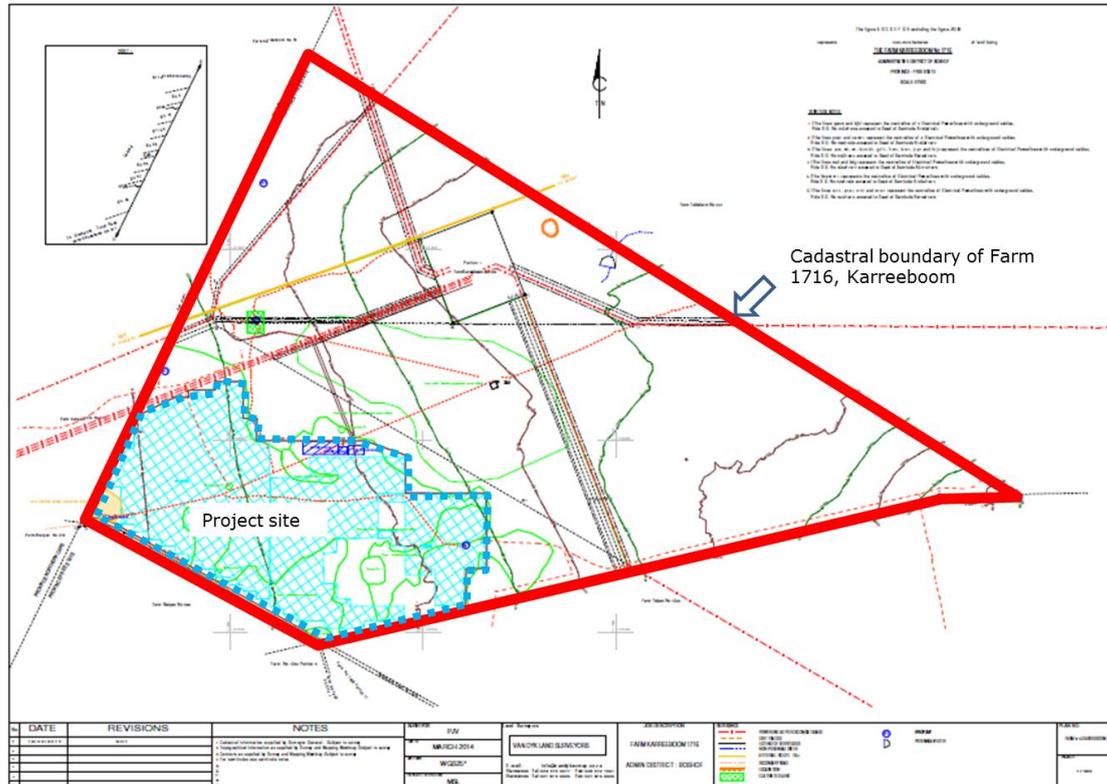


Figure 5: Project site: Boundary Solar Energy Facility

The aim of considering layout alternatives is to balance the technical and financial objectives of maximising the output of the proposed facility with critical environmental and social constraints including visual, botanical, fauna, heritage, archaeological, palaeontological and avifauna. The location of the layout aims to avoid identified sensitivities and the area available for the layout of the infrastructure is constrained on this basis.

It is important to note that parts of the layout provided for the purposes of this application may be subject to amendment as determined by the Environmental Authorization (EA) under the NEMA legislation. However, we do not anticipate that the project site as mapped in **Figure 5** would undergo any significant changes. It is also acknowledged that the approval for this application will not be issued, even if the notification and evaluation process has been completed, until the EA has been issued. Also, conditions of the EA may be applicable to the land-use. However, we believe that, in the context of a multitude of obligatory authorisations, permitting and licensing requirements for a solar energy facility, the EA must pave the way for other decision-making milestones to be achieved.

20. Development specifics (continued)

20.4. Infrastructure²⁹

²⁹ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

The solar energy facility proposes to generate up to 75 MW of electricity and will comprise the following infrastructure:

- Solar panels (fixed/tracking technology) with an export capacity of up to 75MW
- Mounting structures for the solar panels to be rammed steel piles or piles with pre-manufactured concrete footings, alternatively making use of ground screws to support the PV panels
- Cabling between the structures, to be laid underground where practical
- Central inverter/transformer stations to collect all energy generated from the PV panels. The inverter's role is to convert direct current (DC) electricity to alternating current (AC) electricity at grid frequency
- An on-site substation (120m x 70m) and overhead power line (1700m) to facilitate the connection between the solar energy facility and the existing Boundary Substation located on the site (Farm Karreeboom 1716)
- Internal access roads (5m wide roads), and
- Associated buildings including a workshop area for maintenance, storage, and control facility with basic services such as water and electricity (approximate footprint (\pm 200m x 150m))

Access: Preferred access will be off the Rietpan secondary road, given that the R64 is a busy route (see **Figure 6** below).

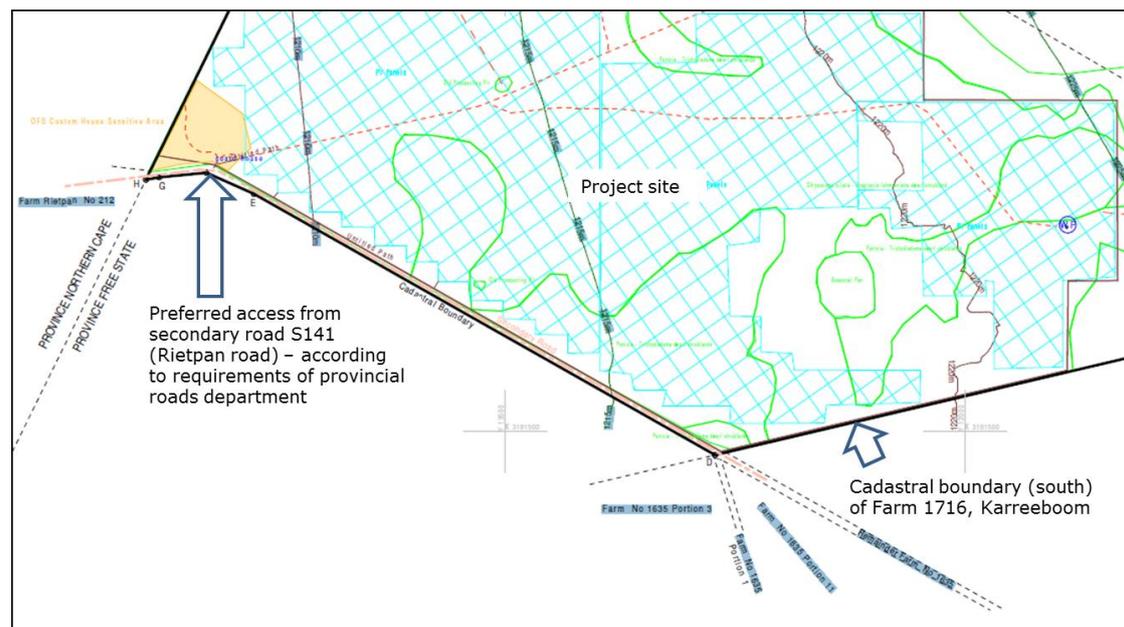


Figure 6: Access to Boundary Solar Energy Facility

20. Development specifics (continued)

20.5. Development impacts³⁰

Please see **Chapter 6** of **Annexure 6** for the findings of the final Environmental Impact Assessment. In the interests of brevity, the following paragraph provides a concise summary of the findings of the final Environmental Impact Report.

³⁰ Final Environmental Impact Report, Proposed Boundary Solar Energy Facility, Free State Province, March 2014.

It is stated that the findings of the specialist studies (see **Annexures 9 to 14**) undertaken within the EIA, to assess both the benefits and potential negative impacts anticipated as a result of the proposed project, conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding. This is subject to the implementation of the recommended mitigation and management measures. The significance levels of the majority of identified negative impacts have been reduced by implementing the mitigation measures recommended by the specialist team during the EIA process, and this specifically included the consideration of the facility layout in relation to sensitivities identified. The avoidance of areas of sensitivity is illustrated by the facility layout drawing included as Figure 5. The project has considered constraints, and is considered to meet the requirements of sustainable development.

As stated before, we believe that conditions of the EA addressing these findings (impacts) may be applicable to the land-use.

20. Development specifics (continued)

20.6 Title deed

See **Annexure 2** for the title deed (and SG Diagram) of the relevant property. A detailed deeds search was not completed as part of this permit application.

20. Development specifics (continued)

20.7 Benefits of the proposed development

The Boundary Solar Energy Facility is proposed as part of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The REIPPPP initiative is intended to promote the use of renewable energy. In addition to the electricity-related benefits, the development of a solar energy facility contributes to other benefits, e.g. employment creation and income generation.

This project can serve as an example of how solar energy can be generated through economically viable means and fed into the national grid. The project might also encourage investment in more such projects. There would be employment opportunities during the construction phase and operational phase of the project. Indirect and induced jobs would also result.

Section VI – Development parameters

21. Land-use parameters

We believe that this kind of renewable energy facility is complex in application and requires specialist knowledge and insight to best determine and adjudicate build and operational restrictions/parameters. However, at the time of writing, the applicant was not aware of any set of land use parameters pertaining to the establishment of renewable energy facilities in the Free State.

We believe that the proposed measures in the final Environmental Impact Report, to address any possible impact during the three operational phases, be considered as parameters.

Section VII – Communication and participation

22. Interested and Affected Parties

It was agreed with officials of the Free State Provincial Government that comment on the permit application would be obtained from Interested and Affected Parties and from adjacent property owners and that a notice of the application would be placed in the print media.

It was agreed that the Department of Cooperative Governance and Traditional Affairs would be responsible for notifying (and advertising) this application as required. The contact details of the relevant adjacent property owners were provided to the department (see **Annexure 25**).

It is important to acknowledge the extensive public participation process conducted as part of the NEMA application. In this regard, **Annexure 7** includes a Comments and Responses Report.

Section VIII – Conclusion

23. Wording of land use change

It is recommended that a permit, in terms of the Physical Planning Act, 1967 (Act 88 of 1967), be issued for the proposed Boundary Solar Energy Facility situated on about 260 ha of the property known as Farm Karreeboom No 1716.

24. Desirability

Recent global events and a greater worldwide awareness of long-term structural changes (such as climate change, energy crises and other shifts) must make planners aware of the need to take a broader look at spatial planning and land use management. Naturally, this should also apply to developments in the western Free State with the following of particular interest, viz. the current global recession and the clear signs that climate change will affect central Southern Africa quite significantly, implying lower rainfall and some dampening of the current pattern of agricultural production. At the same time efforts to better utilise natural resources must be intensified, e.g. power generation and the utilisation of alternative energy sources. With respect to long-term changes much will depend on the way authorities address the at times conflicting goals of biodiversity conservation, renewable energy generation, economic growth, poverty alleviation, land reform and food security.

In this context, we believe that a solar energy facility is the highest and best use of the land identified and motivated in this application. The proposed development will be the continuation of existing site-specific and surrounding land uses. In this regard, it is foreseen that the impact on on-site and adjacent land use as a result of the proposed solar energy facility, is very low if mitigating measures are applied.

The merit of this particular land use is also underpinned by government policies that guide decision-making regarding renewable energy generation according to pre-determined targets and time-frames. An imperative to reach these targets is for Government to seek willing and able partner(s). This sentiment is supported in all the policy documents mentioned in this report. Hence, owing to the rapidly growing industry of power generation through solar energy, and given the scale and nature of location preferences, Government needs to embrace this kind of private initiative but simultaneously ensure sustainable practice. Any decision-making process should be informed by local and regional dynamics with this permit application no different. In this regard, and when applying the principles of economy of scale and highest and best use of land, the rationale for renewable energy on the site becomes clear. The proposed development also blends with the particular type of land(landscape), promotes the (better) economic use of land and conforms to the outcome of socio-political interaction.

Finally, we believe this document contains all the necessary information to enable the relevant authority to process and evaluate this permit application.

Section IX – Annexures

Annexure 1:	Power of Attorney
Annexure 2:	Title deed and SG diagram
Annexure 3:	Application form
Annexure 4:	Site Development Plan
Annexure 5:	Locality map
Annexure 6:	Final Environmental Impact Report, March 2014
Annexure 7:	NEMA Comments and Responses Report
Annexure 8:	Environmental Management Plan
Annexure 9:	Avifauna Report
Annexure 10:	Ecology Report
Annexure 11:	Heritage Report
Annexure 12:	Palaeontology Report
Annexure 13:	Soil and Agricultural Report
Annexure 14:	Visual Report
Annexure 15:	DAFF Acknowledgement
Annexure 16:	DAFF Request for comment
Annexure 17:	Electrical Connection Study
Annexure 18:	ESKOM Grid Application Form
Annexure 19:	ESKOM Invoice (8355873018)
Annexure 20:	Ventusa payment
Annexure 21:	Tokoloko Municipality: Water use letter
Annexure 22:	Water Consumption Study
Annexure 23:	Geotechnical Report
Annexure 24:	Flood line Study
Annexure 25:	Contact details of adjacent property owners