EXECUTIVE SUMMARY: SCOPING REPORT
SKILPAD SOLAR ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE, NORTHERN CAPE PROVINCE

JUNE 2023 SRK PROJECT NUMBER: 583169/01

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (Mainstream) proposes to develop the Hanover Cluster (the Cluster) of 11 renewable energy facilities comprising seven Solar Energy Facilities (SEFs), four Wind Energy Facilities (WEFs), 12 Battery Energy Storage Systems (BESS), and 12 substations (11 on-site substations and one Main Transmission Substation [MTS]). The associated infrastructure comprises access roads and grid connections to evacuate energy from each SEF and WEF to the national grid.

The Cluster is located ~ 15 km west of the town of Hanover, in the Pixley ka Seme District Municipality (PKSDM), Northern Cape Province. The Cluster extends across 21 farms and has a total development area of ~27 918 ha (279 km^2) (see Figure 1).

SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by Mainstream to undertake the Scoping and Environmental Impact Reporting (S&EIR also referred to as Environmental Impact Assessment [EIA]) processes) and Basic Assessment (BA) processes for components of the Cluster that have been grouped into 23 projects.

Separate EAs are sought for the individual projects in the Hanover Cluster:

- 7 x SEFs, each including 33 kV powerlines, BESS and an on-site substation;
- 4 x WEFs, each including 33 kV powerlines, BESS and an on-site substation;
- 11 x 132 kV powerlines connecting each on-site substation to the MTS; and
- 1 x MTS, BESS and two alternative 400 kV lines that will tie in to existing 400 kV powerlines.

The EIA process for the Skilpad SEF, being undertaken in accordance with the EIA Regulations, 2014 is required to inform an Application for Environmental Authorisation (EA) in terms of the National Environmental Management Act 107 of 1998 (NEMA).

The Scoping Reports for the seven SEFs are currently available for public comment. **This executive summary relates to the Skilpad SEF and associated infrastructure.**

See page 7 for details on how you can participate in the process.

2. GOVERNANCE FRAMEWORK

NEMA and EIA Regulations, 2014

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA issued by the competent authority, in this case, the National Department of Forestry, Fisheries and the Environment (DFFE).

Listing Notice (LN) 1 and LN 3 list activities requiring a BA process to be followed, and LN 2 lists activities requiring S&EIR.

SRK has determined that the proposed project triggers activities listed in terms of LN 1, LN 2 and LN 3 as described (briefly) in Table 1.

Table 1: Listed activities triggered by the project

No	Description
LN1 (requiring BA)	
11	The development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.
14	The development and related operations of facilities or infrastructure, for the storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 80 m^3 or more but not exceeding 500 m^3.
19	The infilling or depositing of any material of more than 10 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 m^3 from a watercourse.
24	The development of a road with a reserve wider than 13.5 m, or where no reserve exists where the road is wider than 8 m.
28	Residential, mixed, retail, commercial, industrial or institutional developments on land used for agriculture where such development will occur outside an urban area, where the total land to be developed is bigger than 1 ha.
56	The widening of a road by more than 6 m, or the lengthening of a road by more than 1 km where no reserve exists, where the existing road is wider than 8 m.
LN2 (requiring S&EIR)	
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output of 20 megawatts or more.
15	The clearance of an area of 20 ha or more of indigenous vegetation.

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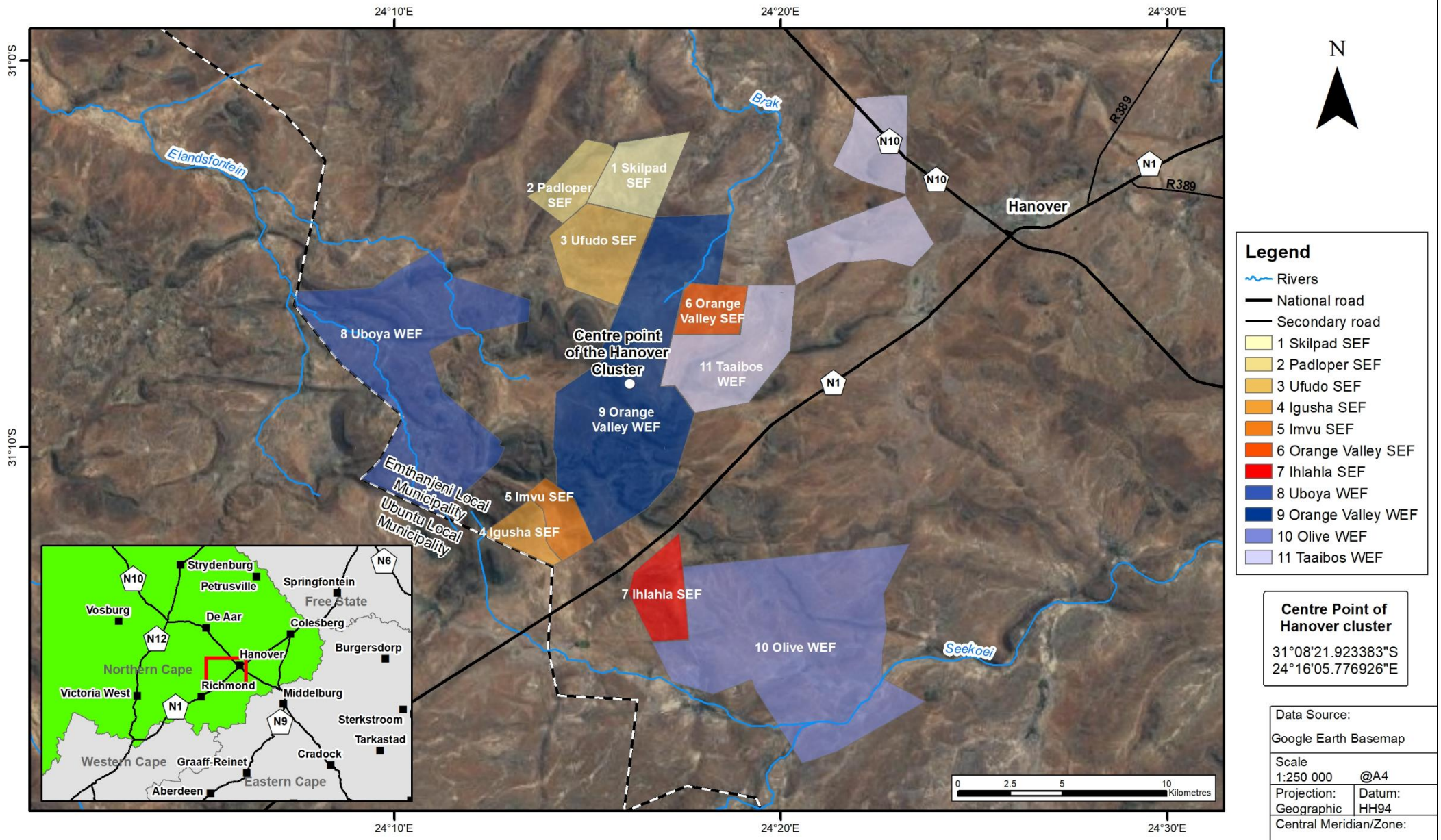

Data Source:	Google Earth Basemap
Scale 1:250 000	@A4
Projection: Geographic	Datum: HH94
Central Meridian/Zone:	

srk consulting

HANOVER RENEWABLE ENERGY CLUSTER
LOCALITY MAP

Date: 10/10/2022	Compiled by: LOUA
Project No. 583169	Fig No.

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No	Description
LN3 (requiring BA in the sensitive areas)	
4	The development of a road wider than 4 m with a reserve less than 13.5 m in a Critical Biodiversity Area (CBA).
12	The clearance of an area of 300 m^2 or more of indigenous vegetation within a critically endangered or endangered ecosystem or a CBA.
14	The development of infrastructure or structures with a physical footprint of 10 m^2 or more where such development occurs within a watercourse or within 32 m of a watercourse, in sensitive areas as identified in an environmental management framework or CBAs or ecosystem service areas.
18	The widening of a road by more than 4m or the lengthening of a road by more than 1 km outside urban areas, within sensitive areas, CBAs or ecosystem service areas or within a watercourse or wetland or 100m of a watercourse or wetland.

Consequently, the Mainstream is obliged to apply for EA for the project and will submit an Application for EA to DFFE.

National Water Act 36 of 1998 (NWA)

A Water Use Authorisation in terms of sections 21 of the NWA will potentially be required from the Department of Water and Sanitation due to the proximity of infrastructure to watercourses. (If required, Mainstream will make application in terms of the NWA if the project is awarded Preferred Bidder status).

National Heritage Resources Act 25 of 1999 (NHRA)

The proponent is required to notify the South African Heritage Resources Agency (SAHRA) and the Northern Cape Heritage Resources Authority (NCHRA) of the proposed activities and then undertake any assessments deemed necessary by *either of these authorities.* The assessment of heritage, archaeological and paleontological impacts will be undertaken as part of the NEMA EIA process.

3. ENVIRONMENTAL PROCESS

The EIA Regulations, 2014 define the detailed approach to the S&EIR process, which consists of two phases: Scoping Phase and the Impact Assessment Phase (see Figure 2).

The objectives of the Scoping Phase are to:

- Identify stakeholders and inform them of the proposed activity, feasible alternatives and the S&EIR process;
- Describe the affected environment and potential environmental issues and benefits arising from the proposed project that may require further investigation in the Impact Assessment Phase;
- Develop terms of reference for specialist studies to be undertaken in the Impact Assessment Phase;
- Provide stakeholders with the opportunity to participate in the process and identify any issues or concerns; and
- Produce a Scoping Report for submission to the relevant authorities.

Once the Scoping Phase has been completed, the Impact Assessment Phase will commence, in which the significance of potential impacts will be assessed and measures to avoid and /or mitigate negative impacts and enhance benefits will be determined.

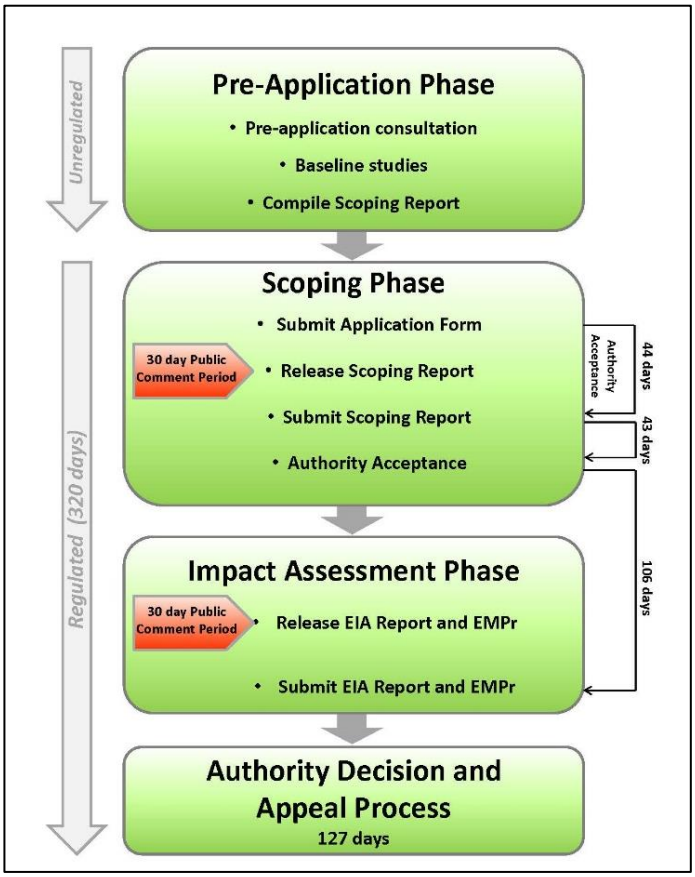

Figure 2: S&EIR Process

***Note:** EMPr = Environmental Management Programme*

4. DESCRIPTION OF THE SITE AND ENVIRONMENT

The Hanover Cluster is located in the semi-arid Great Karoo, where agriculture and – further north - mining are the key economic sectors. The climate and vegetation of the Great Karoo limit the potential for cultivation and the area is predominantly utilised for sheep and cattle farming.

Apart from the nodes of urban development (Hanover ~15km to the east, De Aar ~ 45km to the north-west and Richmond ~50 km to the south-west), the area largely comprises extensive farms, mainly given over to grazing, guesthouses and lodges, a network of gravel farm roads, and the N1 and N10 transport corridors.

The Skilpad SEF is located in the Emthanjeni Local Municipality, ~15 km north-west of the town of Hanover in the Northern Cape Province. The project is situated on Farm Vogelfontein 1/71.

Farm Vogelfontein 1/71 measures approximately 1 692 ha, is zoned for Agriculture and currently used as grazing land for sheep, goats and cattle. The portion of the property on which the Skilpad SEF is proposed would be rezoned to Special Zoning and leased from the property owner. No

existing structures or roads are currently located on or traverse this land.

Mainstream has identified a development envelope for the Skilpad SEF, which aims to exclude all areas of very high sensitivity from an environmental or social perspective.

The development envelope comprises shrubland plain habitat, characteristic of the Northern Upper Karoo vegetation type, largely consisting of various grass species. The site is relatively flat, conducive to the development of a SEF, but is flanked by ridges to the north and west of the site and rocky outcrops directly to the east and south. No rivers traverse the development envelope, but a drainage area for an ephemeral river occurs directly to the west of the site.

The Hanover Cluster intersects four distinct vegetation types, namely the Eastern Upper Karoo, Northern Upper Karoo, Upper Karoo Hardeveld and Besemkaree Koppies Shrubland. A total of 448 species of indigenous plants are expected to occur within the proposed Hanover Cluster. Seven of these flora species are SCC.

A total of 35 species, representing 14 families of protected flora were recorded within the Skilpad SEF development area. Eighteen (51%) of these species are endemic to South Africa, with two regarded as SCC.

Figure 3: Shrubland plains in Skilpad development envelope

Approximately half of the Hanover Cluster overlaps with CBAs and the remaining half with Ecological Support Areas (ESAs) associated with the Platberg-Karoo Conservancy Important Bird Area (IBA) and catchments designated as Freshwater Ecosystem Priority Areas (FEPA).

A total of 11 amphibian species are expected to occur within the Hanover Cluster, none of which are SCC. Thirty four reptile species are expected to occur within the Hanover Cluster, one of which is regarded as a SCC - *Psammobates tentorius verroxii* (Verrox's Tent Tortoise). Of the fifty seven mammal species that are expected to occur within the Hanover Cluster, seven are regarded as SCC.

The Hanover Cluster is located within the Platberg-Karoo Conservancy IBA. This IBA contributes significantly to the conservation of large terrestrial birds and raptors. 289 bird species are known to occur in the IBA. Threatened bird species expected to occur in the Broader Area include:

- Blue Crane (Globally Vulnerable, Regionally Near Threatened);
- Blue Korhaan (Globally Near Threatened);
- Martial Eagle (Globally and Regionally Endangered);
- Blue Korhaan (Globally Vulnerable);
- Black Harrier (Globally and Regionally Endangered);
- Verreaux's Eagle (Regionally Vulnerable);
- Ludwig's Bustard (Globally and Regionally Endangered); and
- Secretarybird (Globally Endangered, Regionally Vulnerable).

Figure 4: Verreaux's Eagle

The Karoo is a vast palaeontological landscape underlain by multiple shale and mudstone strata which together represent ~400 million years of depositional history. These strata contain an array of fossils, ranging from fish, early vertebrates and plant remains to trace fossils and are one of the most complete fossil repositories on the planet and have been a subject of research since the early 20th century.

There is a high likelihood of pre-colonials archaeological material occurring in the area.

5. PROJECT MOTIVATION

Mainstream intends to develop the 150 MW Skilpad SEF and associated infrastructure to generate ~322 GWh of electricity per annum near Hanover, Northern Cape Province. This project will reduce the carbon intensity of South Africa's energy production. The location of the larger Hanover Cluster and proposed Skilpad SEF is considered suitable for the development of a PV array and evacuation to the grid due to the high Global Horizontal Irradiation (GHI), sufficiently large sites, suitable topography, landowner support for the project, site access and grid access.

6. PROJECT DESCRIPTION

The Skilpad SEF will comprise:

- Photovoltaic (PV) arrays with a maximum export capacity of 150 MW;
- 33/132 kV on-site substation comprising:
  - Independent Power Producer (IPP) portion ("side") of the 33/132 kV on-site substation including the BESS; and
  - 132 kV switching-station portion of the on-site substation;

- A 33 kV overhead powerline(s) / underground cabling between the SEF and IPP-side of the 33/ 132 kV on-site substation; and
- Internal ancillary infrastructure and structures including roads, invertor substations and service infrastructure.

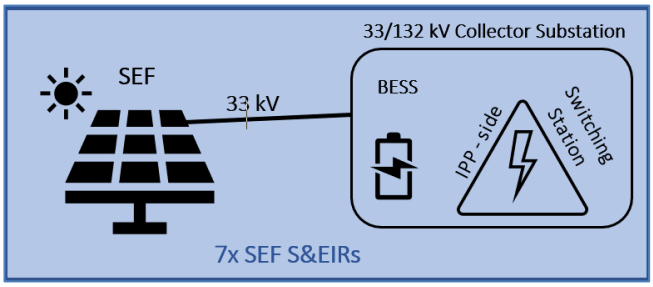

Figure 5: Skilpad SEF project components

This infrastructure will be positioned in the Skilpad SEF development envelope, however a detailed development layout has not yet been determined. For the purposes of the EIA, it is assumed that the entire development envelope will be disturbed, and area of approximately 390 ha.

Solar panel arrays will comprise either monofacial panels (with PV cells on one side only) or bifacial panels (with solar cells on both sides), each on a single axis mounting system. The Skilpad SEF will comprise approximately 250 000 – 350 000 PV panels mounted in parallel rows north-south aligned rows over most of the development envelope.

Three cell technology alternatives will be considered during detailed design: Monocrystalline modules, Polycrystalline modules and Thin-film modules. While more polycrystalline modules are required to generate the same energy output than monocrystalline modules, the choice of cell technology does not materially affect the project layout or impacts and these will not be comparatively assessed.

A **BESS**, occupying up to 5ha within the footprint of the IPP-side of the on-site substation, may be constructed to store energy generated by the SEF, making energy supply from the SEF more efficient, available and reliable. The BESS will comprise an assemblage of container-sized battery modules. Mainstream is considering with solid state or redox flow batteries.

Either underground cables or overhead **transmission lines** will connect the panels and arrays, and provide connection to the on-site substation and BESS.

The on-site substation will occupy up to 25 ha and will comprise two portions:

- the 12.5 ha IPP-side of the substation will receive incoming power from the SEF at 33 kV and step up outgoing electricity to 132 kV, which is converted from DC to AC. The substation will be owned and operated by the IPP; and
- the 12.5 ha switching station portion of the on-site substation will step up electricity to 132 kV and transmit electricity to the MTS. This portion of the substation will be owned and operated by Eskom.

7. ALTERNATIVES

Appendix 2 Section 2 (h)(i) of the EIA Regulations, 2014, requires that all S&EIR processes must identify and describe feasible and reasonable alternatives.

Various alternatives have been (or are being) considered by Mainstream and will be assessed in the EIA process (see Table 2). In most cases these alternatives are next expected to impact the project footprint or impacts and may not be comparatively assessed.

Table 2: Alternatives considered

Alternative type	Alternatives considered	Assessed in EIA
Location	Project location	**Yes**
	Alternative location	No
Layout	Covering entire development area	No
	Reduced development envelope based on environmental sensitivities	**Yes**
Activity	Activity as described in Scoping Report	**Yes**
	No-go alternative	**Yes**
Technology ***Cell technology***	Monocrystalline Modules	**Yes**
	Polycrystalline Modules	**Yes**
	Thin Film Modules	**Yes**
Panel technology	Monofacial panels	**Yes**
	Bifacial panels	**Yes**
Panel mounting technology	Fixed axis	No
	Single axis tracking	**Yes**
	Dual axis tracking	No
BESS technology	Solid State Batteries	**Yes**
	Redox Flow Batteries	**Yes**

The No Go alternative will be considered in the EIA in accordance with the requirements of the EIA Regulations, 2014. The No Go alternative entails no change to the *status quo*, in other words the proposed project will not proceed and no PV array, substation and powerlines will be built

8. POTENTIAL ENVIRONMENAL AND SOCIAL IMPACTS

The potential impacts of the project are mostly linked to the sensitivity of the ecological environment, heritage and cultural environment, social environment, and stakeholders' perceptions.

The following key environmental issues – potential negative impacts and potential benefits – have been identified:

- **Terrestrial and aquatic ecology** – the clearance of vegetation, accidental fires, erosion and dust will lead to habitat loss and fragmentation, impact on species productivity and diversity of the pollinator community. Encroachment of invasive alien plants into disturbed areas may occur. Construction activities, increased noise and reflection effects could also disturb fauna;
- **Avifauna** – disturbance and habitat transformation will displace certain avifaunal priority species in the area. Mortality of certain species can result from collisions with solar panels and overhead powerlines, entrapment in perimeter fences and electrocution on overhead powerlines;
- **Socio-economic** – investment contributing to the economy and generation of employment, income, skills development and increased prosperity due to socio-economic development initiatives and possible part ownership are potential benefits of the project;
- **Heritage** – site preparation and earthworks can lead to loss of, or damage to, palaeontological and archaeological resources and historical structures. The cultural landscape and heritage significance will also be altered;
- **Visual** – construction activities, proposed infrastructure and additional lighting on the overwhelmingly natural site will alter the sense of place and lead to visual intrusion; and
- **Traffic** – increased traffic volumes on the road network during construction and operation phases causing potential disruption to existing road users and damage to dirt roads.

Certain impacts, while important, are considered likely to be less significant, including noise and air quality impacts. Climate change impacts will also be considered.

9. STAKEHOLDER ENGAGEMENT

Stakeholder engagement is a key component of the S&EIR process and is being undertaken in accordance with Chapter 6 of the EIA Regulations, 2014. The stakeholder engagement activities undertaken during the Pre-Application Phase and proposed during the Scoping Phase are summarised in Table 3 below.

Relevant local, provincial and national authorities, conservation bodies, local forums and surrounding landowners and occupants have been directly notified of the S&EIR process and the release of the Scoping Report for comment.

Table 3: Stakeholder engagement during Pre-Application and Scoping

Activity	Date
Pre-Application	
Site notification posters and community notices inviting registration	8 September 2022
Scoping	
Advertise project and Release Scoping Report to the Public	14- 19 June 2023
Comment period	19 June – 18 July 2023
Compile Issues and Responses Summary and Final Scoping Report	~8 August 2023

(Limited) comments submitted to date indicate that many of the affected landowners support the project and do not expected current farming activities to be affected.

Following public review of the Scoping Report, issues raised by authorities and the public will be summarised and responded to in an Issues and Responses Summary, which will be appended to the Scoping Report

10. PLAN OF STUDY FOR THE IMPACT ASSESSMENT

To address the potential issues and associated with the project, the following **specialist studies** are proposed:

- Biodiversity (including terrestrial and aquatic ecology) Impact Assessment;
- Land Capability and Agricultural Potential Compliance Statement;
- Avifauna Impact Assessment;
- Socio-Economic Impact Assessment;
- Heritage Impact Assessment;
- Visual Impact Assessment; and
- Traffic Impact Assessment.

Climate change impacts will also be assessed in the EIA by SRK.

The specialists will be required to provide detailed baseline information and to identify and assess the potential impacts of the proposed project. In addition, the specialist will be required to identify practicable mitigation and optimisation measures to avoid or minimise potential negative impacts and/or enhance any benefits. SRK's standard impact rating methodology will be employed in the assessment of impacts.

Once specialist studies have been completed, the results will be collated into an EIA Report and EMPr. The EIA Report and EMPr will be released for public comment through notifications to registered Interested and Affected Parties

(IAPs). Key authorities will also be consulted as part of the process.

All comments received will be incorporated into a Comments Report which will be appended to the EIA Report. The EIA Report and EMPr will then be submitted to the DFFE for their consideration in decision-making.

HOW YOU CAN PARTICIPATE

The Scoping Report is not a final report and can be amended based on comments received from stakeholders. Issues and concerns identified in the Scoping Study will assist in focussing the EIA and will be used to refine the terms of reference for specialist investigations. Stakeholders are therefore urged to participate:

REVIEW THE REPORT

An electronic copy of the **Scoping Report** is available for public review on SRK's website: www.srk.co.za – click on the 'Knowledge Centre' and then 'Public Documents' links.

Hard copies of the Scoping Report are available at:

- Hanover Public Library;
- Emthanjeni Local Municipality Hanover Office; and
- SRK's office in Rondebosch.

IAPs are invited to submit comments on the Scoping Report and/or send relevant details (see below) so that SRK can register you on the project database (if you are not registered already). IAPs must provide their comments and/or request to register on the project database together with their name, contact details (preferred method of notification, e.g. email), and an indication of any direct business, financial, personal or other interest which they have in the application, to the contact person below, by **18 July 2023.**

REGISTER OR PROVIDE YOUR OPINION

To register on the project database or submit initial comments, please send your contact details and/or comment to:

Kelly Armstrong

SRK Consulting

Postnet Suite #206, Private Bag X18,
Rondebosch, 7701

Email: ctpp@srk.co.za

Tel: + 27 21 659 3060

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Comments must reach SRK no later than **18 July 2023** to be included in the Final Scoping Report. Only registered IAPs will be notified of future opportunities to provide comments.