



BASIC ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF UP TO A 132KV POWER LINE AND ASSOCIATED INFRASTRUCTURE FOR THE PROPOSED KALKAAR SOLAR THERMAL POWER PLANT NEAR KIMBERLEY, FREE STATE AND NORTHERN CAPE PROVINCES

INTRODUCTION

On the 3rd September 2015, SolarReserve South Africa (Pty) Ltd (hereafter referred to as, "SolarReserve) received environmental authorization (EA – DEA Ref: 14/12/16/3/3/2/660) for the proposed 200MW Concentrated Solar Power (CSP) facilities on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal in the Free State Province (the "Kalkaar CSP Project").

Based on recent communications with Eskom the preferred evacuation point for the electricity generated by the Kalkaar CSP Project is via the Kimberley Substation to Boundary Substation near Kimberley. In addition to this interconnection solution, SolarReserve is also considering the nearby Jacobsdal Substation, near Jacobsdal as a secondary evacuation point. Therefore, in order to evacuate the electricity generated as a result of the Kalkaar CSP Project, a new environmental authorization process is being undertaken in order to assess the feasibility of the proposed grid connections to the aforementioned points of interconnection to the national grid.

SolarReserve have appointed SiVEST, as the independent Environmental Assessment Practitioner (EAP), to undertake the required Basic Assessment (BA) processes for the proposed 132kV power lines and associated infrastructure in the Free State and Northern Cape Provinces (the "Project").

PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to inform interested and/or affected parties (I&APs) about the Basic Assessment (BA).

In addition to supplying information about the proposed project and the BA process being undertaken, this BID will also provide I&APs with the opportunity to:

- better understand the proposed projects in order to provide comments and raise issues of concern;
- understand the environmental authorisation process in order to participate effectively;
- raise issues of concern and/or submit suggestions to enhance the proposed projects;
- contribute local knowledge; and
- comment on the specialist studies that will be conducted.

Project Information

The Project is being proposed in order to evacuate the power generated at the Kalkaar CSP Project to the national grid via Kimberley Substation to Boundary Substation and the Jacobsdal Substation, near Jacobsdal in the Northern Cape and Free State Provinces respectively. The grid connections are mainly within the Free State Province, however the connection via Kimberley Substation to Boundary Substation will route through a small portion of the Northern Cape Province near Kimberley.

The proposed project will comprise of the following:

- Construction of one Tern power line of up to 132kV from the proposed Kalkaar Solar Thermal Energy Plant. The grid connections that will be assessed include the following:
 - » Jacobsdal Link = approximately 19km in length;

- » Kalkaar CSP via Kimberley DS to Boundary Substation Alternative 1 = approximately 61km in length;
- » Kalkaar CSP via Kimberley DS to Boundary Substation Alternative 2 = approximately 62km in length.

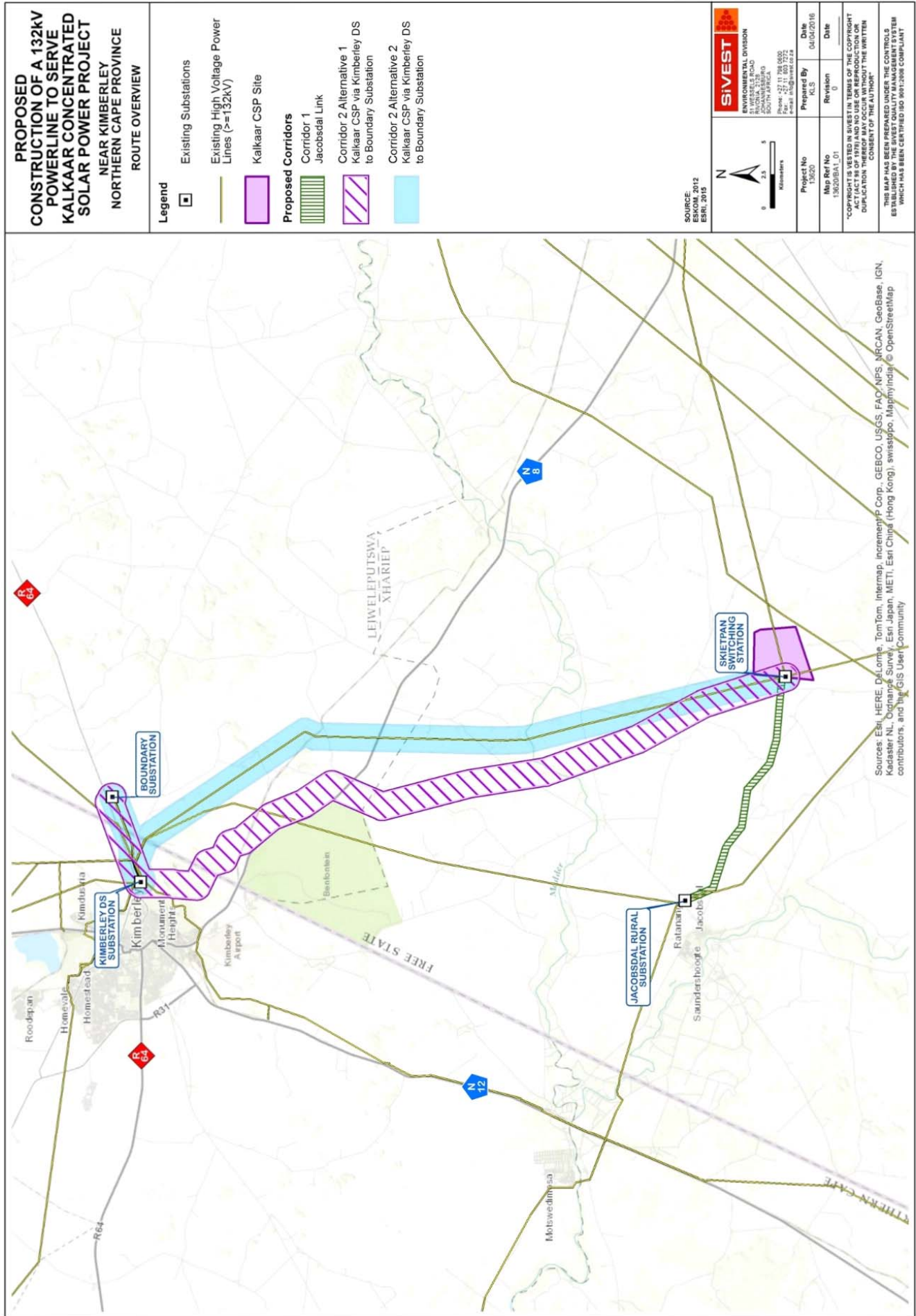
- Install 48 core optical ground wire (OPGW) on the line
- Build 2 bay substations next to the approved substations on the Kalkaar CSP Project site. Proposed substations will be approximately 100m x 100m
- Inclusive of all cable trenches
- Install 3 x 25m lighting/lightning masts
- Build access road to substation
- Build standard control room (5.5m x 12m) with top entry and cable racks. Will include a sewage system, air-conditioning and energy efficient lighting
- Install security fence with entrance gates
- 2 x 132kV line bay and 2 x 132kV metering bay
- Install required Control Plant, AC/DC, Metering, SCADA and Telecoms
- V drain extension of substation for drainage purposes

The location of the proposed substations will be next to the substations within the approved layout of the Kalkaar CSP Project which was authorized under the EA (DEA Ref: 14/12/16/3/3/2/660). The footprint of the proposed substations would be approximately 10 000m².

The power lines will consist of a series of towers located approximately 100-200m apart, depending on the terrain and soil conditions. The exact tower type to be used will be determined (based on load and other calculations) during the final design stages of the power lines. It is however likely that the bird friendly mono-pole self-supporting intermediate suspension (single steel pole) structure will be used in combination with various other structures which are usually applied as follows:

- The mono-pole guyed intermediate suspension structures are normally installed at obvious rocky terrains, where the foundations can have a huge cost impact.
- The mono-pole angle suspension structures are used on slight angles up to 23°.
- The mono-pole strain structures are used as 0° in-line strainers with four diagonal stays and at angles from 1° to 110° with a variety of stay configurations to suit the specific application. The structure is also used as a terminal in situations where lines approach towards the substation feeder bay at an angle larger than 45°.
- The H-pole are used for horizontal applications to cross over or under existing power lines where clearances are a problem and are used as terminal structures with an in-line approach to the substation feeder bay.
- The 3-pole strain structures are normally used at very long spans crossing rivers, valleys, etc. These are very expensive structures, therefore it is not used very often.

Figure 1: Locality Map





The height of the single steel pole structure ranges between 18m and 26.5m in height. Where the proposed power line is aligned parallel to an existing power line the option of restringing the existing line as an alternative to building a new power line will be investigated. Sections of the existing power line where restringing is possible will be determined during the final design stages. The exact location of the towers will also be investigated during the final design stages of the power lines.

Project Location

The study area is located mainly within the Free State Province, with a relatively small portion cited in the Northern Cape Province near Kimberley. The proposed power lines traverse the Lejweleputswa District Municipality in the Free State Province and the Frances Baard District Municipality in the Northern Cape Province. More specifically, the proposed power lines traverse into the Tokologo Local Municipality in the Free State Province and the Sol Plaatjie Local Municipality in the Northern Cape Province. Land uses for the proposed project encompasses mainly vacant land, mining, industrial (renewable), agricultural farming activities and urban as well as residential areas.

Proposed Route Corridor Alternatives

For the power line component, three corridors have been provided for assessment. Two of the three corridors are up to 2km (1km either side of the centre line) wide originating from the Kalkaar CSP Project site routing via the Kimberley Distribution Substation to the Boundary Substation. The aforementioned two corridors will serve as alternatives to each other for the comparative assessment. An additional corridor of 500m in width (250m either side of the centre line) is to be established for the route option to the Jacobsdal Substation. This route will not however have an separate alternative, but environmental considerations will determine the alignment best suited to the receiving environment. The registered servitude width will be 31 metres (15.5 metres either side of the centre line). The three power line corridors include the following:

- Corridor 1 (Green) – Kalkaar CSP to Jacobsdal Substation (approximately 20km in length);
- Corridor 2 Alternative 1 (Purple) – Kalkaar CSP via Kimberley Distribution Substation to Boundary Substation (approximately 62km in length); and
- Corridor 2 Alternative 2 (Turquoise) – Kalkaar CSP via Kimberley Distribution Substation to Boundary Substation (approximately 62km in length).

The proposed power line will also include the establishment of all associated infrastructure as required (including but not limited to access roads, control rooms, security systems etc.).

PROPOSED CONSTRUCTION SCHEDULE AND METHODOLOGY FOR THE CONSTRUCTING THE POWER LINE

Timeframe

The construction period for the proposed power lines is estimated to be approximately 24 months in total. This includes the clearing of the servitude, construction of the towers, stringing of the conductors, and construction of the switchyards and commissioning of the power line.

Rehabilitation of servitude after construction

An Environmental Management Programme (EMPr) will be established which will, amongst other requirements, detail the rehabilitation of any

disturbed areas resulting from construction works. The appointed Environmental Control Officer (ECO) on site will ensure that all disturbed areas are stabilised as soon as possible after construction and the area rehabilitated as close to the original condition as possible, as per the EMPr. Rehabilitated areas that are susceptible to erosion due to their position in the landscape will be adequately protected by soil conservation measures.

Employment opportunities during construction

SolarServe will appoint contractors for the construction of the proposed power line and should any local labour force be required, the appointed contractor will source the labour force through established structures, for example, the Local Municipality. As the construction of power lines requires highly skilled personnel, and are mainly constructed by the utilisation of specialised machinery, it is not envisaged that additional labour force will be required for this proposed project.

Health (possible impacts of Electro-magnetic Fields – EMFs)

Power lines are designed and built to comply with the Occupational Health and Safety (OHS) Act (Act 85 of 1993). As long as activities under the power line comply with the servitude conditions, they are deemed safe to undertake. EMF effects decrease as distance from the power line increases and any living quarters outside the servitude will not be affected by the power line as radiation from the power line is nil at the edge of the servitude. A report on EMFs is available on Eskom's website should further clarity be sought on this subject.

BASIC ASSESSMENT PROCESS

What is a Basic Assessment?

A Basic Assessment (BA) is a process of collecting, organising, analysing, interpreting and communicating information that is relevant for the consideration of a particular application. BAs are undertaken where the impacts are less likely to have significant impacts on the receiving environment.

BAs are used by planning authorities/developers to obtain an independent and objective view of the potential environmental (biophysical and social) impacts that could arise during the construction and operation of the proposed development. This information needs to provide the Competent Authority with a sound basis for their decision-making. Environmental management and mitigation measures are also identified through the BA process.

National Environmental Management Act (NEMA)

The BA for the proposed power line will be conducted in terms of the EIA Regulations under Government Notices No R982, R983, R984 and R985 promulgated on the 04th December 2014, in terms of Section 24 (5) read with section 44 of the National Environmental Management Act (Act No. 107 of 1998).

Environmental issues to be investigated during the BA

SPECIALIST UNDERTAKING THE STUDY	SPECIALIST STUDY
Simon Todd Consulting cc – Simon Todd	Biodiversity (Flora and Fauna)
Chris Van Rooyen Consulting cc – Chris Van Rooyen	Avi-fauna
Stephen Van Staden – Scientific Aquatic Services	Wetlands
Independent Soils Specialist – Johann Lanz	Desktop Agriculture and soils
SiVEST – Andrea Gibb / Stephan Jacobs	Visual impact
Wouter Fourie – Professional Grave Solutions (PGS)	Heritage
Urban-Econ – Elena Broughton	Socio-economic
Continuum Social and Environmental Services – Riaan Barnard	Landowner Consultation
Kerry Schwartz – SiVEST	GIS and Mapping

How to become involved

- Respond (by phone, fax or e-mail) to our invitation for your participation, which has been advertised in the printed media.
- Mail, fax or e-mail the attached Registration and Comment Form to SiVEST.
- Contact us telephonically should you have a query, comment or require further project information.
- Review the draft Basic Assessment Report within the review periods that will be stipulated in the advertisement.

By completing and submitting the accompanying Registration and Comment Form, you automatically register yourself as an I&AP for this proposed project, ensuring that your comments and/or concerns raised regarding the proposed project will be noted. The public participation consultants will respond to all comments and queries received during the course of the project.

Please be informed that all relevant public documents can be downloaded from the SiVEST's website (www.sivest.co.za)

We look forward to your contributions.

COMMENTS AND QUERIES

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LIST OF ACRONYMS

BA	Basic Assessment	EMPr	Environmental Management Programme
BID	Background Information Document	FBAR	Final Basic Assessment Report
CSP	Concentrated Solar Plant	GN	Government Notice
DEA	National Department of Environmental Affairs	I&APs	Interested and/or Affected Party(ies)
DBAR	Draft Basic Assessment Report	kV	Kilo Volt
EA	Environmental Authorisation	NEAS	National Environmental Assessment System
EAP	Environmental Assessment Practitioner	NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
ECO	Environmental Control Officer	OHS	Occupational Health and Safety
EIA	Environmental Impact Assessment	PGS	Professional Grave Solutions
EMF	Electro-magnetic Field	WWTW	Waste Water Treatment Works