

EXECUTIVE SUMMARY: BASIC ASSESSMENT REPORT

STILFONTEIN PV CLUSTER: SUNBIRD PV FACILITY

STILFONTEIN, NORTHERN CAPE

SRK Project Number: 581877/Project 2

1 INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (**Mainstream**) proposes to develop the Stilfontein Photovoltaic (PV) Cluster, ~6 km north-east of Stilfontein in North West Province (see Figure 1). The Stilfontein Cluster (the 'project area') comprises:

- 9 x 150MW (max) PV facilities and associated infrastructure (11-33 kV transmission lines, a Battery Energy Storage Systems (BESS) per site and an Independent Power Producer (IPP)-side on-site substation per site);
- 9 x Eskom-side on-site substations and 132 kV transmission lines to evacuate power to the Main Transmission Station (MTS); and
- 1 x MTS and 400 kV lines to existing Hermes Pluto transmission lines.

SRK Consulting (South Africa) (Pty) Ltd (**SRK**) was appointed by Mainstream to undertake the environmental processes required in terms of the National Environmental Management Act 107 of 1998 (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2014, in support of applications for Environmental Authorisation (EA) for the various components of the project. (Separate EAs are sought for the nineteen individual projects in the Stilfontein Cluster, as listed above.) In addition, the project will require a heritage comment in terms of the National Heritage Resources Act 25 of 1998 (NHRA) issued by the South African Heritage Resources Agency (SAHRA).

This Basic Assessment Report (BAR) relates specifically to the SUNBIRD PV facility and associated infrastructure project.

See page 6 for details on how you can participate in the process.



2 GOVERNANCE FRAMEWORK

The EIA Regulations, 2014, govern the process, methodologies and requirements for EIAs in support of EA applications.

The EIA Regulations lay out two authorisation processes and depending on the type of activity that is proposed, either a Basic Assessment (BA) process or a Scoping and Environmental Impact Reporting (S&EIR) process is required to obtain EA. The EIA Regulations are accompanied by Listing Notices (LN) 1-3 that list activities that require EA. LN 1 and LN 3 list activities that require a BA process, while LN 2 lists activities that require S&EIR.

The proposed project triggers activities in both all three listing notices so normally, a S&EIR process would be required. However, the Department of Forestry, Fisheries and Environment (DFFE) has identified eleven Renewable Energy Development Zones (REDZ) across the country and to expedite the authorisation of large renewable energy projects in response to the energy crisis in South Africa, Government Notice (GN) 142 of 2021¹ stipulates that a BA process must be followed when a project falls within a REDZ. The Stilfontein Cluster lies entirely within the Klerksdorp REDZ and thus BA processes are being followed for each EA application as per the approach set out in the EIA Regulations, 2014 and GN 142, 2021 (see Figure 2).

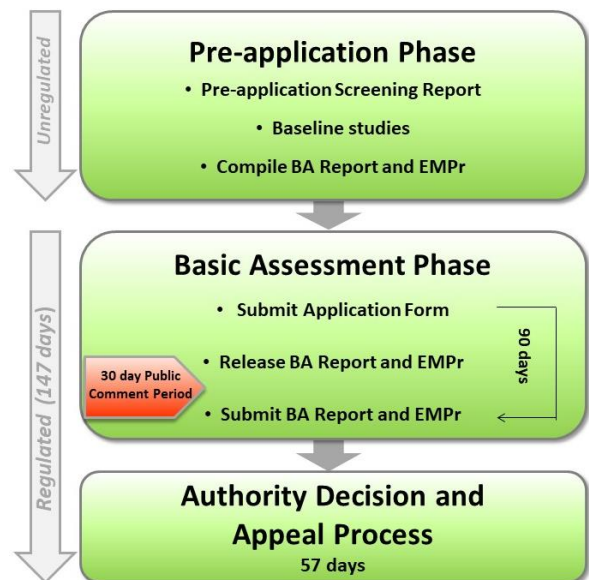
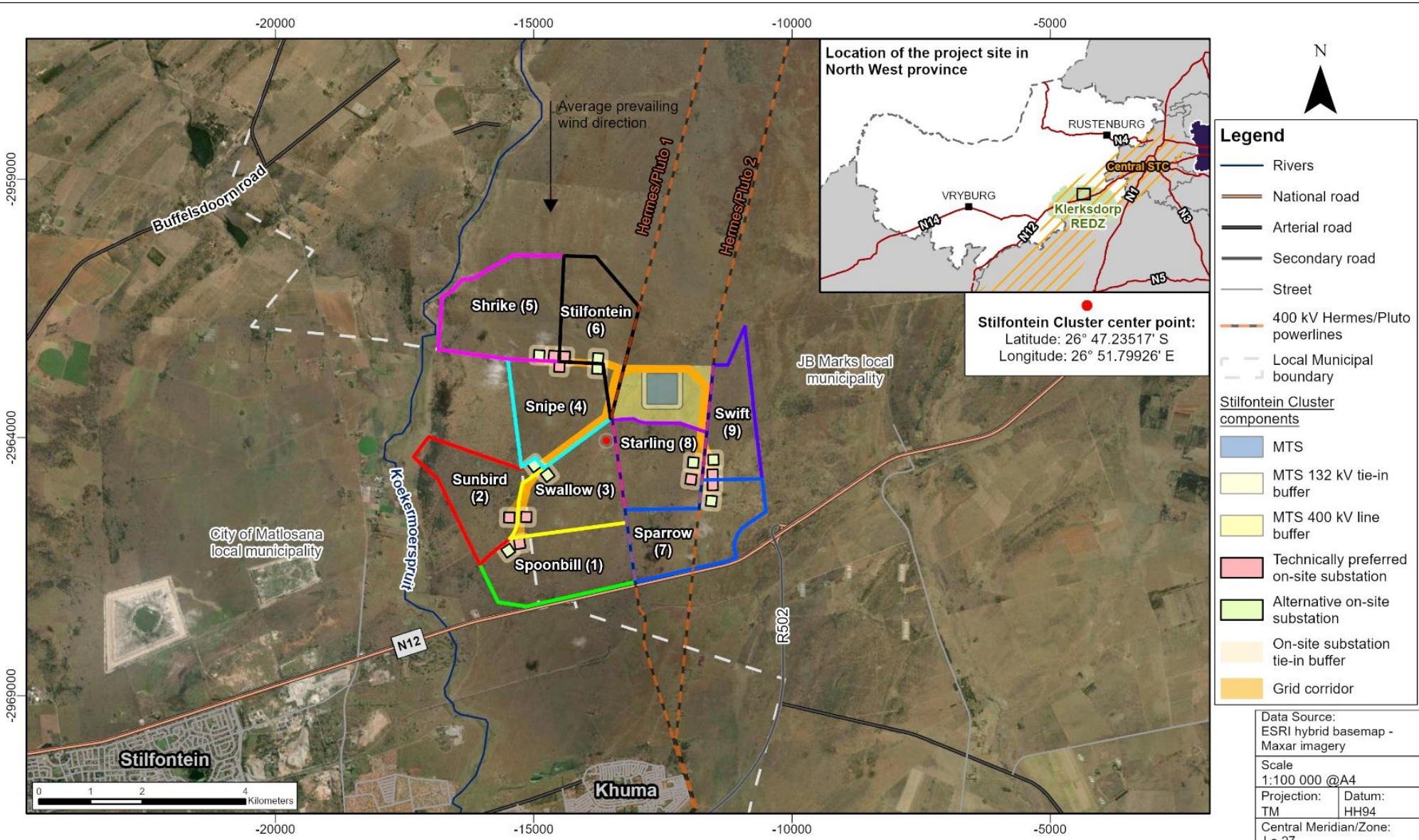


Figure 2: BA Process for projects within a REDZ.

The project is intended to form part of a submission under the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP). As such, DFFE is the competent authority for this application.

¹¹ Identification of Procedures to be Followed when Applying for or Deciding on an Environmental Authorisation Application

for Large Scale Wind and Solar Photovoltaic Facilities, when occurring in Renewable Energy Development Zones



Legend

- Rivers
- National road
- Arterial road
- Secondary road
- Street
- 400 kV Hermes/Pluto powerlines
- Local Municipal boundary

Stilfontein Cluster components

- MTS
- MTS 132 kV tie-in buffer
- MTS 400 kV line buffer
- Technically preferred on-site substation
- Alternative on-site substation
- On-site substation tie-in buffer
- Grid corridor

Data Source: ESRI hybrid basemap - Maxar imagery	
Scale 1:100 000 @A4	
Projection: TM	Datum: HH94
Central Meridian/Zone: Lo 27	
Date: 10/01/2023	Compiled by: BRCH
Project No. 581877	Fig No. 1



**STILFONTEIN PV CLUSTER BAS
LOCALITY MAP**

3 ENVIRONMENTAL PROCESS

The objectives of the BA process are to:

- Identify relevant authorities and key stakeholders to engage in the stakeholder engagement process;
- Facilitate the dissemination of information to the relevant authorities and stakeholders and provide them with an opportunity to raise issues or concerns related to the project;
- Identify potential issues and environmental impacts;
- Assess the significance of the potential environmental impacts identified;
- Describe and investigate alternatives that have been and / or could be considered; and
- Provide feasible mitigation measures to address any significant impacts identified.

The above objectives are achieved through the technical evaluation of the proposed activity, the stakeholder engagement process and the submission of the relevant information and documentation to DFFE.

4 DESCRIPTION OF THE ENVIRONMENT

The project area falls within the Dry Highveld Grassland Bioregion, which is not particularly species rich compared to other South African biomes and contains few endemic or floral and faunal Species of Conservation Concern (SCC).

The vegetation in the project area mainly consists of grassland-woodland vegetation with occasional rocky ridges. The habitat in most of the project area is degraded due to overgrazing and other agricultural practices. While the area is not entirely transformed, ongoing disturbance prevents recovery of these areas to a more natural state. Camel Thorn (*Vachellia erioloba*) is the only SCC recorded in the project area and these trees are widely distributed across the site (see Figure 3). Camel thorn trees are protected under the National Forests Act 84 of 1998 and their removal requires a permit. The Critically Endangered White-backed Vulture (*Gyps africanus*) is the only faunal SCC recorded in the Stilfontein Cluster area, recorded roosting on the 400kV Hermes / Pluto 2 powerline (see Figure 4).



Figure 3: Typical vegetation in the project area.

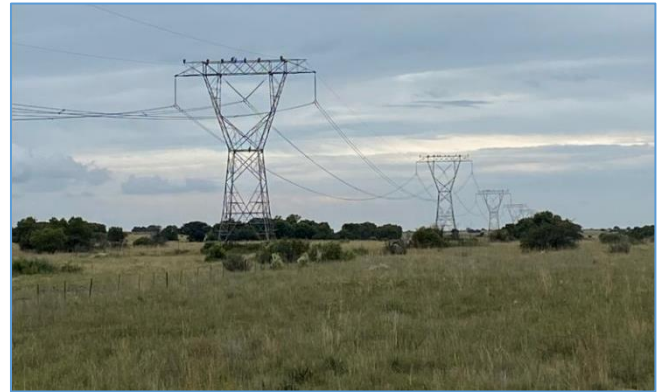


Figure 4: White-backed vultures roosting on the 400kV Hermes- Pluto transmission lines.

A large proportion of the project area is classified as an Ecological Support Area (ESA category 1), with a small portion along the northern boundary of the project area overlapping a Critical Biodiversity Area (CBA level 2).

There is very little surface water in the project area. Concrete reservoirs provide important resources for birds in the project area. The Kromdraaispruit and Koekemoerspruit lie west of the project area and their floodplains are classified as Critically Endangered habitat in terms of the 2018 National Biodiversity Assessment, although they are categorised as 'moderately modified'. A depression wetland located near the centre of the project area has low ecosystem functioning but does provide some important ecosystem services.

The site lies in the Dr Kenneth Kaunda District Municipality (DM), the smallest but marginally most affluent DM in the province. The N12 corridor forms an important regional development axis along its southern boundary. The economy is dominated by agriculture, services, mining and manufacturing. Employment opportunities in the DM are limited, primarily in the mining industry, and poverty levels are showing a strong upward trend.

Heritage resources on the site are limited to low-density scatters of Stone Age artefacts, a few structures of limited historical value and a burial site. Visually, the project area is characterised as a modified rural landscape, with rolling expanses of grazing land with mining activities and busy roads and railways visible in the landscape.

5 PROJECT DESCRIPTION

The SUNBIRD PV facility will occupy ~280 ha across several farm portions and comprises these key components:

- PV arrays with a maximum capacity of 150 MW;
- Internal cabling connecting panels, inverters and transformers;
- Lithium-Ion BESS;
- 11-33kV underground cable / overhead powerline between the PV facility and on-site substation;
- Internal gravel roads;

- Fencing and lighting;
- Material and construction laydown areas;
- Stormwater infrastructure;
- Water supply and water storage infrastructure;
- Offices, including ablutions with septic tank / conservancy tanks sewage treatment infrastructure;
- Operational control centre and maintenance area; and
- Security guard house.

Note that the associated Eskom-side on-site substation and 132 kV transmission lines to the MTS are subject to a separate EA application.

6 ALTERNATIVES

Appendix 3 Section 3 (h)(i) of the EIA Regulations, 2014, requires that all BA processes must identify and describe feasible and reasonable alternatives. Alternatives considered during screening phases of the project include:

- Location alternatives
- Layout alternatives
- Activity alternatives
- Technology alternatives (including cell, **panel**, mounting and BESS technologies)
- The No-Go alternative.

Solar panel technology alternatives that were assessed in detail in the BAR are:

- *Monofacial panels*: only have PV cells on top of the solar panel that collect direct sunlight.
- *Bifacial panels*: have solar cells on top and underneath the solar panel to gather both direct sunlight and reflected light. They require a reflective substrate under and more space between panels, but can be as much as ~35% more efficient than monofacial panels.

7 ASSESSMENT OF POTENTIAL IMPACTS

For all potentially significant impacts, the significance of the anticipated impact was rated using SRK’s standard Impact Assessment Methodology. These impacts are presented in Table 1, which summarises:

- The impacts assessed in the BAR, including alternatives assessed where relevant; and
- Their significance before (without) and following (with) the implementation of essential mitigation measures.

Impact Significance Ratings Legend:

Rating	+ve	-ve
Insignificant	I	I
VL	VL	VL
L	L	L
M	M	M
H	H	H
Very H	VH	VH

Mitigation measures for the management and monitoring of identified impacts are set out in the BAR and detailed in an Environmental Management Programme Report (EMPr), which accompanies the BAR.

The following specialists were engaged to identify and assess potential impacts within their particular field of study and to identify practicable mitigation and optimisation measures to avoid or minimise potential negative impacts and/or enhance any benefits:

- Land capability specialist
- Freshwater ecologist
- Terrestrial ecologist
- Avifaunal ecologist
- Socio-economist
- Heritage and palaeontology practitioner
- Visual specialist

Table 1: Summary of impacts

Impact	Significance rating	
	Without	With
CONSTRUCTION PHASE IMPACTS		
Reduction and loss of land capability	VL	VL
Degradation and loss of habitat and protected species	Panel Technology One	
	L	VL
	Panel Technology Two	
	H	M
Spread of alien and invasive species	Panel Technology One	
	VL	VL
	Panel Technology Two	
	L	VL
Displacement and loss of fauna	Panel Technology One	
	VL	VL
	Panel Technology Two	
	M	VL
Bird displacement due to disturbance	L	VL
Bird displacement due to habitat transformation	H	M
Capital investment contributing to the national, regional and local economy	M	M
Generation of employment, income and skills	L	M
Social disruption and change in social dynamics	VL	I
Reduced quality of life and increased risks due to construction near residences	VL	I
Loss of heritage resources	H	VL
Altered Sense of Place and Visual Intrusion	L	VL
(Traffic) trip generation	L	VL
OPERATIONAL PHASE IMPACTS		
Reduction and loss of land capability	VL	VL
Degradation of wetlands	M	L
Degradation and fragmentation of habitat	Panel Technology One	
	VL	VL
	Panel Technology Two	
	L	M

Impact	Significance rating	
	Without	With
Spread of alien and invasive species	Panel Technology One	
	VL	VL
	Panel Technology Two	
Displacement and loss of fauna	Panel Technology One	
	VL	VL
	Panel Technology Two	
Bird mortality due to collision with solar panels	Panel Technology One	
	VL	VL
	Panel Technology Two	
Bird mortality due to entrapment in perimeter fences	Panel Technology One	
	L	VL
	Panel Technology Two	
Bird mortality due to electrocution	Panel Technology One	
	H	L
	Panel Technology Two	
Bird mortality due to collision with transmission lines	Panel Technology One	
	H	L
	Panel Technology Two	
Bird displacement due to disturbance	Panel Technology One	
	L	VL
	Panel Technology Two	
Operational investment contributing to the national, regional and local economy	Panel Technology One	
	M	M
	Panel Technology Two	
Generation of employment, income and skills	Panel Technology One	
	L	L
	Panel Technology Two	
Increased community prosperity through contributions and income from the project	If procured via the REIPPPP	
	M	H
	If a private end-user agreement is pursued	
	L	L
Altered sense of place and visual intrusion caused by the PV array	Panel Technology One	
	H	M
	Panel Technology Two	
Altered sense of place and visual intrusion caused by the 11-33kV powerlines and pylons	Panel Technology One	
	L	L
	Panel Technology Two	
Altered sense of place and visual intrusion caused by the BESS and IPP side substation	Panel Technology One	
	M	M
	Panel Technology Two	
Visual discomfort and impaired visibility (glint and glare)	Panel Technology One	
	H	L
	Panel Technology Two	
Altered visual quality from nightglow	Panel Technology One	
	M	M
	Panel Technology Two	
DECOMMISSIONING PHASE IMPACTS		
Degradation and fragmentation of habitat	Panel Technology One	
	VL	VL
	Panel Technology Two	
Spread of alien and invasive species	Panel Technology One	
	VL	I
	Panel Technology Two	
Bird displacement due to disturbance	Panel Technology One	
	L	VL
	Panel Technology Two	
Reduced employment and funding	Panel Technology One	
	VL	VL
	Panel Technology Two	
(Traffic) trip generation	Panel Technology One	
	VL	VL
	Panel Technology Two	

Cumulative impacts of this project were also assessed using the same methodology, taking consideration of the other proposed projects that form part of the Stilfontein Cluster as well as other approved solar projects in the area (see Table 2):

Table 2 Summary of cumulative impacts

Cumulative Impact	Significance rating	
	Without	With
Cumulative reduction and loss of land capability	L	L
Cumulative loss of habitat	M	M
Cumulative bird displacement	L	L
Cumulative stimulation of economic and employment growth	VH	VH
Cumulative increase in community prosperity	If procured via the REIPPPP	
	VH	VH
	If a private end-user agreement is pursued	
	L	M
Cumulative heritage impacts	VL	VL
Cumulative altered sense of place and visual intrusion	M	M
Cumulative visual discomfort and impaired visibility (glint and glare)	M	M
Cumulative (traffic) trip generation	M	M

8 FINDINGS AND RECOMMENDATIONS

This Draft BAR has identified and assessed the potential biophysical and socio-economic impacts associated with the proposed SUNBIRDPV Facility and associated infrastructure near Stilfontein in the North West.

In terms of Section 31 (n) of NEMA, the EAP is required to provide an opinion as to whether the activity should or should not be authorised. SRK believes that sufficient information is available for DFFE to take a decision.

The PV Facility and associated infrastructure will result in unavoidable adverse biophysical impacts. Assuming that Mainstream is committed to ensuring that the EMPr is strictly implemented, none of these adverse impacts are considered unacceptably significant. The project will result in significant potential socio-economic benefits and responds to a national need for additional, cleaner power generation. On this basis, the No-Go alternative is not preferred.

In conclusion, and noting that the project is located within a REDZ, SRK is of the opinion that on purely ‘environmental’ grounds (i.e. the project’s potential social, economic and biophysical implications) the application as it is currently articulated should be approved, provided the essential mitigation measures are implemented. The impacts of both panel technologies are deemed acceptable with mitigation. Ultimately, however, DFFE will need to consider whether the project benefits outweigh the potential impacts.

9 STAKEHOLDER ENGAGEMENT

Stakeholder engagement is a key component of the BA process and is being undertaken in accordance with the requirements of the EIA Regulations, 2014. The stakeholder engagement activities undertaken as part of this BA process are summarised in Table 3:

Table 3: Stakeholder engagement during the BA process

Activity	Date
Advertise commencement of the EIA process	26 May -30 June 2022
Submit Application Form to DFFE	05 April 2023
Readvertise the EIA process	05 - 13 April 2023
Release Draft BAR to the Public	13 April 2023
Comment period	14 April - 16 May 2023
Submit Final BAR to DFFE	June 2023

Note that the project originally commenced in February 2022 and calls for registration of Interested and Affected Parties (IAPs) were first made in May 2022. The EIA process was put on hold while Mainstream refined their project description.

The project has been readvertised and stakeholders are again invited to register (noting that if you registered previously, you will remain registered).

Relevant Organs of State (local, provincial and national authorities) as well as conservation bodies and local forums have been automatically registered as stakeholders.

According to the EIA Regulations, 2014 all other **persons must request in writing to be placed on the register or submit written comments in order to be registered as stakeholders** and be included in future communication for the project.

HOW CAN YOU PARTICIPATE IN THE BA PROCESS?

The Draft BAR is not a final report and can be amended based on comments received from stakeholders. Stakeholders are therefore urged to participate:

REVIEW THE REPORT

The complete **report is available** for public review on SRK's website: www.srk.co.za.

Click on the 'Knowledge Centre' and then 'Public Documents' links.

Should you require a hardcopy of the report please contact SRK at the contact details below and an arrangement will be made to place a hardcopy in a nearby library.

IAPs are invited to comment on the Draft BAR. IAPs should refer to the SRK project number, and must provide their comments 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, via the online form on SRK's website or to the contact person below, by **16 May 2023**.

SUBMIT WRITTEN COMMENTS AND / OR REGISTER ON THE PROJECT DATABASE

Via the following link:

<https://forms.office.com/r/RisvzNuZ6D>

Alternatively send written comments to **Asheerah Meyer** at SRK Consulting
Email: ameyer@srk.co.za

Tel: + 27 21 659 3060; Fax: +27 21 685 7105
Postnet Suite #206, Private Bag X18,
Rondebosch, 7701

Following the close of the public comment period, the Final BAR will be prepared, taking account of the comments submitted by stakeholders. Note that if substantial changes are made to the Draft BAR in response to comments received, the BAR will be released for a second public comment period prior to submission to DFFE.

The Final BAR will be submitted to DFFE, including the comments received, for their consideration. Once a decision is taken by the authorities, this decision will be communicated to all registered stakeholders.

Comments must reach SRK no later than **16 May 2023** to be included in the Final BAR.

By registering as a stakeholder you voluntarily consent to SRK, the Project Proponent and the Competent Authority processing and selectively disclosing your personal data (including contact details), in fulfilment of the requirements of the EIA Regulations, 2014, and the National Appeal Regulations, 2014. Personal data will only be used for the purposes of providing relevant project information (pertinent to the EIA process and related activities e.g. notifications of decisions, subsequent appeals, audits) and obtaining feedback on these processes. SRK undertakes to process data in compliance with the Protection of Personal Information Act 14 of 2013 (POPIA) and in accordance with our Protection of Personal Information Policy. Should you wish to deregister as a stakeholder, please contact SRK

