APPENDIX C3:

Background Information Document

savannah environmental

BACKGROUND INFORMATION DOCUMENT (BID)

SEPTEMBER
2021

ENVIRONMENTAL IMPACT ASSESSMENT AND PUBLIC PARTICIPATION PROCESS

PROPOSED DEVELOPMENT OF THE GREAT KAROO CLUSTER OF RENEWABLE ENERGY FACILITIES AND ASSOCIATED ELECTRICAL GRID INFRASTRUCTURE, NEAR RICHMOND

NORTHERN CAPE PROVINCE

Great Karoo Renewable Energy (Pty) Ltd proposes the development of a cluster of renewable energy facilities and associated infrastructure, including Electrical Grid Infrastructure (EGI), ~35km South-West of the town of Richmond along the N1 and 80km South-East of Victoria West along the R63 in the Northern Cape Province (Figure 1). The cluster consists of three (3) 100MW solar photovoltaic (PV) energy facilities, and two (2) 140MW wind farms. The grid connection infrastructure for all projects will include one central collector 132kV substation and a double circuit 132kV power line to the existing Eskom Gamma Substation.

Each renewable energy facility will be constructed as a separate stand-alone project and therefore, separate Scoping and Environmental Impact Assessment (S&EIA) processes will be undertaken for each of the renewable energy facilities. Similarly, the grid connection solution will be subjected to a separate Basic Assessment (BA) process which will consider feasible alternatives for the power line corridors. A combined six (6) applications for Environmental Authorisation (EA) are currently being pursued as follows:

- Two (2) wind farm EAs.
- Three (3) solar PV facility EAs.
- One (1) central collector 132kV substation and double circuit 132kV power line EA.

Due to the proximity of the renewable energy facilities and their associated grid connection solution to one another, the public participation processes for the projects will be undertaken concurrently, providing the public with an opportunity to understand and provide comment on all the projects.

The Great Karoo cluster of renewable energy facilities, including the project names, infrastructure details, properties affected by the proposed facilities, EGI and associated infrastructure are shown in the Table below:

Project Name	Nku Solar PV Facility	Moriri Solar PV Facility	Kwana Solar PV Facility
	Portion 0 and 1 of Farm Rondavel 85	Portion 0 and 1 of Farm Rondavel 85	Portion 0 and 1 of Farm Rondavel 85
Contracted capacity	100MW	100MW	100MW
Technology	Solar Photovoltaic	Solar Photovoltaic	Solar Photovoltaic
On-site substation size and capacity	33/132kV on-site substation of 1000mx700m	33/132kV on-site substation of 1000mx700m	33/132kV on-site substation of 1000mx700m
Battery Energy Storage System	Footprint: 2 – 10ha, to be located within the footprint of the on-site substation Capacity: 200 - 800MWh.	Footprint: 2 – 10ha, to be located within the footprint of the on-site substation Capacity: 200 - 800MWh.	Footprint: 2 – 10ha, to be located within the footprint of the on-site substation Capacity: 200 - 800MWh.
Access roads (main and internal)	Gravel main access road: Will be part of wind farm internal road system. No additional access road required. If wind farm is constructed later, access road is 5km, of which 3.3 km is an existing gravel road to be upgraded.	Gravel main access road: Approximately 200 meters of new road will be constructed. Apart from that, the access road will be part of the wind farm internal road system. If the wind farm is constructed later, access road is 5km, of which 3.3 km is an existing gravel road to be upgraded. Internal roads: 4.5m wide with curve extensions	Gravel main access road: Will be part of wind farm internal road system. No additional access road required. If wind farm is constructed later, access road is 5km, of which 3.3 km is an existing gravel road to be upgraded. Internal roads: 4.5m wide with curve extensions
Other associated infrastructure	Cabling from the onsite substation to the collector substation area (either underground or overhead); centralised inverter stations or string inverters; cabling between panels, to be laid underground where practical; a temporary laydown area; staff accommodation; and operation and maintenance buildings, including a gate house and security building, control centre, offices, warehouses, a workshop, and visitor's centre. Each project will include all necessary electrical and auxiliary equipment required at the collector substation that serves that solar facility. This would include transformer, switchyard/bay, control building, fences etc.		

Wind energy facilities:

Project Name	Angora Wind Energy Facility	Merino Wind Energy Facility
Affected properties (i.e., project site)	• Portion 11 of Farm Gegundefontein 53 • Portion 0 of Farm Vogelstruisfontein 84 • Portion 1 of Farm Rondavel 85 • Portion 0 of Farm Rondavel 85	• Portion 1 of Farm Rondavel 85 • Portion 0 of Farm Rondavel 85 • Portion 9 of Farm Bult & Rietfontein 96
Contracted capacity	140MW	140MW
No. of turbines	23 – 45 pcs	23 – 45 pcs
Turbine hub height	110 – 170 m	110 – 170 m
Turbine tip height	170 – 250 m	170 – 250 m
Rotor diameter	125-180 m	125-180 m
On-site substation size and capacity	33/132kV on-site substation of 1000mx700m	33/132kV on-site substation of 1000mx700m
Battery Energy Storage System	Footprint: 2 – 10ha, to be located within the footprint of the on-site substation Capacity: 200 - 800MWh.	Footprint: 2 – 10ha, to be located within the footprint of the on-site substation Capacity: 200 - 800MWh.
Access roads (main and internal)	Approximately 30 km of new roads plus upgrading of approximately 20 km of existing roads.	Approximately 30 km of new roads, plus upgrading of approximately 20 km of existing roads.
Other associated infrastructure	Cabling from the onsite substation to the collector substation area (underground); concrete turbine foundations and turbine hardstands; temporary laydown areas, which will accommodate storage and assembly areas; cabling between the turbines, to be laid underground where practical; a temporary concrete batching plant; staff accommodation; and operation and maintenance building, including a gate house, security building, control centre, offices, warehouses, a workshop, and visitor's centre. Each project will include all necessary electrical and auxiliary equipment required at the collector substation that serves that wind energy facility. This would include switchyard/bay, control building, fences etc.	

Grid connection infrastructure

Details of the proposed grid connection infrastructure and alternatives are provided in the table below. Various connection options exist to ultimately connect each of the facilities to the Eskom Gamma Substation.

Corridor width (for assessment purposes)	Four alternative grid connection corridors have been identified for the assessment and placement of the grid connection infrastructure. The grid connection corridors comprise of a 1km wide power line corridor to allow for avoidance of environmental sensitivities, and suitable placement within the identified preferred corridor. Therefore, the entire corridor is being proposed for the development provided the infrastructure remains within the assessed corridor and environmental sensitivities are avoided.
Power line capacity	132kV (single- or double-circuit)
Tower height	Up to 32m
Power line servitude width	Up to 40m
Length of power lines	**Option 1:** Collector Sub – Gamma ~ 37.95km **Option 2:** Collector Sub – Gamma ~ 37.85km **Option 3:** Collector Sub – Gamma ~ 37.6km **Option 4:** Collector Sub – Gamma ~ 37.5km
Development footprint of the Collector Substation	1000mx700m
Capacity of the Collector Substation	132kV
Affected properties	• Portion 0 of Farm Annex Rondavel 86 • Portion 1 of Farm Annex Rondavel 86 • Portion 1of Farm Uit Vlugt Fontein 265 • Portion 0 of Farm Wynandsfontein 91 • Portion 1 of Farm Wynandsfontein 91 • Portion 3 of Farm Vlekfontein 90 • Portion 0 of Farm Burgersfontein 92 • Portion 1 of Farm Nieuwe Fontein 89 • Portion 0 of Farm Rondavel 85 • Portion 1 of Farm Rondavel 85 • Portion 0 of Farm Kleinfontein 93 • Portion 8 of Farm Jan Booysens Onder Plaats 94 • Portion 1 of Farm Bult & Rietfontein 96 • Remaining extent of Farm 3

The projects are intended to assist in addressing South Africa's energy challenge and to align with the Department of Mineral Resources and Energy (DMRE's) Integrated Resource Plan (IRP) 2019, to pursue a diversified energy mix that reduces reliance on a single or a few primary energy resources. It is the Developer's intention to bid each renewable energy facility under the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme. The power generated from each renewable energy facility will be sold to Eskom and fed into the national electricity grid through the proposed grid connection solution.

Aim of this background information document

This document aims to provide you, as an Interested and/or Affected Party (I&AP), with:

» An overview of the renewable energy facilities which form part of the cluster, and their associated grid connection solutions.
» An overview of the Scoping and Environmental Impact Assessment (EIA) processes, Basic Assessment (BA) processes, and specialist studies being undertaken to assess the renewable energy facilities and their associated grid connection solutions.
» Details of how you can become involved in the S&EIA and BA processes, receive information, or raise comments that may concern and/or interest you.

Overview of solar pv technology

Solar energy facilities use energy from the sun to generate electricity through a process known as the **Photovoltaic Effect**. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity. The solar fields of the PV facilities will comprise the following components:

Photovoltaic Cells:

A photovoltaic (PV) cell is made of silicone that acts as a semiconductor used to produce the photovoltaic effect. PV cells are arranged in multiples/arrays and placed behind a protective glass sheet to form a PV panel. Each PV cell is positively charged on one side and negatively charged on the opposite side, with electrical conductors attached to either side to form a circuit. This circuit captures the released electrons in the form of an electric current (i.e., Direct Current (DC)).

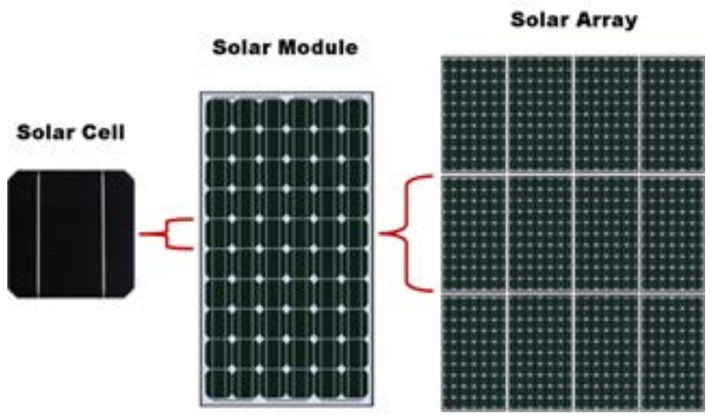


Figure 2: Overview of a PV cell, module and array/panel (Source: pveducation.com).

A solar PV module is made up of individual solar PV cells connected together, whereas a solar PV array is a system made up of a group of individual solar PV modules electrically wired together to form a much larger PV installation. The PV panels will be fixed to support structures to maximise exposure to the sun.

Inverters

Inverters are used to convert electricity produced by the PV cells from Direct Current (DC) into Alternating Current (AC) to enable the facility to be connected to the national electricity grid. Numerous inverters will be arranged in several arrays to collect and convert power produced by the facilities.

PV panels are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance.

Support Structures

PV panels will be fixed to support structures. PV panels can either utilise fixed / static support structures, or alternatively they can utilise single or double axis tracking support structures. PV panels which utilise fixed / static support structures are set at an angle (fixed-tilt PV system) so as to optimise the amount of solar irradiation received. With fixed / static support structures the angle of the PV panel is dependent on the latitude of the proposed development and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels which utilise tracking support structures track the movement of the sun throughout the day so as to receive the maximum amount of solar irradiation.

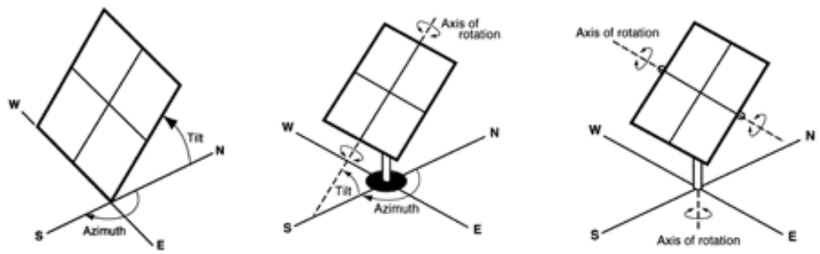


Figure 3: Overview of different PV tracking systems (from left to right: fixed-tilt, single-axis tracking, and double-axis tracking (Source: pveducation.com).

PV panels are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance.

Battery energy storage system (bess)

The need for a BESS stems from the fact that electricity is only produced by the Renewable Energy Facility while the sun is shining, while the peak demand may not necessarily occur during the daytime. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable and electricity supply more constant.

The BESS will:

- Store and integrate a greater amount of renewable energy from the Solar PV Facilities into the electricity grid.
- This will assist with the objective to generate electricity by means of renewable energy to feed into the National Grid which will be procured under either the Renewable Energy Independent Power Producer Procurement Program (REIPPPP) other government run procurement programmes or for sale to private entities if required.
- Proposed footprint of battery storage area: 2 – 10ha.
- Proposed capacity of battery storage: 200 - 800MWh.
- Proposed technology to be used: Lithium-ion batteries (LFP/NMC or others) (Li-Ion), Lithium capacitors/ Electrochemical capacitors (LiC), and/or Redox-flow batteries (RFB)
- Battery types to be considered: Solid State Batteries and Redox Flow Batteries.

Overview of wind energy technology

Wind turbines use the energy from the wind to generate electricity. A wind turbine consists of four large main components:

- The rotor.
- The nacelle.
- The tower.
- The foundation unit.

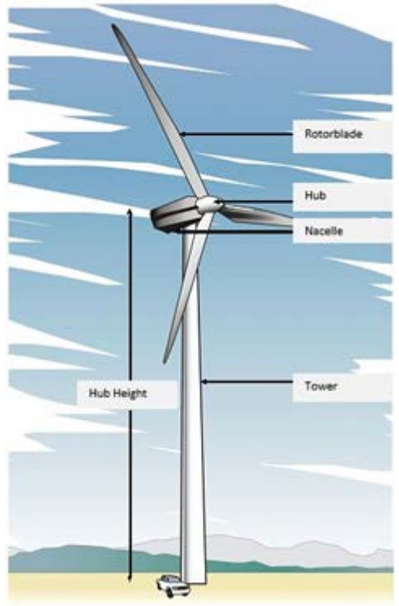


Figure 4: Main components of a wind turbine.

The mechanical power generated by the rotation of the blades is transmitted to the generator within the nacelle via a gearbox and drive train. The wind turns the blades, which in turn spin a shaft which connects to a generator and generates electricity. The use of wind for electricity generation is essentially a non-consumptive use of a natural resource and produces zero greenhouse gas emissions.

Turbines are able to operate at varying speeds. The amount of energy a turbine can harness depends on both the wind velocity and the length of the rotor blades. The turbines being considered for use at the two wind farms will be up to 6.5MW in capacity. The turbines will have a hub height of up to 170m, with a tip height of up to 250m.

Various wind turbine designs and layouts on the project sites are being considered by the developer in order to maximise the generating capacity of the sites while minimising environmental impacts. The final facility layouts, turbine capacities and models will be dependent on what is deemed suitable for the project sites in relation to, among other things, further studies of the wind regime, terrain, and environmental constraints and social sensitivities.

The length of the construction period for each of the wind farms is estimated to be approximately 15 – 18 months. A turbine is designed to operate continuously, with low maintenance for 20 to 25 years.

Environmental impact assessment process

In accordance with the EIA Regulations, 2014 (as amended) published in terms of Section 24(5) of the National Environmental Management Act (No. 107 of 1998) (NEMA), the applicant requires Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE), in consultation with the Department of Agriculture, Environmental Affairs, Land Reform and Rural Development, Northern Cape Province, for the development of the proposed projects. In terms of Section 24(5) of NEMA, the EIA Regulations 2014 (as amended) and Listing Notices (GNR 327, GNR 325, and GNR 324). The five (5) applications for EA for the renewable energy facilities are subject to the completion of Scoping/ EIA processes. The one (1) application for EA for the grid connection solution is subject to the completion of a Basic Assessment (BA) process. Each application is required to be supported by comprehensive, independent environmental studies undertaken in accordance with the EIA Regulations, 2014 (as amended).

An EIA is an effective planning and decision-making tool. It allows for potential environmental consequences resulting from a proposed activity to be identified and appropriately managed during the construction, operation, and decommissioning phases of development. It also provides an opportunity for the project applicant to be forewarned of potential environmental issues and allows for the resolution of issue(s) identified and reported on as part of the EIA process, as well as provides opportunity for dialogue with key stakeholders and Interested and Affected Parties (I&APs).

Savannah Environmental has been appointed as the independent environmental consultant responsible for managing the separate applications for EA and undertaking the supporting EIA process required to identify and assess potential environmental impacts associated with the projects detailed above, as well as propose appropriate mitigation and management measures to be contained within the Environmental Management Programmes (EMPrs).

What are the potential environmental impacts associated with the proposed projects?

The development area and the grid connection corridors will be assessed by independent environmental specialists to identify the potential for environmental impacts. Specialist studies that are proposed as part of the EIA processes include the following:

- Biodiversity Impact Assessment – includes ecology, fauna and flora and assesses the potential impact and the associated disturbance of vegetation on the biodiversity of the area (including critical biodiversity areas and broad-scale processes).
- Wetland and freshwater Impact Assessment – includes an assessment of impacts and associated disturbance to drainage lines, rivers, and wetlands at a broad and fine scale.
- Avifauna Impact Assessment – includes pre-construction monitoring in terms of the relevant guidelines and assesses the impact on avifaunal habitats and sensitive species.
- Bat Impact Assessment – includes pre-construction monitoring in terms of the relevant guidelines and assesses the impact on bat habitats and sensitive species.
- Soils and Agricultural Potential Assessment – includes land types and assesses the significance of loss of agricultural land and soil degradation and/or erosion.
- Heritage Impact Assessment (Archaeology and Palaeontology) – which includes archaeology and palaeontology and assesses the potential of disturbance to or destruction of heritage sites and fossils during the construction phase through excavation activities.

- Visual Impact Assessment – which includes the visual quality of the area and assesses the impact of the solar PV facilities and the grid connection solution on the aesthetics within the area.
- Noise Impact Assessment – includes identification of sensitive noise receptors within the area and assess the significance during construction and operation of the wind farms.
- Social Impact Assessment – which assesses the positive and negative social impacts.
- Traffic Impact Assessment – assesses the impact of the developments on traffic and road networks in the area.

Site-specific studies will be undertaken to assess the potential impact of the proposed development, in order to delineate areas of sensitivity within the affected farm portions, assess impacts associated with the projects and make recommendations regarding avoidance, management and mitigation of impacts. Studies will be informed by available information and detailed field investigations undertaken in accordance with the relevant guidelines and protocols. Once the constraining environmental factors have been determined, the layouts for the proposed facilities can be determined and presented in the EIA reporting.

Public participation process

The sharing of information forms the basis of the public participation process and offers I&APs the opportunity to become actively involved in the EIA processes. Comments and inputs from I&APs are encouraged in order to ensure that potential impacts are considered throughout the EIA processes. The public participation process aims to ensure that:

- Information containing all relevant facts in respect of the applications are made available to I&APs for review.
- I&AP participation is facilitated in such a manner that they are provided with reasonable opportunity to comment on the proposed projects.
- Adequate review periods are provided for I&APs to comment on the findings of the Scoping, EIA and Basic Assessment Reports.

In order to ensure effective participation, the public participation processes include the following:

- Identifying I&APs, including affected and adjacent landowners and occupiers of land, and relevant Organs of State, and recording details within a database.
- Notifying registered I&APs of the commencement of the EIA processes and distributing the Background Information Document (BID).
- Providing access to registered parties to an online stakeholder engagement platform, which centralises project information and stakeholder input in a single digital platform.
- Providing an opportunity for I&APs to engage with the project team.
- Placing site notices at the affected properties and in the study area.
- Placing an advertisement in a local newspaper and using a local radio station (where available).
- Notifying I&APs of the release of the Reports for review and comment, meetings to be held and the closing dates by which comments must be received.
- Providing an opportunity to engage with the project team via appropriate virtual platform (to reduce the risks associated with COVID-19) or telephone.

Your responsibilities as an i&ap

In terms of the EIA Regulations, 2014 (as amended) and the Public Participation Guidelines, 2014, your attention is drawn to your responsibilities as an I&AP:

- To participate in the EIA processes, you must register yourself on the I&AP database.
- You are required to disclose any direct business, financial, personal, or other interest that you may have in the approval or refusal of the applications.
- You must ensure that any comments regarding the proposed projects are submitted within the stipulated timeframes.

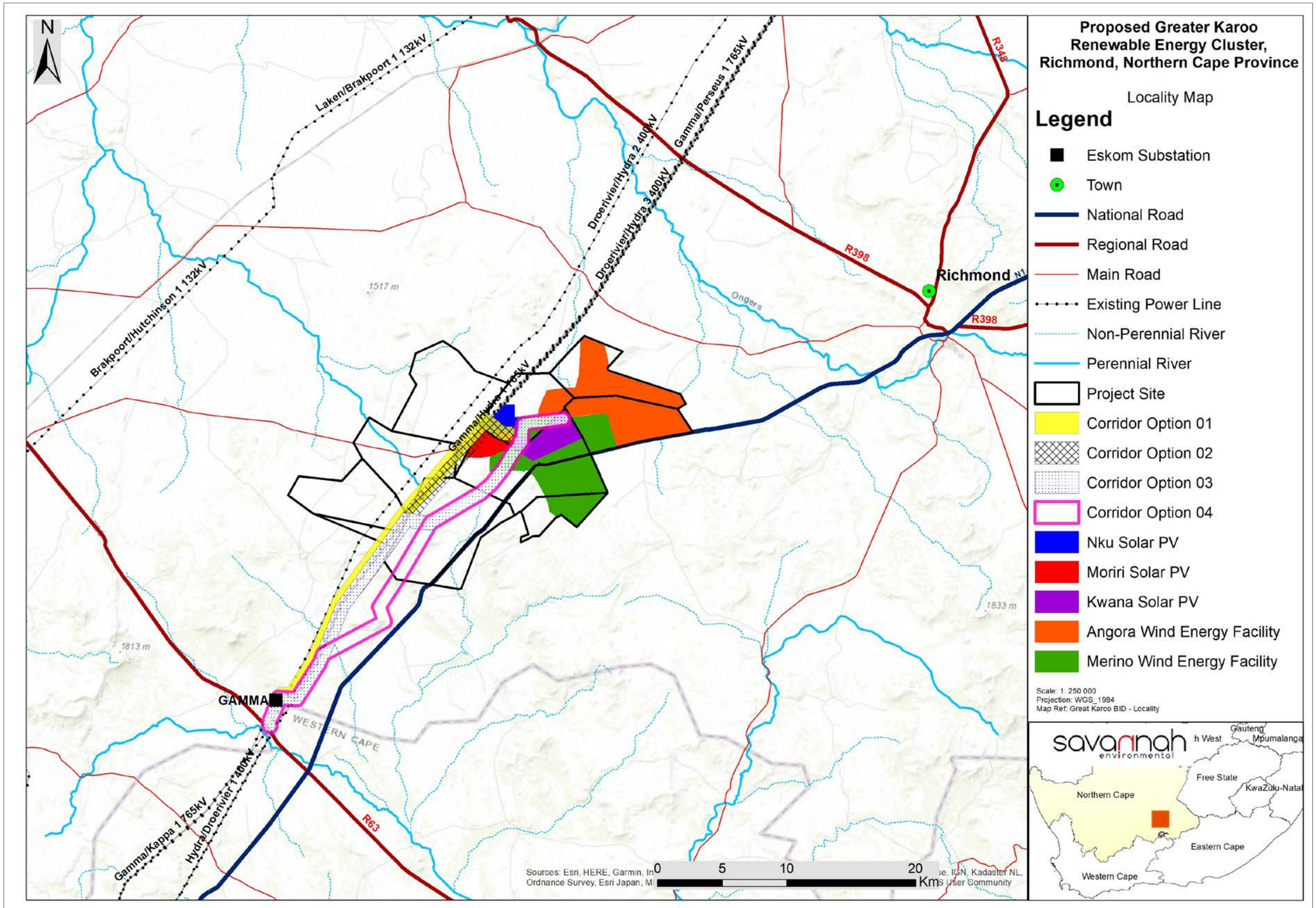
How to become involved

- By responding by phone, fax, or e-mail to the invitation for your involvement.
- By returning the reply form to the relevant contact person.
- By engaging with the project team during the EIA processes.
- By contacting the environmental consultant with queries or comments.
- By reviewing and commenting on the Reports within the stipulated review and comment periods.

If you consider yourself an I&AP for the proposed projects, we urge you to make use of the opportunities created by the public participation process to provide comment, raise issues and concerns which affect and / or interest you, or request further information. Your input forms a key element of the EIA processes.

By completing and submitting the accompanying reply form, you automatically register yourself as an I&AP for the proposed projects, and are ensured that your comments, concerns, or queries raised regarding the projects will be noted. Please note that all comments received will be included in the project documentation. This may include personal information.

Figure 1: Locality map of the Great Karoo Renewable Energy Cluster.



COMMENTS AND QUERIES

Direct all comments, queries or responses to:

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To view project documentation, visit
www.savannahSA.com

savannah environmental

AGTERGRONDINLIGTINGSDOKUMENT

SEPTEMBER
2021

OMGEWINGSIMPAKEVALUERING EN OPENBARE DEELNAMEPROSES

BEOOGDE ONTWIKKELING VAN DIE GROOT KAROO-GROEP HERNUBARE KRAGAANLEGTE EN VERWANTE ELEKTRIESE KRAGNETINFRASTRUKTUUR NABY RICHMOND,

NOORD-KAAPPROVINSIE

Great Karoo Renewable Energy (Edms.) Bpk. beoog die ontwikkeling van ‘n groep hernubare kragaanlegte en verwante infrastruktuur, met insluiting van Elektriese Kragnetinfrastruktuur (EKI), ~ 35 km suidwes van die dorp Richmond langs die N1 en 80 km suidoos van Victoria-Wes met die R63 langs in die Noord -Kaapprovinsie (Figuur 1). Die groep bestaan uit drie (3) fotovoltaïese (FV) sonkragaanlegte van 100 MW en twee (2) windplase van 140 MW. Die roosterkonneksie-infrastruktuur vir al die projekte sal een sentrale kollektorsubstasie van 132 kV en ‘n dubbelkring kraglyn van 132 kV tot by Eskom se bestaande Gamma-substasie insluit.

Elke hernubare kragaanleg sal as ‘n aparte losstaande projek opgerig word, gevolglik sal aparte Bestekopname- en Omgewingsimpakevalueringsprosesse (B&OIE-prosesse) vir elk van die hernubare kragaanlegte onderneem word. Eweneens sal die roosterkonneksie-oplossing onderwerp word aan ‘n aparte Basiese Evalueringsproses (BE-proses), wat oorweging aan bedryfbare alternatiewe vir die kraglynkorridors sal skenk.

Altesaam ses (6) aansoeke om Omgewingsmagtiging (OM) word tans nagestreef, naamlik:

- twee (2) windplaas OM’s;
- drie (3) FV-sonkragaanleg OM’s; en
- een (1) sentrale kollektorsubstasie van 132 kV en ‘n dubbelkring kraglyn van 132 kV OM.

Weens die nabyheid van die hernubare kragaanlegte en hul verwante roosterkonneksie-oplossing aan mekaar, sal die openbare deelnameprosesse vir die projekte gelyklopend onderneem word, wat die publiek ‘n geleentheid sal bied om al die projekte te verstaan en daarop kommentaar te kan lewer.

Die Groot Karoo-groep hernubare kragaanlegte, met insluiting van die projekname, infrastruktuur-besonderhede, eiendomme wat deur die beoogde aanlegte geraak word, EKI en verwante infrastruktuur word in die tabel hieronder aangedui:

Fv-sonkragaanlegte:

Projeknaam	Nku FV-sonkragaanleg	Moriri FV-sonkragaanleg	Kwana FV-sonkragaanleg
Geaffekteerde eiendomme (d.i. projekterrein)	Gedeelte 0 en 1 van die plaas Rondavel 85	Gedeelte 0 en 1 van die plaas Rondavel 85	Gedeelte 0 en 1 van die plaas Rondavel 85
Gekontrakteerde vermoë	100 MW	100 MW	100 MW
Tegnologie	Fotovoltaïese sonkrag	Fotovoltaïese sonkrag	Fotovoltaïese sonkrag
Batterykrag-bergingstelsel	Voetspoor: 2–10 ha, wat in die voetspoor van die interne substasie geleë moet wees Vermoë: 200–800 MWh	Voetspoor: 2–10 ha, wat in die voetspoor van die interne substasie geleë moet wees Vermoë: 200–800 MWh	Voetspoor: 2–10 ha, wat in die voetspoor van die interne substasie geleë moet wees Vermoë: 200–800 MWh
Toegangspaaie (hoof- en interne paaie)	Gruishooftoegangspad: Sal deel van die windplaas se interne padnetwerk wees. Geen bykomende toegangspad word benodig nie. As die windplaas later opgerig word, sal die toegangspad 5 km lank wees, waarvan 3,3 km ‘n bestaande gruispad is wat opgegradeer moet word. Interne paaie: 4,5 m breed met verbredings om die draaie.	Gruishooftoegangspad: Sowat 200 m se nuwe pad sal gebou word. Afgesien daarvan, sal die toegangspad deel van die windplaas se interne padnetwerk wees. As die windplaas later opgerig word, sal die toegangspad 5 km lank wees, waarvan 3,3 km ‘n bestaande gruispad is wat opgegradeer moet word. Interne paaie: 4,5 m breed met verbredings om die draaie.	Gruishooftoegangspad: Sal deel van die windplaas se interne padnetwerk wees. Geen bykomende toegangspad word benodig nie. As die windplaas later opgerig word, sal die toegangspad 5 km lank wees, waarvan 3,3 km ‘n bestaande gruispad is wat opgegradeer moet word. Interne paaie: 4,5 m breed met verbredings om die draaie.
Ander verwante infrastruktuur	Kabels vanaf die interne substasie tot by die kollektorsubstasiegebied (hetsy ondergronds of oorhoofs); sentrale wisselrigterstasies of stringwisselrigters; kabels tussen panele, wat ondergronds gelê moet word waar dit prakties moontlik is; ‘n tydelike stapelwefgebied; personeelverblyf; en bedryfs- en instandhoudingsgeboue met insluiting van ‘n hekhuis, sekerheidsgebou, beheersentrum, kantore, store, ‘n werkswinkel en besoekersentrum. Elke projek sal al die nodige elektriese en hulptoerusting insluit wat by die kollektorsubstasie benodig word wat daardie sonkragaanleg bedien. Dit sal ‘n transformator, skakelwerf/-vak, beheergebou, heinings, ens. insluit.		

Windkragaanlegte:

Projeknaam	Angora Windkragaanleg	Merino Windkragaanleg
Geaffekteerde eiendomme (d.i. projekterrein)	• Gedeelte 11 van die plaas Gegundefontein 53 • Gedeelte 0 van die plaas Vogelstruisfontein 84 • Gedeelte 1 van die plaas Rondavel 85 • Gedeelte 0 van die plaas Rondavel 85	• Gedeelte 1 van die plaas Rondavel 85 • Gedeelte 0 van die plaas Rondavel 85 • Gedeelte 9 van die plaas Bult & Rietfontein 96
Gekontrakteerde vermoë	140 MW	140 MW
Aantal turbines	23–45 eenhede	23–45 eenhede
Turbine se naafhoogte	110 – 170 m	110 – 170 m
Turbine se spitshoogte	170 – 250 m	170 – 250 m
Rotordeursnee	125-180 m	125-180 m
Grootte en vermoë van interne substasie	33/132 kV interne substasie van 1 000 m x 700 m	33/132 kV interne substasie van 1 000 m x 700 m
Batterykrag-bergingstelsel	Voetspoor: 2–10 ha, wat in die voetspoor van die interne substasie geleë moet wees Vermoë: 200–800 MWh	Voetspoor: 2–10 ha, wat in die voetspoor van die interne substasie geleë moet wees Vermoë: 200–800 MWh
Toegangspaaie (hoof- en interne toegangspaaie)	Ongeveer 30 km se nuwe paaie plus die opgradering van ongeveer 20 km se bestaande paaie.	Ongeveer 30 km se nuwe paaie plus die opgradering van ongeveer 20 km se bestaande paaie.
Ander verwante infrastruktuur	Kabels vanaf die interne substasie tot by die kollektorsubstasiegebied (ondergronds); beton turbinefondasies en -vasteblaaie; tydelike stapelwerfgebiede wat bergings- en monteergebiede sal akkommodeer; kabels tussen die turbines, wat ondergronds gelê moet word waar dit prakties moontlik is; 'n tydelike betonlotaanleg; personeelverblyf; en bedryfs- en instandhoudingsgeboue met insluiting van 'n hekhuis, sekerheidsgebou, beheersentrum, kantore, store, 'n werkswinkel en besoekersentrum. Elke projek sal al die nodige elektriese en hulptoerusting insluit wat by die kollektorsubstasie benodig word wat daardie windkragaanleg bedien. Dit sal 'n skakelwerf/-vak, beheergebou, heinings, ens. insluit.	

Roosterkonneksie-infrastruktuur

Besonderhede van die beoogde roosterkonneksie-infrastruktuur en alternatiewe word in die onderstaande tabel voorsien. Verskeie konneksie-opsies bestaan om elk van die aanlegte uiteindelik met Eskom se Gamma-substasie te verbind.

Korridorbreedte (vir evalueringsdoeleindes)	Vier alternatiewe roosterkonneksiekorridors is vir die evaluering en plasing van die roosterkonneksie-infrastruktuur geïdentifiseer. Die roosterkonneksiekorridors behels 'n 1 km-breë kraglynkorridor om dit moontlik te maak om omgewingsensitiwiteite te vermy en om geskikte plasing in die geïdentifiseerde korridor van voorkeur moontlik te maak. Gevolglik word die hele korridor vir die ontwikkeling beoog, met dien verstande dat die infrastruktuur in die geëvalueerde korridor bly en omgewingsensitiwiteite vermy word.
Kraglynvermoë	132 kV (enkel- of dubbelkring)
Mashoogte	Hoogstens 32 m
Breedte van die kraglynserwituut	Hoogstens 40 m
Lengte van kraglyne	**Opsie 1:** Kollektorsubstasie – Gamma ~ 37,95 km **Opsie 2:** Kollektorsubstasie – Gamma ~ 37,85 km **Opsie 3:** Kollektorsubstasie – Gamma ~ 37,6 km **Opsie 4:** Kollektorsubstasie – Gamma ~ 37,5 km
Ontwikkelingsvoetspoor van die kollektorsubstasie	1000mx700m
Capacity of the Collector Substation	132kV
Affected properties	• Gedeelte 0 van die plaas Annex Rondavel 86 • Gedeelte 1 van die plaas Annex Rondavel 86 • Gedeelte 1 van die plaas Uit Vlugt Fontein 265 • Gedeelte 0 van die plaas Wynandsfontein 91 • Gedeelte 1 van die plaas Wynandsfontein 91 • Gedeelte 3 van die plaas Vlekfontein 90 • Gedeelte 0 van die plaas Burgersfontein 92 • Gedeelte 1 van die plaas Nieuwe Fontein 89 • Gedeelte 0 van die plaas Rondavel 85 • Gedeelte 1 van die plaas Rondavel 85 • Gedeelte 0 van die plaas Kleinfontein 93 • Gedeelte 8 van die plaas Jan Booysens Onder Plaats 94 • Gedeelte 1 van die plaas Bult & Rietfontein 96 • Restant van Plaas 3

Die projekte is om te help om Suid-Afrika se kraguitdaging aan te spreek en om in lyn te wees met die Departement van Minerale Hulpbronne en Energie (DMHE) se Geïntegreerde Hulpbronplan (GHP) 2019, om 'n uiteenlopende kragmengsel na te streef wat afhanklikheid van 'n enkele of 'n paar primêre kragbronne verminder. Die ontwikkelaar is van voorneme om elke hernubare kragaanleg aan te bied ingevolge die Verkrygingsprogram vir Onafhanklike Hernubare Kragprodusente (REIPPP). Die krag wat by elke hernubare kragaanleg opgewek sal word, sal aan Eskom verkoop en deur die beoogde roosterkonneksie-oplossing by die nasionale kragnet ingevoer word.

Doel van hierdie agtergrondinligtingsdokument

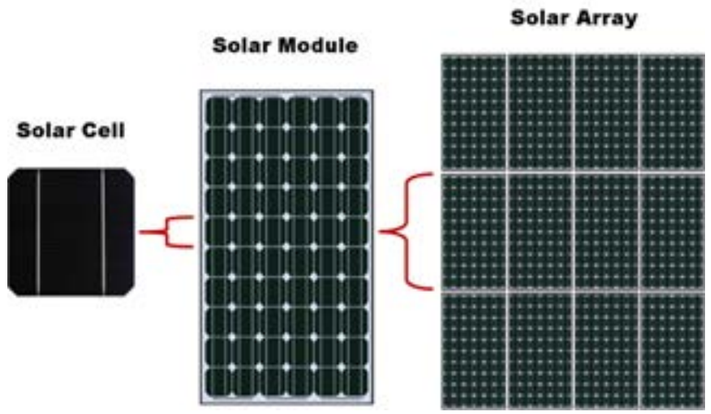
Hierdie dokument stel dit ten doel om u, as 'n belangstellende en/of geaffekteerde party (B&GP), te voorsien van:

- 'n oorsig van die hernubare kragaanlegte wat deel van die groep en hul verwante roosterkonneksie-oplossings vorm.
- 'n oorsig van die Bestekopname- en Omgewingsimpakevalueringsprosesse (OIE-prosesse), Basiese Evalueringsprosesse (BE) en spesialisstudies wat onderneem word om die hernubare kragaanlegte en hul verwante roosterkonneksie-oplossings te evalueer;
- besonderhede van hoe u by die B&OIE- en BE-prosesse betrokke kan raak, inligting kan ontvang of kommentaar kan opper wat u dalk kan raak en/of vir u van belang kan wees.

Oorsig van fv-sonkragtegnologie

Sonkragaanlegte gebruik die son se energie om elektrisiteit op te wek deur 'n proses wat as die Fotovoltaïese Effek bekendstaan. Hierdie effek verwys na ligfotone wat met elektrone bots, wat die elektrone gevolglik in 'n hoër staat van energie plaas om elektrisiteit voort te bring. Die FV-aanlegte se sonkragvelde sal uit die volgende komponente bestaan:

Fotovoltaïese Selle:
'n Fotovoltaïese (FV) sel word van silikon gemaak wat as halfgeleier optree en gebruik word om die fotovoltaïese effek voort te bring. FV-selle word in veelvoude/reekse gerangskik en agter 'n beskermende glaspaneel geplaas om 'n FV-paneel te vorm. Elke FV-sel se een kant is positief en die teenoorgestelde kant negatief gelaai, met elektriese geleiers wat aan beide kante gekoppel word om 'n stroombaan te vorm. Hierdie stroombaan vang die vrygestelde elektrone vas in die vorm van 'n elektriese stroom (d.i. gelykstroom (GS)).



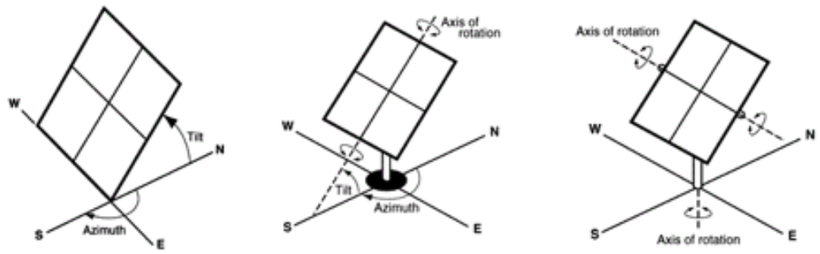
Figuur 2: Oorsig van 'n FV-sel, module en reeks/paneel (Bron: pveducation.com)

'n FV-sonpaneelmodule bestaan uit individuele FV-selle wat met mekaar verbind is, terwyl 'n FV-sonkragreeks 'n stelsel is wat bestaan uit 'n groep individuele FV-sonkragmodules wat elektries bedraad is om 'n veel groter FV-installasie te vorm. Die FV-panele sal op steunstrukture aangebring word om blootstelling aan die son te maksimaliseer.

Wisselrigters
Wisselrigters word gebruik om elektrisiteit wat deur die FV-selle opgewek word van gelykstroom (GS) na wisselstroom (WS) om te sit sodat die aanleg met die nasionale kragnet verbind kan word. Verskeie wisselrigters sal in etlike reekse gerangskik word om krag wat deur die aanlegte opgewek word, te versamel en om te sit.

FV-panele is ontwerp om vir meer as 20 jaar ononderbroke, meestal onbeman en met min instandhouding in bedryf te staan.

Steunstrukture
FV-panele sal op steunstrukture aangebring word. FV-panele kan hetsy vaste/stilstaande steunstrukture gebruik, of andersins kan dit enkel- of dubbelas naspoorsteunstrukture gebruik. FV-panele wat vaste/
stilstaande steunstrukture gebruik, word teen 'n hoek gestel (vaste-kanteling FV-stelsel) ten einde die hoeveelheid sonbestraling wat ontvang word, ten volle te benut. Met vaste/stilstaande steunstrukture, hang die hoek van die FV-paneel af van die breedteligging van die beoogde ontwikkeling en kan verstel word om die kenmerke van somer- en wintersonbestraling ten volle te benut. FV-panele wat naspoorsteunstrukture gebruik, volg die son se beweging deur die dag ten einde die maksimum hoeveelheid sonbestraling te ontvang.



Figuur 3: Oorsig van verskillende FV-naspoorstelsels (van links na regs: vastekanteling, enkelas-nasporing en dubbelas-nasporing (Bron: pveducation.com)

FV-panele is ontwerp om vir meer as 20 jaar ononderbroke, meestal onbeman en met min instandhouding in bedryf te staan.

Batterykragbergingstelsel (BESS)

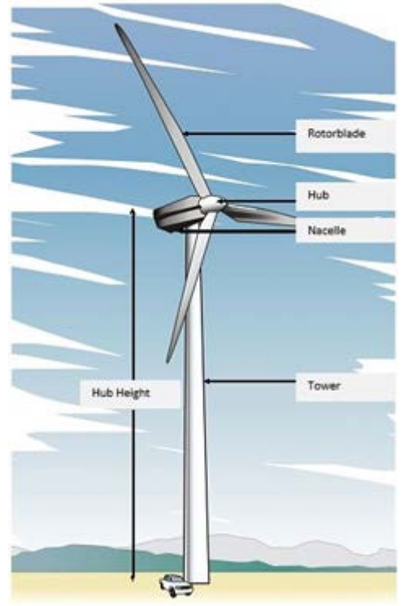
Die behoefte vir 'n BESS spruit voort uit die feit dat elektrisiteit slegs deur die Hernubare Kragaanleg opgewek word terwyl die son skyn, terwyl die piekvraag nie noodwendig gedurende die dag plaasvind nie. Gevolglik sal die berging van elektrisiteit en die voorsiening daarvan tydens piekvraag beteken dat die aanleg meer doeltreffend en meer betroubaar sal wees en dat die elektrisiteitsvoorsiening meer bestendig sal wees.

- Die BESS sal meer hernubare krag van die FV-sonkragaanlegte stoor en by die kragnet integreer.
- Dit sal help met die doelwit om elektrisiteit by wyse van hernubare kragtegnologie op te wek, om by die nasionale kragnet in te voer, wat bekom sal word ingevolge hetsy die Verkrygingsprogram vir Hernubare Krag van Onafhanklike Kragprodusente (REIPPPP), ander staatsbeheerde verkrygingsprogramme of vir verkoop aan privaat entiteite, indien nodig.
- Beoogde voetspoor van batterybergingsgebied: 2 – 10 ha.
- Beoogde vermoë van batteryberging: 200 – 800 MWh.
- Beoogde tegnologie wat gebruik gaan word: Litium-ioon batterye (LFP/NMC of ander) (Li-Ion), Litium kapasitors/Elektrochemiese kapasitors (LiC), en/of Redoksvloeibatterye (RFB).
- Soorte batterye wat oorweeg sal word: Vastestaat- en Redoksvloeibatterye.

Oorsig van windkragtegnologie

Windturbines span windkrag in om elektrisiteit op te wek. 'n Windturbine bestaan uit vier groot hoofonderdele, naamlik die:

- rotor;
- nacelle (turbinehuis);
- toring; en
- fondasie-eenheid.



Figuur 4: Hoofonderdele van 'n windturbine

Die meganiese krag wat deur die rotasie van die skroewe opgewek word, word via 'n ratkas en dryfwerk aan die generator binne-in die nacelle (turbinehuis) oorgedra. Die wind draai die skroewe wat op hul beurt 'n as draai wat aan 'n generator gekoppel is wat elektrisiteit opwek. Die benutting van wind vir die opwekking van elektrisiteit is in wese 'n nie-verbruikende benutting van 'n natuurlike hulpbron en stel geen kweekhuisgasse vry nie.

Turbines kan teen verskillende snelhede funksioneer. Die hoeveelheid energie wat 'n turbine kan inspan, hang af van beide die windsnelheid en die lengte van die rotorskroewe. Die turbines wat vir gebruik by die twee windplase oorweeg word, sal hoogstens 6,5 MW in vermoë wees. Die turbines sal oor 'n naafhoogte van hoogstens 170 m beskik, met 'n spitshoogte van hoogstens 250 m.

Die ontwikkelaar oorweeg verskeie windturbine-ontwerpe en -uitlegte op die projekterreine om die opwekkingsvermoë van die terreine te maksimaliseer terwyl die omgewingsimpakte geminimaliseer word. Die finale uitleg van die aanlegte, turbinevermoëns en -modelle sal afhang van wat as geskik vir die projekterreine in verhouding tot, onder andere, verdere studies van die windregime, terrein en omgewingsbeperkings en goed wat maatskaplik sensitief is, geag word.

Die tydsduur van die konstruksietydperk vir elk van die windplase word op sowat 15–18 maande geraam. 'n Turbine is ontwerp om ononderbroke en met min instandhouding vir 20 tot 25 jaar in bedryf te staan.

Omgewingsimpakevalueringsproses

Ooreenkomstig die OIE-regulasies, 2014 (soos gewysig), wat kragtens Artikel 24(5) van die Nasionale Wet op Omgewingsbestuur (Wet 107 van 1998) (NEMA) gepubliseer is, benodig die applikant Omgewingsmagtiging (OM) van die Nasionale Departement van Bosbou, Visserye en die Omgewing (DFFE), in oorleg met die Noord-Kaapse Departement van Landbou, Omgewingsake, Grondhervorming en Landelike Ontwikkeling vir die ontwikkeling van die beoogde projekte. Ingevolge Artikel 24(5) van NEMA, die OIE-regulasies 2014 (soos gewysig) en Lyskennisgewings (Staatskennisgewing R327, R325 en R324), is die vyf (5) aansoeke om OM vir die hernubare kragaanlegte onderhewig aan die voltooiing van Bestekopname-/OIE-prosesse. Die een (1) aansoek om OM vir die roosterkonneksie-oplossing is onderhewig aan die afhandeling van 'n Basiese Evalueringsproses (BE-proses). Elke aansoek moet gerugsteun word deur omvattende, onafhanklike omgewingstudies wat ingevolge die OIE-regulasies, 2014 (soos gewysig) onderneem word.

'n OIE is 'n doeltreffende beplannings- en besluitnemingswerktuig. Dit bring mee dat potensiële omgewingsverwante gevolge wat voortspruit uit 'n beoogde aktiwiteit, geïdentifiseer en na behore tydens die oprigtings-, bedryfs- en uitbedryfstellingsfase van ontwikkeling bestuur word. Dit bied ook 'n geleentheid vir die projekaansoeker om vooraf gewaarsku te wees van potensiële omgewingskwessies en maak voorsiening vir die oplossing van kwessies wat geïdentifiseer en as deel van die OIE-proses oor verslag gedoen is, en bied ook die geleentheid vir dialoog tussen sleutelbelanghebbers en belangstellende en geaffekteerde partye (B&GP's).

Savannah Environmental is aangestel as die onafhanklike omgewingskonsultant wat verantwoordelik is vir die bestuur van die aparte aansoeke om OM en om die stawende OIE-proses te onderneem wat vereis word om alle potensiële omgewingsimpakte wat verband hou met die projekte wat hierbo uiteengesit is, te identifiseer en te evalueer, en om gepaste versagtings- en bestuursmaatreëls aan die hand te doen wat in die Omgewingsbestuursprogramme (OBPr'e) vervat moet word.

Wat is die potensiële omgewingsimpakte wat verband hou met die beoogde projekte?

Die ontwikkelingsgebied en die roosterkonneksiekorridors sal deur onafhanklike omgewingspesialiste geëvalueer word om die potensiaal vir omgewingsimpakte te identifiseer. Spesialisstudies wat as deel van die OIE-prosesse beoog word, sluit die onderstaande in.

- Biodiversiteitsimpakevaluering – sluit ekologie, fauna en flora in en evalueer die potensiële impak en verwante versteuring van plantegroei op die biodiversiteit van die gebied (insluitende kritiese biodiversiteitsgebiede en breëskaalprosesse.
- Vleiland en varswaterkenmerke – sluit 'n evaluering van impakte en die verwante versteuring van dreineringslyne, riviere en vleilande op 'n breë- en fynskaal in.
- Avifauna-evaluering – sluit in monitering vóór oprigting ingevolge die tersaaklike riglyne en die impak op avifauna se gewoontes en sensitiewe spesies evalueer.
- Vlermuisevaluering – sluit in monitering voor oprigting ingevolge die tersaaklike riglyne en die impak op vlermuise se gewoontes en sensitiewe spesies evalueer.
- Grond en landboupotensiaal-evaluering – sluit grondsoorte in en evalueer die wesenlikheid van verlies aan landbougrond en gronddegradasie en/of erosie.
- Erfenisimpakevaluering (argeologie en paleontologie) – sluit argeologie en paleontologie in en evalueer die potensiële versteuring of vernietiging van erfenisterreine en fossiele tydens die konstruksiefase weens opgrawingsbedrywighede.

- Visuele impakevaluering – sluit die visuele gehalte van die gebied in en evalueer die impak van FV-sonkragaanlegte en die roosterkonneksie-oplossing op die estetika in die gebied.
- Geraasimpakevaluering – sluit in die identifisering van sensitiewe geraasreseptors in die gebied en evalueer die wesenlikheid van die versteuring tydens oprigting en bedryf van die windplase.
- Maatskaplike impakevaluering – wat die positiewe en negatiewe maatskaplike impakte evalueer.
- Verkeersimpakevaluering – evalueer die impak van die ontwikkelings op verkeer en padnetwerke in die gebied.

Terreinspesifieke studies sal onderneem word om die potensiële impak van die beoogde ontwikkeling te evalueer, om sensitiwiteitsgebiede in die geaffekteerde plaasgedeeltes af te baken, om die impakte wat met die projekte verband hou, te evalueer en om aanbevelings te maak betreffende vermyding, bestuur en versagting van impakte. Studies sal deur beskikbare inligting en gedetailleerde veldondersoeke toegelig word wat ooreenkomstig die tersaaklike riglyne en protokolle onderneem word. Sodra die beperkende omgewingsfaktore bepaal is, kan die uitleg vir die beoogde aanlegte bepaal en in die OIE-verslagdoening voorgehou word.

Openbare deelnameproses

Die deel van inligting vorm die grondslag van die openbare deelnameproses en bied B&GP's die geleentheid om aktief by die OIE-prosesse betrokke te raak. Kommentaar en insette van B&GP's word aangemoedig ten einde te verseker dat oorweging aan potensiële impakte regdeur die OIE-prosesse geskenk word.

Die openbare deelnameproses poog om te verseker dat:
- inligting wat al die tersaaklike feite met betrekking tot die aansoeke bevat, aan B&GP's beskikbaar gestel word vir insae;
- deelname deur B&GP's op so 'n wyse gefasiliteer word dat hulle 'n redelike geleentheid gegun word om kommentaar op die beoogde projekte te lewer; en
- voldoende insaetydperke aan B&GP's gebied word om kommentaar te lewer oor die bevindinge van die Bestekopname-, OIE- en Basiese Evalueringsverslag.

Ten einde doeltreffende deelname te verseker, sluit die openbare deelnameprosesse in:

- die identifisering van B&GP's, met insluiting van geaffekteerde en naburige grondeienaars en -bewoners en tersaaklike staatsinstansies en die boekstawing van besonderhede in 'n databasis;
- die verwittiging van geregistreerde B&GP's van die aanvang van die OIE-prosesse en die verspreiding van die Agtergrondinligtingsdokument (AID);
- die voorsiening van toegang aan geregistreerde partye tot 'n aanlyn skakelingsplatform vir belanghebbers, wat projekinligting en insette van belanghebbers in 'n enkele digitale platform bymekaarbring;
- om B&GP's 'n geleentheid te bied om met die projekspan te skakel;
- die plasing van terreinkennisgewings by die geaffekteerde eiendomme en in die studiegebied;
- die plasing van 'n advertensie in 'n plaaslike koerant en die gebruik van 'n plaaslike radiostasie (waar dit beskikbaar is);
- die verwittiging van B&GP's van die vrystelling van die verslae vir insae en kommentaar, vergaderings wat gehou moet word en van die sluitingsdatums waarteen kommentaar ontvang moet word;
- om 'n geleentheid te bied om via 'n geskikte virtuele platform (om die risiko's te verminder wat met COVID-19 gepaard gaan) of telefonies met die projekspan te skakel.

U verantwoordelikhede as 'n b&gp

Kragtens die OIE-regulasies, 2014 (soos gewysig) en die Openbare Deelnameriglyne, 2014, word u aandag gevestig op u verantwoordelikhede as 'n B&GP, naamlik om:

- uself op die B&GP se databasis te registreer om aan die OIE-prosesse deel te neem;
- enige regstreekse sake-, finansiële-, persoonlike- of ander belang wat u dalk in die goedkeuring of weiering van die aansoeke kan hê, bekend te maak;
- toe te sien dat u enige kommentaar met betrekking tot die beoogde projekte binne die gestipuleerde tydsraamwerke ingedien word.

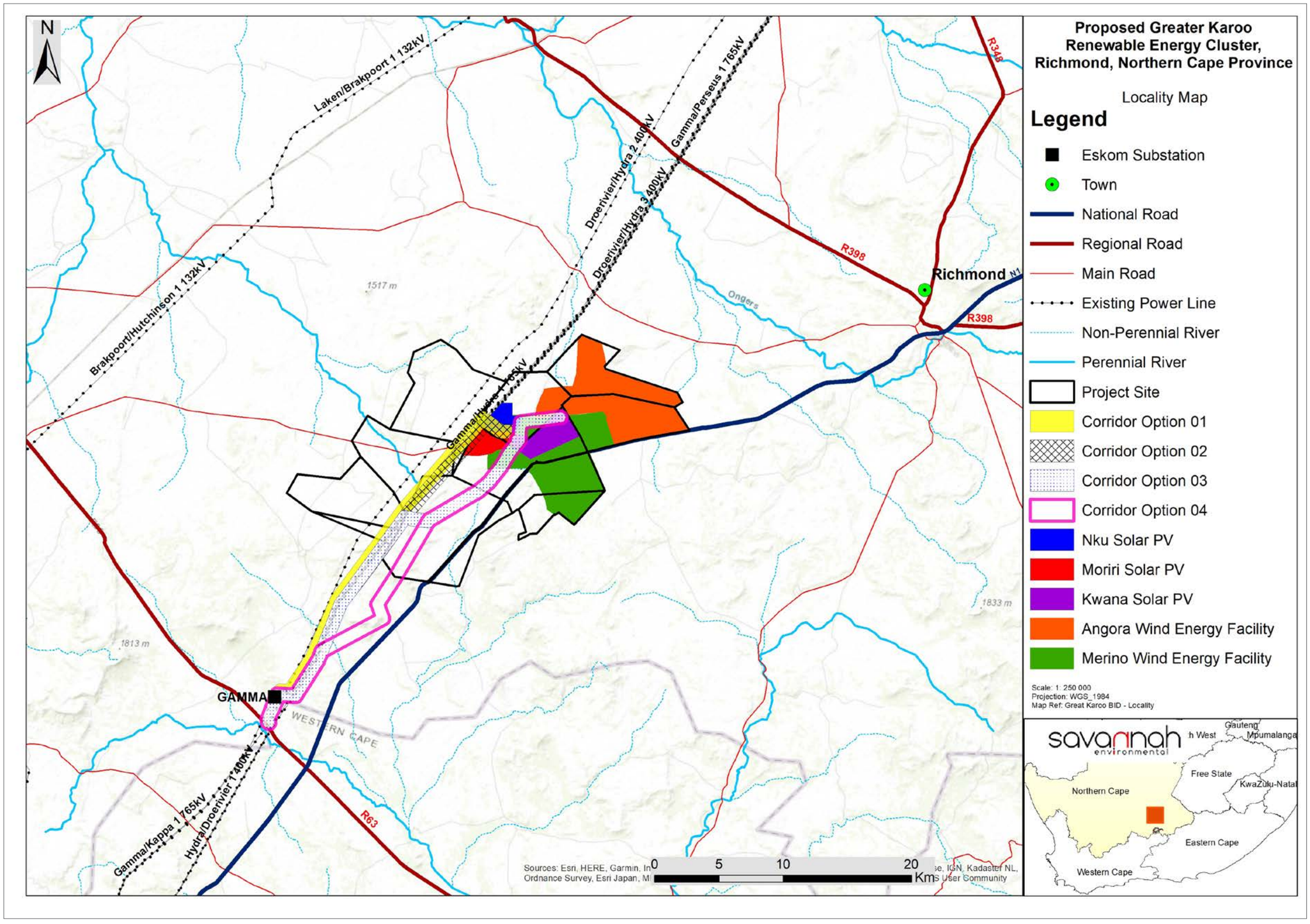
Hoe om betrokke te raak

- Deur telefonies, per faks of per e-pos te reageer op die uitnodiging vir u betrokkenheid.
- Deur die antwoordvorm aan die tersaaklike kontakpersoon terug te besorg.
- Deur tydens die OIE-prosesse met die projekspan te skakel.
- Deur die omgewingskonsultant met navrae of kommentaar te kontak.
- Deur oorsig oor en kommentaar op die verslae te bied, en wel binne die gestipuleerde insae- en kommentaartydperke.

As u uself as 'n B&GP vir die beoogde projekte ag, moedig ons u aan om gebruik te maak van die geleenthede wat geskep word deur die openbare deelnameproses om kommentaar te lewer of daardie kwessies en knelpunte te opper wat u raak en/of vir u van belang is of waaroor u meer inligting versoek. U inset vorm 'n belangrike deel van die OIE-prosesse.

Deur die meegaande antwoordvorm in te vul en aan ons terug te besorg, registreer u uself outomaties as 'n B&GP vir die beoogde projekte en verseker u dat kennis geneem sal word van die kommentaar, knelpunte of navrae wat u met betrekking tot die projekte opper. Let asseblief daarop dat alle kommentaar wat ontvang word, by die projek se dokumentasie ingesluit sal word. Dit kan persoonlike inligting insluit.

Figuur 1: Liggingskaart van die Groot Karoo Hernubare Kraggroep



KOMMENTAAR EN NAVRAE

Rig alle kommentaar, navrae of antwoorde aan:

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om projekdokumentasie te besigtig.