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BASIC ASSESSMENT REPORT



Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure (KENHARDT PV 1 - TRANSMISSION LINE) to support the proposed 75 MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province

Prepared for:
Scatec Solar SA 330 (PTY) Ltd

CSIR Report No.: CSIR/02100/SS/ER/2016/0004/B

March 2016

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Basic Assessment Process

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report details

Title:	Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure (KENHARDT PV 1 - TRANSMISSION LINE) to support the proposed 75 MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province: BASIC ASSESSMENT REPORT
Purpose of this report:	<p>This Basic Assessment (BA) Report forms part of a series of reports and information sources that are being provided during the BA Process for the Development of a Transmission Line and associated electrical infrastructure (KENHARDT PV 1 - TRANSMISSION LINE) to support the proposed 75 MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province. The purpose of this BA Report is to:</p> <ul style="list-style-type: none"> • Present the proposed project and the need for the project; • Describe the affected environment at a sufficient level of detail to facilitate informed decision-making; • Provide an overview of the BA Process being followed, including public consultation; • Assess the predicted positive and negative impacts of the project on the environment; • Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project; • Provide an Environmental Management Programme (EMPr) for the proposed project. <p>This BA Report is being made available to all Interested and Affected Parties (I&APs) and stakeholders for a 30-day review period. All comments submitted during the review of the BA Report will be incorporated into the finalised BA Report as applicable and where necessary. This finalised BA Report will then be submitted to the National Department of Environmental Affairs (DEA) for decision-making.</p>
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executive summary

Introduction, Background and Environmental Assessment Process

Scatec Solar SA 163 (PTY) Ltd is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (including transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168, approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The proposed 75 MW Solar PV facilities will connect (via the transmission lines and associated electrical infrastructure) to the Eskom Nieuwehoop Substation, which is currently being constructed on the remaining extent of Portion 3 of Gembok Bult Farm 120. The proposed transmission lines and electrical infrastructure will be constructed within a single electrical infrastructure corridor.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, a **full Scoping and EIA Process** is required for the construction of the three Solar PV facilities. The proposed 75 MW Solar PV facility projects (requiring a Scoping and EIA Process) are referred to as:

- Kenhardt PV 1;
- Kenhardt PV 2; and
- Kenhardt PV 3.

In October 2015, separate Applications for Environmental Authorisation (EA) were submitted to the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed **Scoping and EIA** project (i.e. the Solar PV facilities). The Applications for EA were acknowledged by the DEA on 23 October 2015 and the following reference numbers were assigned to the Kenhardt PV (**Scoping and EIA**) projects:

- Kenhardt PV 1 - DEA Reference: 14/12/16/3/3/2/837;
- Kenhardt PV 2 - DEA Reference: 14/12/16/3/3/2/838; and
- Kenhardt PV 3 - DEA Reference: 14/12/16/3/3/2/836.

The Scoping Reports for the abovementioned PV projects were released separately to Interested and Affected Parties (I&APs) for review in September 2015 during the Scoping Phase. In November 2015, the finalised Scoping Reports were submitted to the DEA, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations, for decision-making in terms of Regulation 22 of the 2014 NEMA EIA Regulations. The DEA accepted the finalised Scoping Reports on 8 December 2015, which marked the end of the Scoping Phase, after which the EIA Process moved into the impact assessment and reporting phase. The EIA Reports have been compiled for the Kenhardt PV 1, PV 2 and PV 3 projects and are currently being made available to I&APs for a 30-day comment period, together with the BA Reports.

More specifically, in terms of the NEMA and the 2014 NEMA EIA Regulations promulgated in Government Gazette 38282 and GN R982, R983, R984 and R985 on 8 December 2014, three **Basic Assessment** (BA) Processes are being conducted for the proposed construction of the transmission lines and electrical infrastructure, which are required to ensure that the abovementioned proposed Kenhardt PV 1, PV 2 and PV 3 facilities are connected to the Eskom Nieuwehoop Substation (i.e. national grid). These BA Projects are referred to as:

- Kenhardt PV 1 - Transmission Line (i.e. this project);
- Kenhardt PV 2 - Transmission Line; and
- Kenhardt PV 3 - Transmission Line.

This BA Report is only focussed on the proposed **Kenhardt PV 1 - Transmission Line** project.

Scatec Solar SA 163 (PTY) Ltd consists of various subsidiary companies. The subsidiaries that fulfil the role of the Project Applicant are noted below for the proposed 75 MW Solar PV and transmission line projects:

- Scatec Solar SA 330 (PTY) Ltd - Project Applicant for Kenhardt PV 1 and Kenhardt PV 1 - Transmission Line (i.e. this project);
- Scatec Solar SA 350 (PTY) Ltd - Project Applicant for Kenhardt PV 2 and Kenhardt PV 2 - Transmission Line; and
- Scatec Solar SA 370 (PTY) Ltd - Project Applicant for Kenhardt PV 3 and Kenhardt PV 3 - Transmission Line.

As noted above, Scatec Solar SA 330 (PTY) Ltd (hereinafter referred to as Scatec Solar) is the Project Applicant for this proposed transmission line and electrical infrastructure project (referred to as **Kenhardt PV 1 - Transmission Line**).

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations, the Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the separate EIA and BA Processes in order to determine the biophysical, social and economic impacts associated with undertaking the proposed activity. The BA Team also includes various specialists that have been appointed to undertake specialist studies to contribute to the BA Process. These specialist studies are included in Appendix D of the BA Report.

Since the three proposed 75 MW Solar PV facilities, as well as the associated electrical infrastructure and transmission lines are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process (PPP) is being undertaken for the proposed projects. However, as noted above separate Applications for EA were lodged with the DEA in September 2015 for each Kenhardt PV facility (requiring the Scoping and EIA Process). Separate Applications for EA will be lodged for each transmission line and electrical infrastructure project that requires a BA Process. Furthermore, separate reports (i.e. BA, Scoping and EIA Reports) were compiled for each project. As noted above, the BA Reports are currently being released to I&APs for review together with the EIA Reports (for the Kenhardt PV 1, PV 2 and PV 3 projects). The Applications for EA for the BA projects will be submitted to the DEA together with the BA and EIA Reports for comment. The DEA Reference Numbers for the BA Projects were therefore pending at the time of compiling this report. A copy of the Application for EA for the Kenhardt PV 1 - Transmission Line project will be included as an appendix to the finalised BA Report which will be submitted to the DEA for decision-making.

The abovementioned integrated PPP approach, as well as the general approach to the Scoping and EIA Projects and the BA Projects, were discussed with and approved by the DEA at a pre-application meeting, which was held on 17 September 2015. Appendix J.2 of the BA Report includes a copy of the agenda and notes of the meeting, as well as the presentation given by the CSIR at the pre-application meeting.

Scatec Solar is an integrated Independent Power Producer (IPP) that is focused on making solar energy a sustainable and affordable source on a global scale. Scatec Solar was founded in 2001 and holds its headquarters in Norway. The company develops, builds, owns and operates a number of solar power plants internationally and within Africa. The company is growing significantly and is currently planned to provide a combined 207 MW of power in the United States, Honduras and Jordan. In addition, Scatec Solar collectively delivers more than 219 MW of power in the Czech Republic, South Africa and Rwanda. Specifically linked to investment within South Africa, Scatec Solar has been involved in the following major solar energy projects:

- The Linde Solar Plant (40 MW) is located in the Northern Cape and is considered to be the first of the large-scale PV plants in production from the second round of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).
- The Dreunberg Solar Plant (75 MW) is the only REIPPPP Solar PV Project to be located in the Eastern Cape.
- The Kalkbult Solar Plant (75 MW) is located in the Northern Cape and was the first REIPPPP project to be connected to the grid and operational in South Africa.

Scatec Solar was awarded another further 258 MW in the Fourth Round of the REIPPPP. Dyason's Klip 1, Dyason's Klip 2 and Sirius PV Project One were all anticipated to obtain Financial Closure in Quarter 4 of 2015.

Linked to enhancing its operations within South Africa, the proposed 75 MW Solar PV facilities will make use of PV solar technology to generate electricity from the sun's energy (which, as noted above, is being assessed as part of separate Scoping and EIA Processes). The Applicant is proposing to develop three facilities with a possible maximum installed capacity of 100 MW Direct Current (DC) which produces 75 MW Alternating Current (AC) of electricity from PV solar energy. As noted above, the electricity produced will be transmitted to the Eskom Nieuwehoop Substation via transmission lines (this component is the subject of this BA Process). Once a Power Purchase Agreement (PPA) is awarded, the proposed Kenhardt PV 1 facility will generate electricity for a minimum period of 20 years. It is proposed that Scatec Solar will implement the Self-Build Option for the additional electrical infrastructure to be constructed (which is assessed separately as part of this BA Process). Following the construction phase, the proposed transmission line and electrical infrastructure will either be transferred into the ownership of Eskom or remain in the ownership of Scatec Solar.

Project Description

The following proposed transmission line and electrical infrastructure connectivity options are included in the separate BA Processes for the three transmission line projects (i.e. Kenhardt PV 1 - Transmission Line, Kenhardt PV 2 - Transmission Line and Kenhardt PV 3 - Transmission Line):

- Construction of a separate 132 kV transmission line from the proposed Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 facilities to the Eskom Nieuwehoop Substation that is currently being constructed on Farm Gemsbok Bult (remaining extent of Portion 3 of Farm 120); or
- Construction of separate 22/33 kV transmission lines to connect the Kenhardt PV 2 and Kenhardt PV 3 projects to the proposed Kenhardt PV 1 on-site substation which will link via a 132 kV line to the Eskom Nieuwehoop Substation; or
- Construction of one 132 kV transmission line from the Kenhardt PV 1 project to the Eskom Nieuwehoop Substation and connect the Kenhardt PV 2 and Kenhardt PV 3 facilities together via medium voltage transmission lines to either the on-site substation of Kenhardt PV 2 or PV 3, followed by the construction of one 132 kV transmission line from the on-site substation to the Eskom Nieuwehoop Substation.

All transmission lines and connectivity options (as described above) will be constructed within a single electrical infrastructure corridor. The corridor will extend between 300 m and 1000 m wide. This corridor was assessed for the proposed transmission lines and associated electrical infrastructure (for all three Kenhardt PV Transmission Line projects) to ensure that the line routing and placement of the structures avoid sensitive areas that have been identified by the specialists (as indicated in Appendix D of the BA Report).

A large corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of this BA Report, as well as the Environmental Management Programme (EMPr) included in Appendix G of this BA Report). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage

features) within the corridor that was assessed. Based on this map, the preferred location and routing for the Kenhardt PV 1 transmission line avoids the sensitive features that were identified by the specialists within the corridor. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, the preferred routing has also been preliminarily determined for this project, which is included in Appendices A and B of this BA Report, as well as the EMPr included in Appendix G of this BA Report. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout or revisions to the layout occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the EIA Phase. This is based on the understanding that the specialists have assessed the larger area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a “box” in which the project components can be constructed at whichever location (within the corridor’s boundary) without requiring an additional assessment or change in impact significance. Any changes to the layout within the boundaries of the corridor following the issuing of the EA (should it be granted) will therefore be considered to be non-substantive.

This Kenhardt PV 1 - Transmission Line project includes the following:

- A 132 kV overhead transmission line will be constructed between the Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. The proposed transmission line is estimated to extend approximately 4 km in length. The proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The proposed transmission line is expected to have concrete foundations and steel tower structures (i.e. pylons). The line will consist of either self-supporting suspension structures or guyed monopoles. The towers will all have a maximum height of 30 m. The span lengths are estimated to range between 200 m and 300 m. The servitude width for the 132 kV power line will be 52 m wide.
- Associated electrical infrastructure at the Eskom Nieuwehoop Substation will be constructed in order to ensure that the substation is capable of receiving the additional electricity that is generated by the proposed Kenhardt PV 1 facility. This infrastructure includes, but is not limited to, feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation. Discussions have been initiated with the Project Applicant and Eskom to determine the requirements of connecting to the Nieuwehoop Substation.
- On-site substation (with a capacity of 80 MVA) will also be constructed. The on-site substation building is expected to extend approximately 12 m in height, with a maximum footprint of 20 000 m² (2 ha). It is important to note that all high voltage infrastructure leading up to the Point of Connection (i.e. Scatec Solar’s section of the proposed collector/on-site substation) will be covered by the separate EIA Process (i.e. for Kenhardt PV 1). High voltage infrastructure extending from the Point of Connection (i.e. Eskom’s section of the proposed collector/on-site substation) up to the line bay at the Eskom Nieuwehoop Substation may be handed over to Eskom and is being assessed separately as part of this BA Process (i.e. Kenhardt PV 1 - Transmission Line).
- The proposed project will also include the construction of a gravel road below the proposed 132 kV transmission line. The proposed gravel road will follow the route of the transmission line and will extend approximately 4 km to 9 km in length and less than 6 m in width.

In terms of access, the proposed project site can be accessed via an existing gravel road (an unnamed farm road) and the existing Transnet Service Road (private). Both access routes are considered and included in the proposed project. The R27 extends from Keimoes (in the north) to Vredendal in the south. The R27 is 6 m wide and falls within a 45 m road reserve. This National Road is designed for minimum daily traffic exceeding 1000 vehicle units. The Transnet Service Road can be accessed from the R27. The existing gravel road (an unnamed farm road) can be accessed from the R383 Regional Road also via the R27 National Road. The Transnet Service Road and

unnamed farm road are both 7-8 m wide, however in certain sections, the unnamed farm road is believed to be about 2-3 m wide.

Discussions are being held with Transnet and the Project Applicant regarding the potential use of the Transnet Road and associated specific requirements. Transnet have informed the Project Applicant of their requirements that need to be met should the Transnet Service Road be used to gain access to the site. These requirements will be considered in the design where required, and the details of the agreement will be finalised outside of this BA Process.

However, should the Transnet Service Road not be used for access, then the unnamed farm gravel road will be used. This farm road, however, will need to be widened by more than 6 m (where required).

The project can be divided into the following three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and has therefore been assessed by the specialist studies (Appendix D of the BA Report). It is important to note that for the operational phase, the transmission line will result in impacts on avifauna and the surrounding environment; however requirements for water, sewage management and waste disposal do not apply.

The main factors that determined the location of the transmission line are indicated below:

- Location of the Kenhardt PV 1 facility;
- Location of the Nieuwehoop Substation; and
- The most cost-effective route and distance between the Kenhardt PV1 and Nieuwehoop Substation.

The location and property on which the proposed transmission line and associated electrical infrastructure will be constructed is largely dependent on the location of the proposed 75 MW Kenhardt PV 1 facility. The overall aim of this proposed project is to provide the necessary electrical infrastructure to ensure that the proposed 75 MW Kenhardt PV 1 facility is equipped and enabled to transmit the generated electricity (from the Solar PV Plant) to the Eskom Nieuwehoop Substation. The location and property on which the proposed transmission line and associated electrical infrastructure will be constructed is also dependent on the location of the Eskom Nieuwehoop Substation. The location of the Nieuwehoop Substation influences and determines the location of the construction of the proposed associated electrical infrastructure at the substation (including but not limited to an additional feeder bay, Busbars, transformer bay and extension to the platform at the substation).

Based on the above, alternatives for the site and location of the proposed project are not applicable in this regard.

Impact Assessment

Seven specialist studies were carried out as part of the BA Process. These included:

- Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna);
- Visual Impact Assessment;
- Heritage Impact Assessment (Archaeology and Cultural Landscape);
- Desktop Palaeontological Impact Assessment;
- Geohydrological Assessment;
- Soils and Agricultural Potential Assessment; and
- Social Impact Assessment.

It should be noted that the Social Impact Assessment specialist study was subject to a peer review process by an external reviewer (Ms. Liza van der Merwe, a private consultant), as requested by the DEA. This external review report is included as an appendix to the Social Impact Assessment (Appendix D.7 of this report). A Traffic Impact Statement was also compiled by the Environmental Assessment Practitioner (EAP), however it serves as a general description of the existing and predicted traffic associated with the proposed project and does not classify as a specialist study in terms of Appendix 6 of the NEMA EIA Regulations. Furthermore, this statement considered the full development (i.e. the development of the three Solar PV Facilities (which are the subjects of separate EIA Processes) and the associated electrical infrastructure).

In addition, an Electro Magnetic Interference and Radio Frequency Interference Survey Technical Study was commissioned by the Project Applicant to determine the impact of the proposed project on the Square Kilometre Array (SKA), as requested by the SKA Project Office. This report is not a standard specialist study in terms of Appendix 6 of the EIA Regulations, as it is a detailed, technical report which provides a cumulative topographical analysis of the proposed PV projects in the Astronomy Geographic Advantage Area and was undertaken to determine appropriate mitigation and management measures to reduce the risk of a detrimental impact on the SKA project.

Ecological Impact Assessment:

An Ecological Impact Assessment (Appendix D.1 of the BA Report) has been undertaken in order to provide supporting information (relating to ecological features and associated impacts) in terms of the proposed construction of the transmission line and associated infrastructure. The assessment included desktop evaluations, as well as site evaluations of the land within the proposed transmission line corridor. The investigations looked specifically at habitat form and structure and the relationship of such form and structure to the surrounding geology and geomorphology. The assessment sought to identify the ecological status of the land within the route and identify key biophysical drivers. Such information was then considered in respect of any changes to the prevailing habitat that may arise as a consequence of the establishment of the proposed transmission line.

The site is considered to fall within a xeric environment (dry or semi desert) and as such, is subject to significant seasonal to daily fluctuations in meteorological and physical factors which influence the prevailing ecology. In addition to the above, anthropogenic interventions associated with both the presence of livestock on the land in question, as well as indirect influences arising from the establishment of infrastructure (roads and rail) have served to alter other bio physical factors, including surface hydrology and the nature and composition of habitat.

The Ecological Impact Assessment established that the proposed powerline corridor serving the Eskom Nieuwehoop Substation traverses lands presently set aside for the grazing of livestock. The corridor includes two Aloe consocieties (*Aloe dichotoma* and *A claviflora*) of limited extent, which are linked to specific physical drivers. The routing of the transmission line must avoid the Aloe consocieties identified. The assessment notes that this may be achieved, preferably by locating the final route proximal to the existing railway line/roadway, or less favourably by spanning over the consocieties. Mitigation and management measures proposed are that the actual powerline lie either to the south or north of the identified consocieties and where applicable, towers be suitably positioned at points distal from these communities. The relocation of these specimens is possible; however this method should be avoided. Towers should be spaced adequately to avoid the necessity for relocation. A 60 m buffer should be implemented around the Aloe consocieties.

In terms of aquatic ecology, the Wolfkopseloop drainage feature that is inundated on an intermittent basis (periods greater than a year) lies to the north of the site and forms the most significant surface feature. As a significant hydro-geomorphological feature, a buffer of 32 m has been applied to this feature, where it intersects with the subject site. Wider buffers are considered to be inappropriate, given the nature of the terrain in question and the nature of the development. Surface drainage along the proposed transmission line corridor traverses a number of minor drainage lines which serve the Wolfkopseloop drainage feature. As is common to this region, minor drainage lines are influenced by the variability and intensity of rainfall and other factors, in particular the movement of livestock. Such drainage lines have been identified and should be given

consideration in the final layout and design of the transmission line. However, these morphological features do not have to be avoided.

The following main impacts were identified in the Ecological Impact Assessment:

Construction Phase:

- Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project;
- Changes in the geomorphological state of drainage lines; and
- Exotic weed invasion.

Operational Phase:

- Changes in avian behaviour within increased perch and predation opportunities arising for raptors, which in turn have indirect impacts on prey species in the general locale;
- Bird collisions and mortalities arising from electrocution of birds perching on site and possibly direct collisions with the transmission line; and
- Exotic weed invasion as a consequence of regular and continued disturbance of route.

Decommissioning Phase:

- A reversion back to the present seral stage, where continued grazing by livestock and herbivory by game will arise.
- A reversion of present faunal population states within the subject route.
- Exotic weed invasion as a consequence of abandonment of route and cessation of weed control measures.

Cumulative Impacts:

- Extensive alteration of habitat structure and composition over an extensive and wide area where an increase in powerlines arise;
- Increased change in the geomorphological state of drainage lines on account of long term and extensive change in the nature of the catchment; and
- Exotic weed invasion as a consequence of regular and continued disturbance across an extensive area of the transmission line route.

Overall, the above impacts identified in the Ecological Impact Assessment (Appendix D.1 of this BA Report) are predicted to be of a moderate to low significance without the implementation of mitigation measures. No impacts were assessed as being of high significance after the implementation of mitigation.

The following main mitigation measures were identified in the Ecological Impact Assessment specialist study:

- Design Phase: The detailed design should consider and incorporate habitat and features into the routing of the proposed transmission line.
- Design Phase: The detailed design and confirmation of the proposed tower positions along the proposed transmission line route should assist with the avoidance of specific vegetation associates and forms (where applicable). Identify and avoid the two Aloe consociates (*Aloe dichotoma* and *A claviflora*) identified within the electrical infrastructure corridor as part of the Ecological Impact Assessment (Appendix D.1 of this BA Report).
- Design and Construction Phases: Avoidance, where possible of the minor drainage lines and any additional significant plant species that may be identified and incorporate other features along the route into the design. Avoidance of excessive clearance of vegetation within the proposed transmission line corridor, particularly around towers.
- Construction Phase: A second assessment of the route should be undertaken in or around February to March (subsequent to the issuing of an EA and the completion of the detailed engineering) in order to identify any additional plant specimens of significance that may be evident along the route. Undertake plant rescue operations, where such specimens may be relocated/removed (i.e. search and rescue) or avoided (with the relevant permits and approvals in place) prior to the commencement of construction.

- Construction Phase: Appoint a suitable Specialist/Contractor to undertake Search and Rescue operations as required, prior to the commencement of the construction phase.
- Construction Phase: Implement exotic weed control. An initial pre-construction clearance of all exotic vegetation on route should be undertaken to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented during the construction phase that aligns with an exotic vegetation management plan or an alien eradication plan.
- Design and Operational Phases: Management of avifauna impacts along the powerline route by the establishment of bird flight diverters and the use of appropriate tower design; and
- Construction, Operational and Decommissioning Phases: General land management practices to avoid excessive erosion, dust emissions and possible sources of pollution to ground and surface water resources.

Visual Impact Assessment:

A Visual Impact Assessment specialist study was conducted (included in Appendix D.2 of this BA Report) for the proposed transmission line connecting the proposed Kenhardt PV 1 Solar PV to the Nieuwehoop Substation.

The landscape surrounding the proposed route has a rural agricultural character which has been transformed by extensive stock farming and large scale infrastructure in the form of the Sishen-Saldanha ore railway line and Eskom Nieuwehoop Substation.

The following sensitive visual receptors will potentially be affected by the introduction of the proposed 132 kV powerline into the landscape:

- Residents and viewpoints on farms surrounding the proposed development site. These are highly sensitive visual receptors since they have an active interest in their surrounding landscape; and
- Motorists using the R383 and the Transnet Service Road (i.e. Loop 14) adjacent to the ore railway line. Motorists are classified as low sensitivity visual receptors since they pass through the landscape and their attention is mostly focused on the road.

The Visual Impact Assessment confirmed that for the proposed transmission line which will support the Kenhardt PV 1 project, there are unlikely to be highly sensitive visual receptors that will be highly exposed to the power line.

The specialist study notes that visual intrusion will be low for visual receptors on surrounding farms since the landscape is already transformed by structures similar to those of the proposed power line. Motorists using the gravel road adjacent to the Sishen-Saldanha railway line will experience low visual intrusion since their views are already severely impacted by the railway line and substation.

The following main impacts were identified in the Visual Impact Assessment:

Construction Phase:

- Potential visual intrusion of construction activities on views of sensitive visual receptors.

Operational Phase:

- Potential landscape impact of the proposed 132 kV powerline on a rural agricultural landscape; and
- Potential visual intrusion of the proposed 132 kV powerline on the views of sensitive visual receptors.

Decommissioning Phase:

- Potential visual intrusion of decommissioning activities on views of sensitive visual receptors.

Cumulative Impacts:

- Cumulative impact of solar energy generation projects and large scale electrical infrastructure on the existing rural-agricultural landscape; and

- Cumulative visual impact of solar energy generation projects and large scale electrical infrastructure on existing views of sensitive visual receptors in the surrounding landscape.

The specialist study notes that the cumulative landscape impact of various solar energy projects and their associated electrical infrastructure in the surrounding landscape will have a slight consequence since the landscape character has been extensively altered by the railway line and Nieuwehoop Substation. The significance of the cumulative impact is very low since the landscape is rapidly changing due to the introduction of large scale and highly visible rail and electrical infrastructure. The significance of the cumulative visual impact on existing views of sensitive visual receptors is rated as very low due to the existing and new structures which have severely limited potential scenic views in the region.

Overall, the above impacts identified as part of the Visual Impact Assessment (Appendix D.2 of this BA Report) are predicted to be of a very low to low significance without and with the implementation of mitigation measures. No impacts were assessed as being of high significance after the implementation of mitigation. Overall, with the implementation of mitigation measures, the impacts identified in the Ecological Impact Assessment (Appendix D.1 of this BA Report) have a low significance.

Overall, the proposed transmission line will fit in with the landscape as it exists now as well as with plans for the future of the surrounding landscape. The overall significance of the visual impact of the proposed 132 kV powerline is low.

The following main mitigation measures were identified in the Visual Impact Assessment specialist study:

- Construction Phase: Adopt standard mitigation measures associated with construction activities.
- Construction Phase: Night time construction should be avoided where possible.
- Construction Phase: Night lighting of the construction sites should be minimised within requirements of safety and efficiency.
- Operational Phase: Towers should be similar to those in existing landscape.
- Decommissioning Phase: Rehabilitation of cleared and disturbed areas.
- Decommissioning Phase: Working at night should be avoided, where possible.
- Decommissioning Phase: Night lighting of reclamation sites should be minimised within requirements of safety and efficiency.

Heritage Impact Assessment (Archaeology and Cultural Landscape):

A Heritage Impact Assessment (HIA) was undertaken as part of the BA Process (included in Appendix D.3 of this BA Report). The HIA is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the heritage resources. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued for consideration by the DEA who will review the BA and grant or withhold authorisation.

The HIA established that the study area is relatively flat, although gently undulating terrain occurs in places. A pan occurs at the northern end of the proposed corridor, while a small rocky koppie occurs in the southern part of the corridor. Vegetation is low and sparse with ground visibility being excellent.

Archaeological material in the form of background scatter was located across much of the general area but impacts to this material would be of very low significance. No archaeological sites or graves were found along the alignment of the proposed transmission line corridor but sites may be expected in association with the pan and koppie which, because of a change to the project, were not covered by the survey. Although sites of high significance are unlikely to occur, these two areas should be avoided with buffers of 75 m radius from the centre of the pan and 120 m radius from the summit of the koppie as a precautionary measure. The landscape was identified as a heritage

resource but, because of the presence of electrical and other infrastructure in the area, the significance of new impacts is considered to be very low and no mitigation is suggested.

The following main impacts were identified in the HIA:

Construction Phase:

- Damage to or destruction of archaeological resources and graves; and
- Impacts to the cultural and natural landscape.

Operational Phase:

- Impacts to the cultural and natural landscape.

Decommissioning Phase:

- Impacts to the cultural and natural landscape.

Cumulative Impacts:

- Damage to or destruction of archaeological resources and graves; and
- Impacts to the cultural and natural landscape.

Overall, the above potential impacts to archaeological resources and graves identified in the HIA (Appendix D.3 of this BA Report) are rated as being of very low significance, while the impacts to the landscape are also rated with a very low significance (without the implementation of mitigation measures). Aside from avoiding the pan and koppie, no mitigation measures are suggested.

The following main mitigation measures were identified in the HIA:

- Design and Construction Phase: The pan and koppie should be avoided with buffers of 75 m from the centre of the pan and 120 m from the summit of the koppie.
- Construction Phase: The construction crew should be informed of the possibility of encountering graves and should be encouraged to report any suspicious-looking stone features prior to disturbance.
- Construction Phase: If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Palaeontological Impact Assessment:

A desktop Palaeontological Impact Assessment was undertaken as part of the BA Process (included in Appendix D.4 of this BA Report) to provide an assessment of potential impacts on local palaeontological (i.e. fossil) heritage within the transmission line corridor between the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation.

The specialist study notes that the corridor for the proposed transmission line is underlain at depth by Precambrian basement rocks (c. 1-2 billion years old) assigned to the Namaqua-Natal Province. These ancient igneous and high-grade metamorphic rocks - mainly granites and gneisses of the Keimoes Suite and Jacomynspan Group - crop out at surface in small areas and are entirely unfossiliferous. The desktop study also confirmed that no previously recorded areas or sites of exceptional fossil heritage sensitivity or significance have been identified within the study area as a whole.

The following main impacts were identified in the Palaeontological Impact Assessment:

Construction Phase:

- Potential loss of palaeontological heritage resources through disturbance, damage or destruction of fossils and fossil sites (including associated geological contextual data) through surface clearance and excavation activities during the construction phase.

Cumulative Impacts:

- Potential cumulative loss of palaeontological heritage resources through disturbance, damage or destruction of fossils and fossil sites (including associated geological contextual data) through surface clearance and excavation activities during the construction phase of proposed transmission line in the context of several alternative energy projects planned within the broader Kenhardt region and other key electrical infrastructure developments within a 20 km radius of the proposed project site.

Due to the inferred scarcity of scientifically important fossil remains within the study areas, as well as the small scale of excavations for electrical pylon footings concerned, the overall impact significance of the construction phase of the transmission line is assessed as very low (before and after mitigation). No significant impacts on fossil heritage are anticipated during the operational and decommissioning phases of the proposed transmission line. The study further concluded that the cumulative impacts on fossil heritage resource posed by the transmission line, in the context of several alternative energy and other infrastructural developments planned in the region is of very low significance. No impacts were assessed as being of high significance after the implementation of mitigation.

The following main mitigation measures were identified in the Palaeontological Impact Assessment:

- Construction Phase: All substantial bedrock excavations (into sedimentary rocks) should be monitored for fossil material by the responsible Environmental Control Officer (ECO). Should significant fossil remains - such as vertebrate bones and teeth, plant-rich fossil lenses, petrified wood or dense fossil burrow assemblages - be exposed during construction, the responsible ECO should safeguard these, preferably *in situ*. The South African Heritage Resources Authority (SAHRA) should be alerted as soon as possible, so that appropriate action can be taken by a professional palaeontologist. Undertake monitoring of all substantial excavations into sedimentary rocks for fossil remains and safeguard any finds *in situ*.
- Construction Phase: Appoint a professional palaeontologist to record and sample any chance fossil finds. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist. The palaeontologist concerned with mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection).

Geohydrological Assessment:

A Geohydrological Impact Assessment was undertaken as part of the BA Process (included in Appendix D.5 of this BA Report) to determine the impact of the proposed project on the surrounding geohydrology and any geohydrological features, as well as to recommend mitigation measures to reduce the significance of potential negative impacts.

A desktop study was conducted based on existing maps and reports of the geology and geohydrology. Groundwater data, including groundwater level and groundwater quality data, was obtained from the National Groundwater Archive (NGA) for the area surrounding the proposed area. This was followed by a detailed fieldwork component to inform the Geohydrological Assessment.

Geologically, the study area for the proposed Kenhardt PV 1 transmission line corridor is overlain by wind-blown sand (Qg) of the Gordonia Formation. Bedrock is expected to be Jacomyns Pan Formation (which consists of weathered metamorphic rock types). According to regional groundwater maps the entire study area does host an “intergranular and fractured” aquifer (i.e. the wind-blown sands and river alluvium as well as fractures within the bedrock constitute an aquifer) with an average borehole yield of 0.1 L/s to 0.5 L/s. Using Electrical Conductivity (EC) as a groundwater quality indicator, the regional groundwater maps indicate that the EC ranges from 300 - 1 000 mS/m within the study area and the area is classified as having a low vulnerability to surface based contaminants.

The following main impacts were identified in the Geohydrological Assessment:

Construction Phase:

- Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages; and
- Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps.

Decommissioning Phase:

- Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.

No impacts on geohydrology were identified for the operational phase of the proposed transmission line development. Overall, the above impacts are predicted to be of a very low significance without and with the implementation of mitigation measures.

The following main mitigation measures were identified in the Geohydrological Assessment:

- All vehicles and other equipment (generators etc.) must be regularly serviced to ensure they do not spill oil. Vehicles should be refuelled and parked on paved (impervious) areas. If liquid product is being transported it must be ensured this does not spill during transit.
- Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.
- Diesel fuel storage tanks must be above ground in a bunded area.
- Vehicle and washing areas must also be on paved surfaces and the by-products correctly managed.

Soils and Agricultural Potential Assessment:

A Soils and Agricultural Potential Assessment (included in Appendix D.6 of the BA Report) was undertaken as part of the BA Process to identify and assess all potential impacts of the proposed development on agricultural resources including soils and agricultural production potential, and to provide recommended mitigation measures, monitoring requirements, and rehabilitation guidelines for all identified impacts.

The study determined that the proposed development is located on land zoned and used for agriculture. South Africa has very limited arable land and it is therefore critical to ensure that development does not lead to an inappropriate loss of land that may be valuable for cultivation. This assessment has found that the proposed site is on land which is of very low agricultural potential and is not suitable for cultivation.

The following main impacts were identified in the Soils and Agricultural Potential Assessment:

Construction and Decommissioning Phases:

- Degradation of veld vegetation beyond the direct footprint of the proposed transmission line corridor due to construction and decommissioning phase disturbance and potential trampling by vehicles.
- Loss of topsoil due to poor topsoil management (burial, erosion, etc.) during construction and decommissioning related soil profile disturbance (levelling, excavations etc.) and resultant decrease in that soil's capability for supporting vegetation.
- Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production.
- Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project.

Operational Phase:

- Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production.
- Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project.

Cumulative Impacts:

- Cumulative impacts due to the regional loss of agricultural land resources as a result of other developments on agricultural land in the region.

The study noted that there are three factors that influence the significance of all potential agricultural impacts. The first is that the actual footprint of disturbance of the proposed power line is very small in relation to available, surrounding land. The second is that the impact of a power line on the kind of agricultural activity (grazing) along the proposed development is very minimal, as this can continue in the presence of a power line with negligible disturbance. The third is that the site has very low agricultural potential, limited by severe climatic moisture availability constraints and shallow, rocky soils.

Because of the above factors, there will be a very low significance overall impact of the proposed development on agricultural production and resources and also a very low significance cumulative impact. No agriculturally sensitive areas occur within the assessed corridor. The land capability is classified as Class 7 - non-arable, low potential grazing land. The site has a low grazing capacity of 31 - 40 hectares per large stock unit. All impacts were assessed as having very low significance (without the implementation of mitigation measures).

The following main mitigation measures were identified in the Soils and Agricultural Potential Assessment:

- Construction and Decommissioning Phases: Control dust through appropriate dust suppression methods.
- Construction and Decommissioning Phases: Strip and stockpile topsoil before disturbance and re-spread it on the surface as soon as possible after disturbance.
- Construction and Decommissioning Phases: Manage any sub-surface spoils from excavations in such a manner that it will not impact on agricultural land.
- Construction and Decommissioning Phases: Minimise road footprint and control vehicle access on designated roads only.
- Operational Phase: Implement an effective system of stormwater run-off control.

Social Impact Assessment:

A Social Impact Assessment (included in Appendix D.7 of the BA Report) was undertaken as part of the BA Process to investigate the potential social disruptors and associated social impacts likely to result from the proposed project. In this regard, the assessment focuses on the town of Kenhardt and not the individual land parcels on which the proposed projects will developed, as most, if not all, of the anticipated social impacts will be experienced in the urban area nearest to the proposed developments (i.e. Kenhardt). Social disruptors and impacts under investigation are those which are most likely to significantly influence social and cultural concerns, values, consequences and benefits to communities.

The following main impacts were identified in the Social Impact Assessment:

Construction and Operational Phases:

- Influx of jobseekers;
- Increases in social deviance;
- Increases in incidence of HIV/AIDS infections;

- Expectations regarding jobs;
- Local spending;
- Local employment; and
- Human development resulting from the proposed Economic Development Plan.

Decommissioning Phase:

- Job losses at the end of the project life-cycle.

Cumulative Impacts:

- Cumulative impacts as a result of exacerbated in-migration.

The overall significance rating of the negative socio-economic impacts associated with the proposed project is low to moderate; whereas the overall significance rating of the positive socio-economic impacts associated with the proposed development is moderate.

It should be accepted that the development of the proposed project is likely result in some form of negative social impact to the local community. However, such a negative impact needs to be weighed against the potential benefit likely to result from the same development. Given the overall medium significance negative impact of the project, as compared to the overall medium-high significance positive impact of the project; it can be concluded that the prospective socio-economic benefits of the proposed project outweighs the socio-economic losses/impacts. In addition, the local vulnerability context strongly suggests that acceptable, though declining, levels of Social and Human capital is present within the Kenhardt community, which should assist with the mitigation of potential negative socio-economic impacts resulting from the proposed project. Conversely, very limited Financial capital is available in the local community, which in turn adds to the erosion of existing Social and Human capital. Accordingly, there appears to be a clear need to invest in the development of Financial capital within the Kenhardt community in order to restore some level of balance between asset classes which in turn should facilitate more options to local community members in terms of viable livelihood strategies.

The following main mitigation measures were identified in the Social Impact Assessment:

Construction and Operational Phases:

- Develop and implement a Workforce Recruitment Plan;
- Reserve employment, where practical, for local residents;
- Clearly define and agree upon the Project Affected People (PAP);
- Develop a database of PAP and their relevant skills and experience, or use an existing legitimate database of skills and expertise;
- Develop and implement a Stakeholder Engagement Plan;
- Delivery on the Economic Development Plan must be contractually binding on the proponent;
- Procure goods and services, where practical, within the study area;
- Obtain regularly required goods and services from as large a selection of local service providers as possible;
- The proponent should engage with local NGOs, CBOs and local government structures in the Kenhardt community to identify and agree upon relevant skills and competencies required;
- Such skills and competencies should then be included in the Economic Development Plan; and
- Where possible, align the Economic Development Plan with Local Municipality's IDP.

Decommissioning Phase:

- The proponent should comply with relevant South African labour legislation when retrenching employees;
- Scatec should also consider appropriate succession training of locally employed staff earmarked for retrenchment during decommissioning; and
- All project infrastructures should be decommissioned appropriately and thoroughly to avoid misuse.

Traffic Impact Statement:

A Traffic Impact Statement (TIS) was produced by the CSIR to show the amount of traffic that can be expected during the construction and operational phase of the proposed development of the proposed Kenhardt PV 1, Kenhardt PV 2, and Kenhardt PV 3 solar energy projects (i.e. separate EIA Processes), as well as the proposed Kenhardt PV 1 - Transmission Line (i.e. this BA Process), Kenhardt PV 2 - Transmission Line, and Kenhardt PV 3 - Transmission Line projects near Kenhardt in the Northern Cape. The TIS focuses on the regional setting in which these projects are proposed and the roads that will be utilised for these projects.

The following main impacts were identified in the TIS:

Construction, Operation and Decommissioning Phases:

- Increase in traffic generation;
- Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads;
- Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and construction equipment; and
- Decrease in quality of surface condition of the roads.

Cumulative Impacts:

- Cumulative impact of traffic generation of three projects and related projects.

Overall, the above impacts identified as part of the TIS (Appendix D.8 of this BA Report) are predicted to be of a moderate to low significance without and with the implementation of mitigation measures. No impacts were assessed as being of high significance after the implementation of mitigation.

The following main mitigation measures were identified in the TIS:

Construction, Operational and Decommissioning Phases:

- Should abnormal loads have to be transported by road to the site, a permit needs to be obtained from the Provincial Government Northern Cape (PGNC) Department of Public Works, Roads and Transport.
- Provide a Transport Traffic Plan to SANRAL.
- Ensure that roadworthy and safety standards are implemented at all time for all construction.
- Adhere to all speed limits applicable to all roads used.
- Implement clear and visible signalisation indicating movement of vehicles and when turning off or onto the Transnet Service Road to ensure safe entry and exit.
- Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles.
- Construction activities will have a higher impact than the normal road activity and therefore the road should be inspected on a weekly basis for structural damage.
- A Road Maintenance Plan should be developed for the section of the Transnet Service Road.
- Ensure that road network is maintained in a good state for the entire operational phase.

Cumulative topographical analysis of the proposed PV projects in the Astronomy Geographic Advantage Area

MESA Solutions (Pty) Ltd (MESA Solutions) was appointed by the Scatec Solar to undertake a topographical analysis of the terrain profiles between various PV project locations (assessed separately as part of EIA Processes) in the Astronomy Geographic Advantage (AGA) area and the closest and core-site SKA telescopes. A total of three Scatec Solar sites (Kenhardt PV 1 to PV 3), as well as ten Mulilo sites (Boven PV1 to PV4; Gemsbok PV1 to PV6) in close proximity (as described in Section D of the BA Report), are considered in this cumulative assessment. The full report, dated 10 February 2016, is included in Appendix D.9 of this BA Report. This technical report aims to inform the potential impact that the proposed project will have on the SKA project and to determine suitable mitigation measures to manage the risk (if any) posed to the SKA project by the development of this project.

From the results it is found that:

- Radiated emissions at levels below that of CISPR 11/22 Class B are required (especially in the case of the closest telescope).
- Negligible terrain loss exists between majority of sites and closest SKA telescope.
- Based on the measured plant emission Radio Frequency Interference (RFI) and maximum allowed emission levels, the required mitigation or surplus attenuation varies based on plant location and frequency. However, mitigation measures will have to be applied based on the highest required level. The required 50 dB of shielding at Boven PV1 at 942 MHz, for example, would require significant attention to detail to achieve.

It is strongly recommended that the following mitigation practises be incorporated into the plants design:

- The inverter units, transformers, communication and control units for an array of panels all be housed in a single shielded environment.
- For shielding of such an environment ensure RFI gasketing be placed on all seams and doors and RFI Honeycomb filtering be placed on all ventilation openings.
- Cables to be laid directly in soil or properly grounded cable trays (not plastic sleeves).
- The use of bare copper directly in soil for earthing is recommended.
- Assuming a tracking PV plant design, care will have to be taken to shield the noise associated with the relays, contactors and hydraulic pumps of the tracking units.
- All data communications to and from the plant to be via fibre optic.

EAP's Recommendation

This BA Report has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect and cumulative impacts associated with the proposed Kenhardt PV 1 - Transmission Line project. No negative impacts have been identified within this BA that, in the opinion of the EAPs who have conducted this BA Process, should be considered "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project.

Based on the findings of the specialist studies, the proposed project is considered to have an overall low negative environmental impact and an overall medium positive socio-economic impact.

The proposed project will be undertaken within the electrical infrastructure corridor. This corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of the BA Report, as well as the EMPr included in Appendix G of the BA Report), which shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the larger corridor that was assessed. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, a site layout and routing for the Kenhardt PV 1 transmission line within has also been preliminarily determined for this project, which is included in Appendices A and B of the BA Report, as well as the EMPr included in Appendix G of the BA Report.

This BA considered the nature, scale and location of the proposed development as well as the wise use of land (i.e. is this the right time and place for the development of this proposed project). When considering the timing of this project, the IRP2010 proposes to secure 17 800 MW of renewable energy capacity by 2030. In August 2011, the Department of Energy (DOE) launched the REIPPPP and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of various renewable energy project (including solar and wind). In terms of the REIPPPP, the submitted proposals are then evaluated. Currently, the two main evaluation criteria for compliant proposals are price and economic development with a point allocation of 70/30 (DOE, 2013), with other selection criteria including technical feasibility and grid

connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders whose responses rank the highest (according to the aforementioned criteria) will have the greatest potential to be appointed as “Preferred Bidders” by the DOE. The first procurement phase of the DOE’s REIPPPP includes five bidding windows. Scatec Solar intends to bid these projects in the 2016 bidding process (i.e. Round 5) to be potentially selected as an IPP. The proposed Kenhardt PV 1 - Transmission Line project is required as part of the bidding process to confirm that the proposed Kenhardt PV 1 facility is enabled and equipped with the necessary infrastructure to connect to the national grid.

Overall the proposed transmission line project will fundamentally support and enable the functioning proposed Kenhardt PV 1 facility and to ensure that it is allowed to contribute to the abovementioned renewable energy targets proposed by the DOE.

On a provincial level, the Northern Cape Province is currently facing considerable constraints in the availability and stability of electricity supply. This is a consequence of South Africa’s electricity generation and supply system being overstretched, and the reliance of the Northern Cape, as many other South African provinces, on the import of power to service its energy needs.

The development of solar energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability. On a municipal planning level, the proposed project does not go against any of the objectives set within the !Kheis Municipality Draft IDP 2012-2017. The proposed project will be in line with/supportive of the IDP’s objective of creating more job opportunities and it will enable the proposed Kenhardt PV 1, 2 and 3 facilities to be constructed and to function optimally. The proposed transmission line project will assist in local job creation during the construction phase of the project (and ultimately enable job creation as a result of the proposed Kenhardt PV 1, 2 and 3 facilities), if approved by the DEA. It should however be noted that employment during construction phase will be temporary.

Taking into consideration the findings of the BA Process, it is the opinion of the EAP, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Kenhardt region. The proposed project will play a key role in enabling and facilitating the construction of the proposed 75 MW Kenhardt PV 1 which will add electricity to the national grid. Provided that the specified mitigation measures are applied effectively, it is recommended that the proposed project receive EA in terms of the EIA Regulations promulgated under the NEMA.

Section 24 of the Constitutional Act states that “everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

Based on this, this BA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site and through appropriate monitoring and management plans to, inter alia, monitor the impacts on birds and protection of SCC potentially present within this area (refer to the EMPr in Appendix G of this BA Report).

In order to ensure the effective implementation of the mitigation and management actions, an EMPr has been compiled and is included in Appendix G of the BA Report. The mitigation measures necessary to ensure that the project is planned and carried out in an environmentally responsible manner are listed in the EMPr. The EMPr is a dynamic document that should be updated as required and provides clear and implementable measures for the proposed project.

glossary

AC	Alternating Current
ADT	Average Daily Traffic
AGIS	Agricultural Geo-Referenced Information System
BA	Basic Assessment
BGIS	Biodiversity Geographic Information System
BID	Background Information Document
CA	Competent Authority
CBA	Critical Biodiversity Area
CPV	Concentrated Photovoltaic
CSP	Concentrated Solar Power
CSIR	Council for Scientific and Industrial Research
DAFF	National Department of Agriculture, Forestry and Fisheries
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DC	Direct Current
DM	Siyanda District Municipality
DMR	National Department of Minerals Resources
DOE	Department Of Energy
DOT	National Department of Transport
DSR	Draft Scoping Report
DWA	National Department of Water Affairs
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
EIA	Environmental Impact Assessment
EMI	Electro Magnetic Interference
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Protection Areas
FSR	Final Scoping Report
GA	General Authorization
GG	Government Gazette
GIS	Geographical Information Systems
GN R	Government Notice Regulation
HPM	Hydraulic Plant Module
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
ICB	Iron Chromium Battery
IDP	Integrated Development Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
kWh	Kilowatt Hours
LSA	Later Stone Age
Mf	Friesdale Charkonite
Mja	Jacomys Pan Formation

Mks	Klip Koppies Granite
MSA	Middle Stone Age
MW	Megawatts
NBA	South African National Parks
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NFEPA	National Freshwater Ecosystems Protected Areas
NHRA	National Heritage Resources Act (Act 25 of 1999)
NPAES	National Protected Expansion Strategy
NWA	National Water Act (Act No. 36 of 1998)
PES	Present Ecological State
PPA	Power Purchasing Agreement
PV	Photovoltaic
REDZs	Renewable Energy Development Zones
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFI	Radio Frequency Inteference
S&EIR	Scoping and Environmental Impact Reporting
SABAP2	South African Bird Atlas Project
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SANBI	South African National Biodiversity Institute
SARERD	South African Renewable Energy Resource Database
SDF	Spatial Development Framework
SKA	Square Kilometre Array
TDS	Total Dissolved Solids
ToR	Terms of Reference
WASA	Wind Atlas of South Africa
WMA	Water Management Area
WULA	Water Use License Application

Summary of where requirements of Appendix 1 of the 2014 NEMA EIA Regulations (GN 982) are provided in this BA Report.

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BAR</u>
<p>Objective of the basic assessment process</p> <p>1) The objective of the basic assessment process is to, through a consultative process-</p> <ul style="list-style-type: none"> a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context; b) identify the alternatives considered, including the activity, location, and technology alternatives; c) describe the need and desirability of the proposed alternatives, d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine- <ul style="list-style-type: none"> (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (ii) the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to- <ul style="list-style-type: none"> (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored. 	<p>Yes</p>	<p style="text-align: center;">Legislation and Policy - Section A (2)</p> <p style="text-align: center;">Alternatives - Section A (2)</p> <p style="text-align: center;">Need and Desirability - Section A (1), Section A (2) and Section A (10)</p>
<p>Scope of assessment and content of basic assessment reports</p> <p>2) (1) A basic assessment report must contain the information that is necessary for the</p>	<p>Yes</p>	<p>Section A (1) and Appendix H</p>

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BAR</u>
competent authority to consider and come to a decision on the application, and must include: (a) details of: (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;		
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Yes	Sections A (1), (2) and (3), and Appendix A
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Yes	Section A (1) and Appendix A
(d) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken including associated structures and infrastructure;	Yes	Section A
(e) a description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Yes	Section A (1) and Appendix D
f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Yes	Section A (1), Section A (2) and Section A (10)
(g) a motivation for the preferred site, activity and technology alternative;	Yes	Section A (2)
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered;	Yes	Refer to Section A (2) i.e. this section of the BA Report for a description of the alternatives considered, and a justification for the

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BAR</u>
		inapplicability of certain alternatives.
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Yes	Refer to Section C of the BA Report for a description of the Public Participation Process undertaken.
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Yes	Refer to Section C and Appendix E of this BA Report for a description of the issues raised by I&APs during the Public Participation Process.
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Yes	Refer to Section A (2) i.e. this section of the BA Report for a description of the alternatives considered. Site alternatives are not applicable as it is dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation.
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Yes	Refer to Section A (2) of the BA Report for a description of the alternatives considered, and a justification for the inapplicability of certain alternatives. Note that a complete impact assessment is included in Section D of this BA Report. The specialists assessed the worst case by studying the entire electrical infrastructure corridor, whilst the transmission line will only be constructed within a portion thereof. Alternatives are not applicable as it is dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Yes	
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Yes	
(viii) the possible mitigation measures that could be applied and level of residual risk;	Yes	
(ix) the outcome of the site selection matrix;	Yes	


<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BAR</u>
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Yes	Nieuwehoop Substation.
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	Yes	Section A (2)
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Yes	Section D and Appendix D
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Yes	Section D and Appendix D
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Yes	Section D and Section E
(l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Yes	Section E

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BAR</u>
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	Yes	Section D and Section E, and Appendix E and Appendix G
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Yes	Section D and Section E, and Appendix E and Appendix G
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Yes	Appendix D
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Yes	Section E
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	X	Not Applicable
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Yes	Appendix H
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	X	Not Applicable
(t) any specific information that may be required by the competent authority; and	Yes	Appendix D.9
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	X	Not Applicable

BASIC ASSESSMENT REPORT

BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure (KENHARDT PV 1 - TRANSMISSION LINE) to support the proposed 75 MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province: **BASIC ASSESSMENT REPORT**



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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:
Application Number:
Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? YES NO
If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

1. INTRODUCTION, BACKGROUND AND ENVIRONMENTAL AUTHORISATION PROCESS

Scatec Solar SA 163 (PTY) Ltd is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (including transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168, approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The proposed 75 MW Solar PV facilities will connect (via the transmission lines and associated electrical infrastructure) to the Eskom Nieuwehoop Substation, which is currently being constructed on the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The proposed transmission lines and electrical infrastructure will be constructed within a single electrical infrastructure corridor.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, a **full Scoping and EIA Process** is required for the construction of the three Solar PV facilities. The proposed 75 MW Solar PV facility projects (requiring a Scoping and EIA Process) are referred to as:

- Kenhardt PV 1;
- Kenhardt PV 2; and
- Kenhardt PV 3.

In October 2015, separate Applications for Environmental Authorisation (EA) were submitted to the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed **Scoping and EIA** project (i.e. the Solar PV facilities). The Applications for EA were acknowledged by the DEA on 23 October 2015 and the following reference numbers were assigned to the Kenhardt PV (**Scoping and EIA**) projects:

- Kenhardt PV 1 - DEA Reference: 14/12/16/3/3/2/837;
- Kenhardt PV 2 - DEA Reference: 14/12/16/3/3/2/838; and
- Kenhardt PV 3 - DEA Reference: 14/12/16/3/3/2/836.

The Scoping Reports for the abovementioned PV projects were released separately to Interested and Affected Parties (I&APs) for review in September 2015 during the Scoping Phase. In November 2015, the finalised Scoping Reports were submitted to the DEA, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations, for decision-making in terms of Regulation 22 of the 2014 NEMA EIA Regulations. The DEA accepted the finalised Scoping Reports on 8 December 2015, which marked the end of the Scoping Phase, after which the EIA Process moved into the impact assessment and reporting phase. The EIA Reports have been compiled for the Kenhardt PV 1, PV 2 and PV 3 projects and are currently being made available to I&APs for a 30-day comment period, together with the BA Reports.

More specifically, in terms of the NEMA and the 2014 NEMA EIA Regulations promulgated in Government Gazette 38282 and GN R982, R983, R984 and R985 on 8 December 2014, three **Basic Assessment** (BA) Processes was conducted for the proposed construction of the transmission lines and electrical infrastructure, which are required to

ensure that the abovementioned proposed Kenhardt PV 1, PV 2 and PV 3 facilities are connected to the Eskom Nieuwehoop Substation (i.e. national grid). These BA Projects are referred to as:

- Kenhardt PV 1 – Transmission Line (i.e. this project);
- Kenhardt PV 2 – Transmission Line; and
- Kenhardt PV 3 – Transmission Line.

This BA Report is only focussed on the proposed **Kenhardt PV 1 – Transmission Line** project.

Figure 1 below shows the overall locality of the three proposed 75 MW Solar PV facility projects and the electrical infrastructure corridor (within which the transmission lines and electrical infrastructure will be constructed to support each Solar PV project).

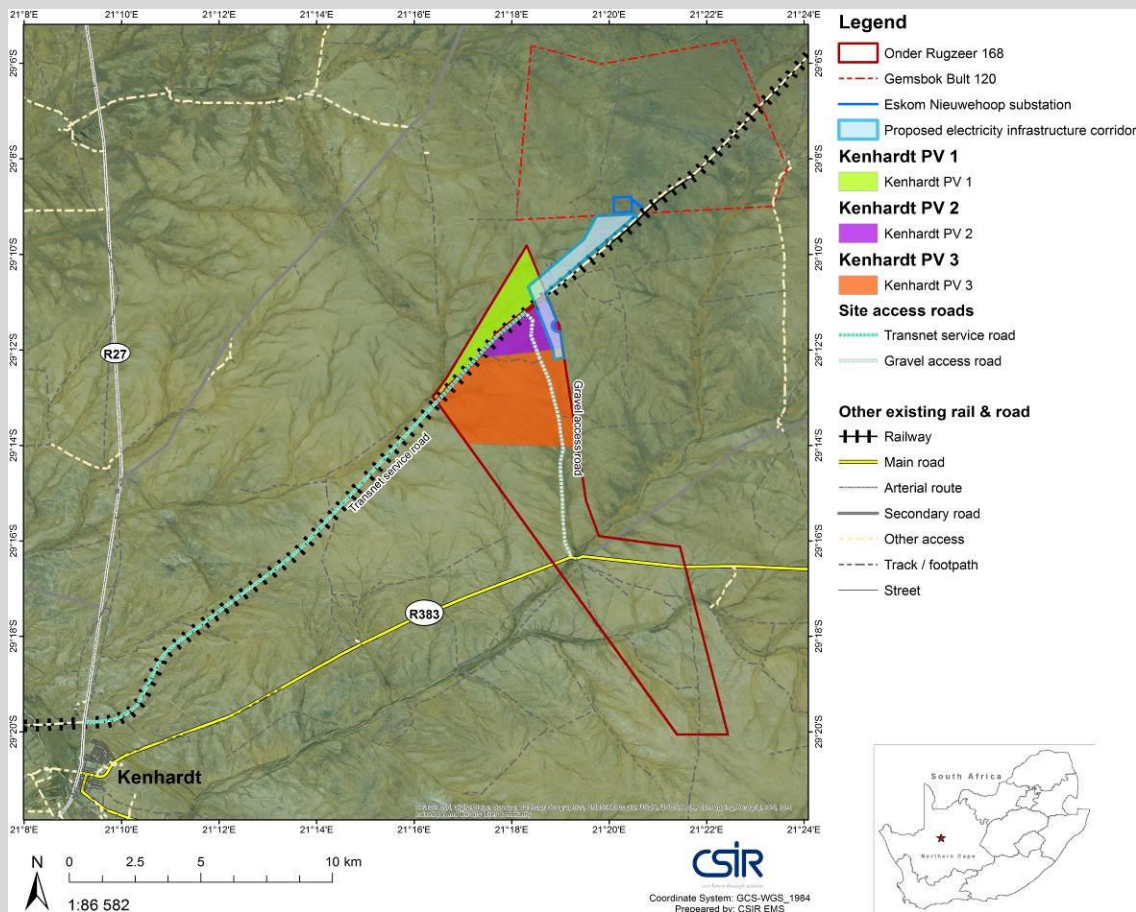


Figure 1: Locality of the three proposed 75 MW PV Facilities and Electrical Infrastructure Corridor

Scatec Solar SA 163 (PTY) Ltd consists of various subsidiary companies. The subsidiaries that fulfil the role of the Project Applicant are noted below for the proposed 75 MW Solar PV and transmission line projects:

- Scatec Solar SA 330 (PTY) Ltd - Project Applicant for Kenhardt PV 1 and Kenhardt PV 1 – Transmission Line (i.e. this project);
- Scatec Solar SA 350 (PTY) Ltd - Project Applicant for Kenhardt PV 2 and Kenhardt PV 2 – Transmission Line; and
- Scatec Solar SA 370 (PTY) Ltd - Project Applicant for Kenhardt PV 3 and Kenhardt PV 3 – Transmission Line.

As noted above, Scatec Solar SA 330 (PTY) Ltd (hereinafter referred to as Scatec Solar) is the Project Applicant for this proposed transmission line and electrical infrastructure project (referred to as **Kenhardt PV 1 – Transmission Line**).

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations, the Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the separate EIA and BA Processes in order to determine the biophysical, social and economic impacts associated with undertaking the proposed activity. The BA Project Team is being led by Surina Laurie (Environmental Assessment Practitioner (EAP)), who will be supported by the Project Manager, Rohaida Abed. Paul Lochner will act as Technical Advisor for the proposed project. Surina has more than 5 years of experience in environmental assessment and management, and is a Senior EAP in the EMS group of the CSIR with a Masters degree in Environmental Management. She is a Registered Professional Natural Scientist (Registration Number: 400033/15) with the South African Council for Natural Scientific Professions (SACNASP). Surina has experience in the management and integration of various types of environmental assessments in South Africa for various sectors, including renewable energy, industry and tourism. She has also been part of advisory teams advising on financing, real estate, corporate, construction, environmental and regulatory aspects for various sponsors, developers and lenders during the DOE's first and second bidding windows in 2012 and 2013. Surina is currently undertaking several Solar PV EIAs in the Northern Cape and Free State. Surina was the Project Manager for the proposed (adjacent) Nieuwehoop Solar Development EIA projects, which have received positive EAs. Refer to Appendix H of this BA Report for the Curriculum Vitae of the BA Team, which also includes a declaration of and affirmation by the EAP as required by the 2014 EIA Regulations.

The BA Team also includes various specialists that have been appointed to undertake specialist studies to contribute to the BA Process. These specialist studies are included in Appendix D of the BA Report. Appendix I of this BA Report includes the declarations of interest by the specialists. The team which is involved in this BA Process is listed in Table 1 below.

Table 1: The BA Team

Name	Organisation	Role/ Specialist Study
Environmental Assessment Practitioners		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Surina Laurie	CSIR	Project Leader (<i>Pr. Sci. Nat.</i>)
Rohaida Abed	CSIR	Project Manager (<i>Pr. Sci. Nat.</i>)
Specialists		
Simon Bundy	Sustainable Development Projects cc	Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna)
Henry Holland	Private	Visual Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Dr. John Almond	Natura Viva cc	Desktop Palaeontological Impact Assessment
Julian Conrad	GEOSS	Geohydrological Assessment
Johann Lanz	Private	Soils and Agricultural Potential Assessment
Rudolph du Toit	CSIR	Social Impact Assessment
P. S. van der Merwe and A. J. Otto	MESA Solutions (PTY) Ltd	Electro Magnetic Interference and Radio Frequency Interference Surveys

It should be noted that the Social Impact Assessment specialist study was subject to a peer review process by an external reviewer (Ms. Liza van der Merwe, a private consultant), as requested by the DEA as part of the acceptance of the Scoping Report.

Since the three proposed 75 MW Solar PV facilities, as well as the associated electrical infrastructure and transmission lines are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process (PPP) is being undertaken for the proposed projects. However, as noted above separate Applications for EA were lodged with the DEA in September 2015 for each Kenhardt PV facility (requiring the Scoping and EIA Process). Separate Applications for EA will be lodged for each transmission line and electrical infrastructure project that requires a BA Process. Furthermore, separate reports (i.e. BA, Scoping and EIA Reports) were compiled for each project. As noted above, the BA Reports are currently being released to I&APs for review together with the EIA Reports (for the Kenhardt PV 1, PV 2 and PV 3 projects). The Applications for EA for the BA projects will be submitted to the DEA together with the BA and EIA Reports for comment. The DEA Reference Numbers for the BA Projects were therefore pending at the time of compiling this report. A copy of the Application for EA for the Kenhardt PV 1 – Transmission Line project will be included as an appendix to the finalised

BA Report which will be submitted to the DEA for decision-making.

The abovementioned integrated PPP approach, as well as the general approach to the Scoping and EIA Projects and the BA Projects, were discussed with and approved by the DEA at a pre-application meeting, which was held on 17 September 2015. Appendix J.2 of this BA Report includes a copy of the agenda and notes of the meeting, as well as the presentation given by the CSIR at the pre-application meeting.

2. PROJECT APPLICANT AND OVERVIEW

Scatec Solar is an integrated Independent Power Producer (IPP) that is focused on making solar energy a sustainable and affordable source on a global scale. Scatec Solar was founded in 2001 and holds its headquarters in Norway. The company develops, builds, owns and operates a number of solar power plants internationally and within Africa. The company is growing significantly and is currently planned to provide a combined 207 MW of power in the United States, Honduras and Jordan. In addition, Scatec Solar collectively delivers more than 219 MW of power in the Czech Republic, South Africa and Rwanda. Specifically linked to investment within South Africa, Scatec Solar has been involved in the following major solar energy projects:

- The Linde Solar Plant (40 MW) is located in the Northern Cape and is considered to be the first of the large-scale PV plants in production from the second round of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).
- The Dreunberg Solar Plant (75 MW) is the only REIPPPP Solar PV Project to be located in the Eastern Cape.
- The Kalkbult Solar Plant (75 MW) is located in the Northern Cape and was the first REIPPPP project to be connected to the grid and operational in South Africa.

Scatec Solar was awarded another further 258 MW in the Fourth Round of the REIPPPP. Dyason's Klip 1, Dyason's Klip 2 and Sirius PV Project One were all anticipated to obtain Financial Closure in Quarter 4 of 2015.

Linked to enhancing its operations within South Africa, the proposed 75 MW Solar PV facilities will make use of PV solar technology to generate electricity from the sun's energy (which, as noted above, is being assessed as part of separate Scoping and EIA Processes). The Applicant is proposing to develop three facilities with a possible maximum installed capacity of 100 MW Direct Current (DC) which produces 75 MW Alternating Current (AC) of electricity from PV solar energy. As noted above, the electricity produced will be transmitted to the Eskom Nieuwehoop Substation via transmission lines (this component is the subject of this BA Process). Once a Power Purchase Agreement (PPA) is awarded, the proposed Kenhardt PV 1 facility will generate electricity for a minimum period of 20 years. It is proposed that Scatec Solar will implement the Self-Build Option for the additional electrical infrastructure to be constructed (which is assessed separately as part of this BA Process). Following the construction phase, the proposed transmission line and electrical infrastructure will either be transferred into the ownership of Eskom or remain in the ownership of Scatec Solar.

Table 2 below indicates the proposed project components which were assessed as part of the separate EIA and BA Processes. It should be noted that a detailed project description (based on the conceptual design) is provided in Section 4 of this project description section of this BA Report for the Kenhardt PV 1 – Transmission Line project.

Table 2: Scope of the EIA and BA Processes

EIA Processes	BA Processes
<ul style="list-style-type: none"> ▪ Solar Field <ul style="list-style-type: none"> • Solar Arrays: <ul style="list-style-type: none"> - PV Modules; - Single Axis Tracking structures (aligned north-south), Fixed Axis Tracking (aligned east-west), Dual Axis Tracking (aligned east-west and north-south) or Fixed Tilt Mounting Structure; - Solar module mounting structures 	<p><u>Infrastructure to be constructed within a proposed electrical infrastructure corridor:</u></p> <ul style="list-style-type: none"> ▪ Building Infrastructure <ul style="list-style-type: none"> • On-site substation building ▪ Associated Infrastructure <ul style="list-style-type: none"> • 132 kV overhead transmission line including pylon and tower infrastructure;

<p>comprised of galvanised steel and aluminium; and</p> <ul style="list-style-type: none"> - Foundations which will likely be drilled and concreted into the ground. <ul style="list-style-type: none"> • Building Infrastructure: <ul style="list-style-type: none"> - Offices; - Operational and maintenance control centre; - Warehouse/workshop; - Ablution facilities; - Converter/Inverter stations; - On-site substation building; and - Guard Houses. <ul style="list-style-type: none"> ▪ Associated Infrastructure <ul style="list-style-type: none"> • On-site substation; • 33 kV internal transmission lines/underground cables; • Underground low voltage cables or cable trays; • Access roads; • Internal gravel roads; • Widening of access roads; • Fencing; • Panel maintenance and cleaning area; • Stormwater channels; and • Temporary work area during the construction phase (i.e. laydown area). 	<ul style="list-style-type: none"> • Associated electrical infrastructure at the Eskom Nieuwehoop Substation (including but not limited to an additional feeder bay, Busbars, transformer bay and extension to the platform at the substation); • On-site substation; • Gravel road; • Widening of access roads; and • Temporary work area during the construction phase (i.e. laydown area).
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3. BRIEF PROJECT MOTIVATION

The proposed projects (PV facilities and transmission lines) are considered to be important because at a national level, South Africa is facing serious electricity shortages as well as water scarcity. The proposed **Kenhardt PV 1 – Transmission Line** project will facilitate the supply of additional electricity to the national grid, with negligible demand for water. Importantly, the proposed transmission line project will fundamentally support and enable the functioning proposed Kenhardt PV 1 facility and will therefore play an important role in reducing the risk of rolling electricity blackouts, which are anticipated in South Africa’s Medium Term Risk Mitigation Plan (MTRM) for electricity from 2011 to 2016. The evolution of South Africa’s electricity sector is aligned with the global transition towards renewable sources of electricity generation. The urgency behind this evolution can be appreciated considering that South Africa is the largest emitter of greenhouse gases in Africa, accounting for as much as 42% of the continent’s total emissions, and is also estimated to rank amongst the top 20 largest emitters of greenhouse gases in the world. These emissions are largely a result of an energy-intensive economy and high dependence on coal-based electricity generation. Furthermore, water demand is high for conventional coal-based electricity generation. Consequently, the South African government is committed to increased use of renewable energy sources for electricity generation. Renewable energy is also a response aimed at advancing economic and social development through the creation of both sector-specific jobs, and jobs in economic sectors that can be sustained by the additional feed-in of electricity to the grid from renewable sources of electricity generation.

In addition to reducing the emission of greenhouse gases, the use of PV technology avoids the high levels of water consumption associated with coal-based electricity generation. This is a benefit that must be considered in the context of Eskom’s current consumption of approximately 2% of South Africa’s total fresh water resources. Accelerated climate change has the potential to impact on the availability and quantity of water in South Africa, with decreases in summer rainfall predicted in the interior and increasing instances of droughts and floods predicted for the country in general. This creates a risk for the longevity in electricity generation that is water-dependent. By comparison, solar energy projects have no direct water demand during operations, except for periodic washing of solar panels. This reduces the demand on South Africa’s water resources, while avoiding the risk of uncertainty in water supply, attributable to climate change effects.

On a provincial level, the Northern Cape Province is currently facing considerable constraints in the availability and stability of electricity supply. This is a consequence of South Africa's electricity generation and supply system being overstretched, and the reliance of the Northern Cape, as many other South African provinces, on the import of power to service its energy needs. The development of solar energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability.

The Integrated Resource Plan (IRP) for South Africa for the period 2010 to 2030 (referred to as "IRP2010") was released by government in 2010, and an updated report was published in 2013, which proposes to secure 17 800 MW of renewable energy capacity by 2030 (including wind, solar and other energy sources). In August 2011, the Department of Energy (DOE) launched the REIPPPP and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of onshore wind, solar thermal, solar PV, biomass, biogas, landfill gas or small hydropower projects. On 18 August 2015, an additional procurement target of 6300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in Government Gazette 39111. The additional target allocated for solar PV energy is 2200 MW.

In terms of the REIPPPP, the submitted proposals are then evaluated. Currently, the two main evaluation criteria for compliant proposals are price and economic development with a point allocation of 70/30 (DOE, 2013), with other selection criteria including technical feasibility and grid connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders whose responses rank the highest (according to the aforementioned criteria) will have the greatest potential to be appointed as "Preferred Bidders" by the DOE. The first procurement phase of the DOE's REIPPPP includes five bidding windows. Scatec Solar intends to bid these projects in the 2016 bidding process (i.e. Round 5) to be potentially selected as an IPP. The proposed Kenhardt PV 1 – Transmission Line project is required as part of the bidding process to confirm that the proposed Kenhardt PV 1 facility is enabled and equipped with the necessary infrastructure to connect to the national grid.

Overall the proposed transmission line project will fundamentally support and enable the functioning proposed Kenhardt PV 1 facility and to ensure that it is allowed to contribute to the abovementioned renewable energy targets proposed by the DOE.

4. PROJECT DESCRIPTION

The Locality Map included in Appendix A.1 of this BA Report provides an overview of the proposed locality of the electrical infrastructure corridor. The co-ordinates of the approximate centre point of the electrical infrastructure corridor are 29° 10' 36.71" S and 21° 18' 43.23" E.

The following proposed transmission line and electrical infrastructure connectivity options are included in the separate BA Processes for the three transmission line projects (i.e. Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line):

- Construction of a separate 132 kV transmission line from the proposed Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 facilities to the Eskom Nieuwehoop Substation that is currently being constructed on Farm Gembok Bult (remaining extent of Portion 3 of Farm 120); or
- Construction of separate 22/33 kV transmission lines to connect the Kenhardt PV 2 and Kenhardt PV 3 projects to the proposed Kenhardt PV 1 on-site substation which will link via a 132 kV line to the Eskom Nieuwehoop Substation; or
- Construction of one 132 kV transmission line from the Kenhardt PV 1 project to the Eskom Nieuwehoop Substation and connect the Kenhardt PV 2 and Kenhardt PV 3 facilities together via medium voltage transmission lines to either the on-site substation of Kenhardt PV 2 or PV 3, followed by the construction of one 132 kV transmission line from the on-site substation to the Eskom Nieuwehoop Substation.

As noted above and shown in Figure 1 above, all transmission lines and connectivity options (as described above) will be constructed within a single electrical infrastructure corridor. The corridor will extend between 300 m and 1000 m wide. This corridor was assessed for the proposed transmission lines and associated electrical infrastructure (for all three Kenhardt PV Transmission Line projects) to ensure that the line routing and placement of

the structures avoid sensitive areas that have been identified by the specialists (as indicated in Appendix D of this BA Report).

A large corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of this BA Report, as well as the Environmental Management Programme (EMPr) included in Appendix G of this BA Report). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the corridor that was assessed. Based on this map, the preferred location and routing for the Kenhardt PV 1 transmission line avoids the sensitive features that were identified by the specialists within the corridor. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, the preferred routing has also been preliminarily determined for this project, which is included in Appendices A and B of this BA Report, as well as the EMPr included in Appendix G of this BA Report. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout or revisions to the layout occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the EIA Phase. This is based on the understanding that the specialists have assessed the larger area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a “box” in which the project components can be constructed at whichever location (within the boundary of the corridor) without requiring an additional assessment or change in impact significance. Any changes to the layout within the boundaries of the corridor following the issuing of the EA (should it be granted) will therefore be considered to be non-substantive.

This Kenhardt PV 1 – Transmission Line project includes the following:

- Transmission line and tower structures;
- Associated electrical infrastructure at the Eskom Nieuwehoop Substation;
- On-site substation;
- Gravel Road;
- Access road and widening of the site access road; and
- Temporary work area during the construction phase.

4.1. TRANSMISSION LINE AND TOWER STRUCTURES

A 132 kV overhead transmission line will be constructed between the Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. The proposed transmission line is estimated to extend approximately 4 km in length. The proposed transmission line from the Kenhardt PV 3 facility (which is assessed as part of a separate BA Process) will extend approximately 9 km in length (i.e. worst case). The proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168.

The proposed transmission line is expected to have concrete foundations and steel tower structures (i.e. pylons). The line will consist of either self-supporting suspension structures or guyed monopoles. The self-supporting towers will have standard pad and plinth foundations. The guyed monopoles will consist of a central plinth for the tower masts. The stay wires will entail dead-man anchor/stay plate anchor foundations. The towers will all have a maximum height of 30 m. Figures 2 (a); 2 (b); and 2 (c) respectively indicate a monopole, a self-supporting suspension tower and a Guyed-Vee suspension tower. Insulators will be used to connect the conductors to the towers. The span lengths are estimated to range between 200 m and 300 m. The servitude width for the 132 kV power line will be 52 m wide. Exact specifications will be confirmed during the detailed design phase.

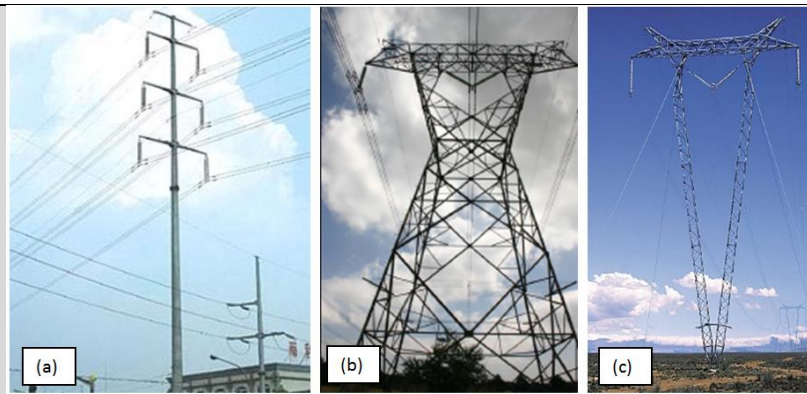


Figure 2: Different types of towers (Images: ECVV.com and Eskom)

During the construction phase, vegetation will be cleared or trimmed below the conductors and transmission line, on either side of the centre line, to allow for swing of the power line and stringing purposes. The clearing of vegetation will take place, with the aid of a surveyor and in accordance with the EMPr (and any recommendations and requirements of Eskom).

4.2. INFRASTRUCTURE AT THE ESKOM NIEUWEHOOP SUBSTATION

Associated electrical infrastructure at the Eskom Nieuwehoop Substation will be constructed in order to ensure that the substation is capable of receiving the additional electricity that is generated by the proposed Kenhardt PV 1 facility. This infrastructure includes, but is not limited to, feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation. Discussions have been initiated with the Project Applicant and Eskom to determine the requirements of connecting to the Nieuwehoop Substation.

4.3. ON-SITE SUBSTATION

An on-site substation (with a capacity of 80 MVA) will also be constructed to support the PV facility and was therefore considered in the BA Process. The on-site substation building is expected to extend approximately 12 m in height, with a maximum footprint of 20 000 m² (2 ha). The Visual Impact Assessment (Appendix D.2 of this BA Report) considered a height of 30 m for the on-site substation building, as a worst case scenario. It is important to note that all high voltage infrastructure leading up to the Point of Connection (i.e. Scatec Solar's section of the proposed collector/on-site substation) will be covered by the separate EIA Process (i.e. for Kenhardt PV 1). High voltage infrastructure extending from the Point of Connection (i.e. Eskom's section of the proposed collector/on-site substation) up to the line bay at the Eskom Nieuwehoop Substation may be handed over to Eskom and is being assessed separately as part of this BA Process (i.e. Kenhardt PV 1 – Transmission Line).

4.4. GRAVEL ROAD AND ACCESS ROAD WIDENING

The proposed project will include the construction of a gravel road below the proposed 132 kV transmission line. Therefore, the proposed gravel road will follow the route of the transmission line and will extend approximately 4 km to 9 km in length and less than 6 m in width.

In terms of access, the proposed project site can be accessed via an existing gravel road (an unnamed farm road) and the existing Transnet Service Road (private). Both access routes are considered and included in the proposed project. The R27 extends from Keimoes (in the north) to Vredendal in the south. The R27 is 6 m wide and falls within a 45 m road reserve. This National Road is designed for minimum daily traffic exceeding 1000 vehicle units. The Transnet Service Road can be accessed from the R27. The existing gravel road (an unnamed farm road) can be accessed from the R383 Regional Road also via the R27 National Road. The Transnet Service Road and unnamed farm road are both 7-8 m wide, however in certain sections, the unnamed farm road is believed to be about 2-3 m wide. A further access road will be constructed from either the Transnet Service Road or the unnamed farm road to the proposed Kenhardt PV 1, 2 and 3 facilities (which is being assessed separately as part of the EIA Processes).

Discussions are being held with Transnet and the Project Applicant regarding the potential use of the Transnet Road and associated specific requirements. Transnet have informed the Project Applicant of their requirements that need to be met should the Transnet Service Road be used to gain access to the site. These requirements will be considered in the design where required, and the details of the agreement will be finalised outside of this BA Process.

However, should the Transnet Service Road not be used for access, then the unnamed farm gravel road will be used. This farm road, however, will need to be widened by more than 6 m (where required). Exact specifications of the widening and upgrading of the unnamed farm gravel road will be confirmed during the detailed design phase.

It is expected that the widening of the unnamed farm road will result in crossings of major and minor drainages lines on site and this was therefore considered within the BA Process. The details of these crossings will be determined during the detailed design phase.

In terms of traffic generation, a Traffic Impact Statement has been provided in Appendix D.8 of this BA Report. This statement considered the full development (i.e. the development of the three Solar PV Facilities and the associated electrical infrastructure). The types of materials that will need to be transported to site during the construction phase include the following:

- Transformers;
- Steel and Aluminium;
- Switchgear and equipment;
- Cables;
- Gravel and sand;
- Concrete;
- Water;
- Reinforcement; and
- Other material.

During the operational phase, fewer materials will need to be transported to site. Trips will also be generated for the transportation of staff during the construction and operational phases. A description of the vehicle trips are provided in Appendix D.8 of this BA Report.

4.5. WATER, SEWAGE, WASTE AND ELECTRICITY REQUIREMENTS

During the project initiation phase of the proposed project it was noted that the Project Applicant intended to make use of existing boreholes to source groundwater (if available and if suitable) for the construction phase. If the groundwater was available and suitable, the water will be transported from the boreholes to the Solar PV facility via water pipelines and stored on site in suitable containers. However, the Geohydrological Assessment undertaken as part of the BA Process (Appendix D.5 of this BA Report) studied the quality of the groundwater and its suitability for use. The Geohydrological Assessment noted that the groundwater on site is extremely low in terms of yields and is not suitable for use. The specialists do not recommend that groundwater be used as a source of water during the construction phase.

Based on the findings of the Geohydrological Assessment (Appendix D.5 of this BA Report), the Applicant no longer plans to make use of groundwater during the construction phase. If the groundwater is not sufficient or suitable for use, water will then be sourced from the municipal supply if required (i.e. delivery via water tankers). During the construction phase (including that of the Kenhardt PV 1 facility), it is proposed to have 5 to 10 water tanks (i.e. suitable containers or reservoir tanks (or similar)) on site. The capacity of the tanks are estimated to be approximately 10 000 litres. During the construction phase, delivery of water will be required once every two days (via water tankers from the municipality). At this stage, no water is planned to be abstracted from or discharged to any surface water systems.

The project will require sewage services during the construction phase. Low volumes of sewage or liquid effluent are estimated. Liquid effluent will be limited to the ablution facilities during the construction phase. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction phase, which will be regularly serviced and

emptied by a suitable (private) contractor on a weekly basis. The waste water will be transported to a nearby Waste Water Treatment Works for treatment. Due to the remote location of the project site; a conservancy tank or septic tank system could be used on site, which is expected to be serviced by the municipality. Feedback from the municipality (in terms of capacity) will be sought during the BA Phase. Due to the remote locality of the farm, sewage cannot be disposed in the municipal waterborne sewage system.

In terms of waste generation, general waste generated during the construction phase will be temporarily and safely stored in a skip on site and periodically removed on a regular basis to a licenced waste disposal facility by a suitable contractor. Waste management is discussed in the EMPr (Appendix G of the BA Report).

In terms of electricity supply, the developer will be provided with auxiliary supply from already existing Eskom infrastructure. The exact location of this source as well route for provision of such supply is still to be determined by Eskom.

The Project Applicant will consult with the municipality in order to confirm the supply of services (in terms of water, waste removal, sewage and electricity) for the proposed project.

During the operational phase of the proposed transmission line, water requirements, and sewage and waste generation are not applicable. The transmission line will not have any electricity requirements as the project itself will transmit electricity.

4.6. OVERVIEW OF PROJECT DEVELOPMENT CYCLE

The project can be divided into the following three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and has therefore been assessed by the specialist studies (Appendix D of the BA Report). It is important to note that for the operational phase, the transmission line will result in impacts on avifauna and the surrounding environment; however requirements for water, sewage management and waste disposal do not apply (as explained above).

4.6.1. CONSTRUCTION PHASE

The construction phase will take place subsequent to the issuing of an EA from the DEA and a successful BID in terms of the REIPPPP (i.e. the issuing of a PPA from the DOE). The construction phase for the proposed Kenhardt PV 1 – Transmission Line project is expected to extend 12 to 14 months (however the construction period is subject to the final requirements of Eskom and the REIPPPP Request for Proposal provisions at that point in time).

As noted above, the construction phase will involve the transportation of personnel, construction material and equipment to the site, and personnel away from the site. In terms of site establishment, laydown areas will be required at the outset of the construction phase, as well as dedicated access routes from the laydown areas to the working areas. Haul roads for construction traffic (for the delivery of concrete, road materials and other construction materials) will be required.

The laydown area for the Kenhardt PV 1 project will be used for the construction of the proposed transmission line and associated electrical infrastructure. It is expected that the laydown area will be temporary in nature (for the duration of the construction phase) and will include the establishment of the construction site camp (including site offices and other temporary facilities for the appointed Contractors).

All efforts will be made to ensure that all construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the EMPr, which is included in Appendix G of the BA Report. During the construction phase, it is estimated that approximately 130 employment opportunities are expected to be created. Additional details regarding the employment opportunities are provided in the Social Impact Assessment (Appendix D.7 of this BA Report). The employment creation is also dependent on the REIPPPP

bidding requirements and the final engineering design.

The main activities that will form part of the construction phase are:

- Removal of vegetation for the proposed infrastructure;
- Excavations for infrastructure and associated infrastructure;
- Establishment of a laydown area for equipment;
- Stockpiling of topsoil and cleared vegetation;
- Transportation of material and equipment to site; and
- Construction of the transmission lines and additional infrastructure.

4.6.2. OPERATIONAL PHASE

The following activities will occur during the operational phase:

- The transmission of electricity generation from the proposed 75 MW Kenhardt PV 1 facility to the Eskom Nieuwehoop Substation; and
- Maintenance of the transmission line servitude including the gravel road.

During the life span of the power line (approximately 20 years), on-going maintenance will be required on a scheduled basis. This maintenance work will be undertaken by contractors employed by the Project Applicant or Eskom, and in compliance with the EMPr. The projected operations are expected to provide several services and added economic spin offs.

4.6.3. DECOMMISSIONING PHASE

The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise (i.e. if the actual PV facility becomes outdated or the land needs to be used for other purposes), the decommissioning procedures will be undertaken in line with the EMPr and the site will be rehabilitated and returned to its pre-construction state.

b) Provide a detailed description of the listed activities associated with the project as applied for

Note from the CSIR: As noted above, the Application for EA for this BA Process will be submitted to the DEA together with this BA Report (as well as the BA Reports for the Kenhardt PV 2 and 3 Transmission Lines, and the EIA Reports for the Kenhardt PV 1, 2 and 3 PV facilities). The Application for EA will be included in the finalised BA Report, which will be submitted to the DEA for decision-making.

Table 3: Applicable Listed Activities

Listed Activity as described in GN R983, R984 and R985	Description of Project Activity that triggers Listed activity
GN R983	
<p>GN R 983: Activity 11 (i)</p> <p>The development of facilities or infrastructure for the transmission and distribution of electricity:</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</p>	<p>The proposed project will entail the construction and installation of an overhead 132 kV transmission line which will extend from the Kenhardt PV 1 project (on the remaining extent of Onder Rugzeer Farm 168) to the Eskom Nieuwehoop Substation on the Remaining Extent of Portion 3 of Gemsbok Bult Farm 120.</p> <p>The proposed project will also include associated electrical infrastructure at the Eskom Nieuwehoop Substation (including but not limited to feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop</p>

Listed Activity as described in GN R983, R984 and R985	Description of Project Activity that triggers Listed activity
	<p>Substation).</p> <p>The proposed project will take place approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. Hence the proposed project will take place outside of an urban area.</p>
<p>GN R 983: Activity 12 (x) and (xii)</p> <p>The development of:</p> <p>(x) buildings exceeding 100 square metres in size; (xii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs -</p> <p>a) within a watercourse; b) in front of a development setback; or c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding-</p> <p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; or (ee) where such development occurs within existing roads or road reserves.</p>	<p>The proposed project will entail the construction and installation of an overhead 132 kV transmission line which will extend from the Kenhardt PV 1 project (on the remaining extent of Onder Rugzeer Farm 168) to the Eskom Nieuwehoop Substation on the Remaining Extent of Portion 3 of Gemsbok Bult Farm 120.</p> <p>The proposed project will entail the construction of a gravel road below the proposed 132 kV transmission line extending approximately 4 km to 9 km in length and less than 6 m in width. Foundations for the for the transmission line pylons and towers will also be constructed. The proposed project will also include associated electrical infrastructure at the Eskom Nieuwehoop Substation (including but not limited to feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation). This constitutes infrastructure with a physical footprint of more than 100 m².</p> <p>The proposed project will also entail the construction of an on-site substation, which will cover an approximate area of 20 000 m² (2 ha). This constitutes buildings and infrastructure with a physical footprint of more than 100 m².</p> <p>The Ecological Impact Assessment undertaken as part of the BA Process has identified major drainage lines on site (such as the Wolfkopseloop River and major drainage features that serve the Wolfkopseloop (i.e. tributaries)). The Ecological Impact Assessment has recommended a 32 m buffer around the major drainage lines. However, the Ecological Impact Assessment also identified various minor drainage lines that occur within the electrical corridor area (which do not need to be avoided based on the findings of the Ecological Impact Assessment). Therefore, infrastructure associated with the construction of the transmission line (as noted above, i.e. gravel road, pylon foundations, buildings etc.) may occur within the minor drainage lines or within 32 m of the edge of the minor drainage lines.</p> <p>The proposed project will take place approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. Hence the proposed project will take place outside of an urban area.</p>
<p>GN R 983: Activity 19 (i)</p> <p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from –</p>	<p>The proposed project may entail the excavation, removal and moving of possibly more than 5 m³ of soil, sand, pebbles or rock from the nearby drainage lines/watercourses. The proposed project may also entail the infilling of more than 5 m³ of material into the nearby minor drainage lines/watercourses. This infilling and excavation of the material will occur as a result of the construction of the gravel</p>

Listed Activity as described in GN R983, R984 and R985	Description of Project Activity that triggers Listed activity
<p>(i) a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving-</p> <p>a) will occur behind a development setback;</p> <p>b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</p> <p>c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</p>	<p>road, pylon foundations, construction of associated electrical infrastructure at the Eskom Nieuwehoop Substation (including but not limited to feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation); as well as the widening of the unnamed farm road to gain access to the site. Details of the infilling of the drainage lines will be confirmed during the detailed design phase.</p> <p>The Ecological Impact Assessment undertaken as part of the BA Process has identified major drainage lines on site (such as the Wolfkopseloop River and major drainage features that serve the Wolfkopseloop (i.e. tributaries)). The Ecological Impact Assessment has recommended a 32 m buffer around the major drainage lines. However, the Ecological Impact Assessment also identified various minor drainage lines that occur within the electrical corridor area (which do not need to be avoided based on the findings of the Ecological Impact Assessment). Therefore, activities associated with the construction of the transmission line (as noted above, i.e. construction of the gravel road and the widening of the unnamed farm road to gain access to the site etc.) may result in infilling and excavation of material within the minor and major drainage lines.</p>
<p><u>GN R 983: Activity 27</u></p> <p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for:</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>The proposed project will also entail the construction of an on-site substation, which will cover an approximate area of 20 000 m² (2 ha). As a result, more than 1 ha of indigenous vegetation could possibly be removed for the construction of the proposed Solar PV facility.</p> <p>The presence of indigenous vegetation on site, as well as legislative requirements surrounding its potential removal is provided in the Ecological Impact Assessment which has been undertaken as part of the BA Process.</p>
<p><u>GN R 983: Activity 28 (ii)</u></p> <p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The transmission lines will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The proposed project will take place north-east of Kenhardt in the Northern Cape. It is understood that the land is currently used for agricultural purposes (mainly grazing). The proposed project (i.e. Kenhardt PV 1 – Transmission Line), which is considered to be a commercial/industrial development, will entail the construction of a gravel road below the proposed 132 kV transmission line extending approximately 4 km to 9 km in length and less than 6 m in width. Foundations for the pylons and towers for the transmission lines will also be constructed. This constitutes infrastructure with a physical footprint of more than 1 hectare (approximately 6 hectares).</p>
<p><u>GN R 983: Activity 47</u></p> <p>The expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the</p>	<p>The proposed project will also include associated electrical infrastructure at the Eskom Nieuwehoop Substation (including but not limited to feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation).</p>

Listed Activity as described in GN R983, R984 and R985	Description of Project Activity that triggers Listed activity
<p>development footprint will increase.</p> <p>GN R 983: Activity 56</p> <p>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre:</p> <p>(i) where no reserve exists, where the existing road is wider than 8 metres;</p> <p>excluding where widening or lengthening occur inside urban areas.</p>	<p>In terms of access, the proposed project site can be accessed via an existing gravel road (an unnamed farm road) and the existing Transnet Service Road (private). Both access routes will be considered and included in the proposed project. The R27 extends from Keimoes (in the north) to Vredendal in the south. The R27 is 6 m wide and falls within a 45 m road reserve. This National Road is designed for minimum daily traffic exceeding 1000 vehicle units. The Transnet Service Road can be accessed from the R27. The existing gravel road (an unnamed farm road) can be accessed from the R383 Regional Road also via the R27 National Road. The Transnet Service Road and unnamed farm road are both 7-8 m wide, however in certain sections, the unnamed farm road is believed to be about 2-3 m wide.</p> <p>Discussions are being held with Transnet and the Project Applicant regarding the potential use of the Transnet Road and associated specific requirements. However, should the Transnet Service Road not be used for access, then the unnamed farm gravel road will be used. This farm road, however, will need to be widened by more than 6 m (where required). Exact specifications of the widening and upgrading of the unnamed farm gravel road will be confirmed during the detailed design phase.</p> <p>The proposed project will take place approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. Hence the proposed project will take place outside of an urban area.</p>
GN R985	
<p>GN R 985: Activity 18</p> <p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p>(a) In Free State, Limpopo, Mpumalanga and Northern Cape provinces:</p> <p>(ii) outside urban areas and</p> <p>(ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.</p>	<p>In terms of access, the proposed project site can be accessed via an existing gravel road (an unnamed farm road) and the existing Transnet Service Road (private). Both access routes will be considered and included in the proposed project. The R27 extends from Keimoes (in the north) to Vredendal in the south. The R27 is 6 m wide and falls within a 45 m road reserve. This National Road is designed for minimum daily traffic exceeding 1000 vehicle units. The Transnet Service Road can be accessed from the R27. The existing gravel road (an unnamed farm road) can be accessed from the R383 Regional Road also via the R27 National Road. The Transnet Service Road and unnamed farm road are both 7-8 m wide, however in certain sections, the unnamed farm road is believed to be about 2-3 m wide.</p> <p>Discussions are being held with Transnet and the Project Applicant regarding the potential use of the Transnet Road and associated specific requirements. However, should the Transnet Service Road not be used for access, then the unnamed farm gravel road will be used. This farm road, however, will need to be widened by more than 6 m (where required). Exact specifications of the widening and upgrading of the unnamed farm gravel road will be confirmed during the detailed design phase.</p>

Listed Activity as described in GN R983, R984 and R985	Description of Project Activity that triggers Listed activity
	<p>The Ecological Impact Assessment undertaken as part of the BA Process has identified major drainage lines on site (such as the Wolfkopseloop River and major drainage features that serve the Wolfkopseloop (i.e. tributaries)). The Ecological Impact Assessment has recommended a 32 m buffer around the major drainage lines. However, the Ecological Impact Assessment also identified various minor drainage lines (which do not need to be avoided based on the findings of the Ecological Impact Assessment). Therefore, the proposed gravel road widening may occur within 100 m of the edge of the minor drainage lines.</p> <p>The proposed project will take place approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. Hence the proposed project will take place outside of an urban area.</p>

Notes from the CSIR:

The above listed activities have been identified in line with the following:

- It should be noted that a precautionary approach was followed when identifying listed activities (for inclusion in the Application for EA), i.e. if the activity potentially forms part of the project, it is listed. However, the final project description will be shaped by the findings of the BA Process and Public Participation Process and certain activities may be added or removed from the project proposal. The DEA and I&APs will be informed in writing of such amendments accordingly.
- Based on the assessment undertaken for the site, the proposed project area does not fall within any threatened ecosystems, National Protected Areas, National Protected Area Expansion Strategy Focus Areas or areas of conservation planning. The closest protected area is approximately 113 km away from the proposed project site. An Ecological Support Area (i.e. a buffer around the Hartbees River) is located approximately 14 km west of proposed project as part of the Namakwa District Biodiversity Sector Plan. Furthermore, there is no conservation plan for the !Kheis Local Municipality and the ZF Mgcawu District Municipality, hence Critical Biodiversity Areas are not present or defined. Therefore, most of the listed activities relating to specific geographic areas contained in GN R985 of the 2014 NEMA EIA Regulations do not apply to the proposed project at this stage. Only Activity 18 of GN R985 applies due to the widening of the access road that will occur within 100 m from the edge of a watercourse.
- It is proposed that less than 30 m³ of dangerous goods (such as petrol and diesel) will be temporarily stored on site during the construction phase. Furthermore, no infrastructure or structures are planned to be specifically constructed for the aforementioned temporary storage. Recommendations for the temporary storage of petrol and diesel on site during the construction phase have been provided in the EMPr (Appendix G of this BA Report).
- The relevant listed activities applicable to the construction of the proposed Kenhardt PV 1, 2 and 3 facilities are included in the separate EIA Reports and the Applications for EA for the EIA Processes. As mentioned previously, the Applications for EA for the EIA Processes were lodged with the DEA in September 2015.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and

(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Note from the CSIR:

This section discusses the alternatives that have been considered as part of the BA Process. Sections 24(4) (b) (i) and 24(4A) of the NEMA require an EIA to include investigation and assessment of impacts associated with alternatives to the proposed project. In addition, Section 24O (1)(b)(iv) also requires that the Competent Authority, when considering an application for EA, takes into account “where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”.

Therefore, the assessment of alternatives should, as a minimum, include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and
- Providing a methodology for the elimination of an alternative.

The main factors that determined the location of the transmission line are indicated below and discussed within this section:

- Location of the Kenhardt PV 1 facility;
- Location of the Nieuwehoop Substation; and
- The most cost-effective route and distance between the Kenhardt PV 1 facility and Nieuwehoop Substation.

The location and property on which the proposed transmission line and associated electrical infrastructure will be constructed is largely dependent on the location of the proposed 75 MW Kenhardt PV 1 facility. As discussed previously, the overall aim of this proposed project is to provide the necessary electrical infrastructure to ensure that the proposed 75 MW Kenhardt PV 1 facility is equipped and enabled to transmit the generated electricity (from the Solar PV Plant) to the Eskom Nieuwehoop Substation. The location and property on which the proposed transmission line and associated electrical infrastructure will be constructed is also dependent on the location of the Eskom Nieuwehoop Substation. The location of the Nieuwehoop Substation influences and determines the location of the construction of the proposed associated electrical infrastructure at the substation (including but not limited to an additional feeder bay, Busbars, transformer bay and extension to the platform at the substation).

In terms of the alternatives considered for the type of activity to be undertaken, this is also entirely dependent on the activity associated with the proposed Kenhardt PV 1 facility (where the activity associated with the PV facility is generation of electricity). Essentially, the Kenhardt PV 1 facility governs the type of activity associated with the proposed project. The activity to be undertaken is therefore the transmission of electricity that will be generated by the proposed Kenhardt PV 1 facility. Therefore, as a result, alternatives for the type of activity for this proposed BA project are **not applicable**. The only feasible method of transmitting the electricity that is generated by the proposed PV plant to the Eskom Nieuwehoop

Substation is via overhead transmission lines. Underground cabling is not deemed technically feasible as the voltage is considered to be too high.

Notwithstanding the above, it is important to note that the implementation of a solar energy facility at the proposed project site (for the Kenhardt PV 1 facility) was determined to be more favourable and feasible than other alternative energy facilities (such as Biomass, Hydro Energy and Wind Energy) for generating 20 MW or more of electricity from a renewable resource. Based on the preliminary investigations undertaken by the Project Applicant, no other renewable energy technologies were deemed to be appropriate for the site. The unsuitability of other renewable energy developments, as well as the suitability of solar energy, for the site is discussed within the separate EIA Report for Kenhardt PV 1 facility.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>As noted above, the location of the proposed transmission line and associated electrical infrastructure is dependent on the location of the Kenhardt PV 1 facility. The overall aim of this proposed project is to provide the necessary electrical infrastructure to the proposed 75 MW Kenhardt PV 1 facility to ensure that it is equipped and enabled to transmit the generated electricity to the Eskom Nieuwehoop Substation. The location of the proposed transmission line and associated electrical infrastructure is also dependent on the location of the Eskom Nieuwehoop Substation. The location of the Nieuwehoop Substation will guide and determine the location of the construction of the proposed associated electrical infrastructure at the substation (including but not limited to an additional feeder bay, Busbars, transformer bay and extension to the platform at the substation).</p> <p>Based on the above, the overall locality of this proposed project is largely dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. In addition, the location of the proposed electrical infrastructure at the substation itself is fixed due to the positioning of the Eskom Nieuwehoop Substation. As a result, site alternatives for this proposed BA project are not applicable.</p> <p>Please note that the co-ordinates provided in this section reflect the approximate centre-point location of the proposed electrical corridor.</p>	29° 10' 36.71" S	21° 18' 43.23" E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Latitude (S):

Longitude (E):

29° 12' 11.29" S	21° 18' 58.78" E
29° 10' 36.71" S	21° 18' 43.23" E
29° 9' 12.61" S	21° 20' 5.38" E

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

Note from the CSIR: As noted above, an electrical corridor has been assessed as part of this BA Process. The transmission lines and electrical infrastructure required for the Kenhardt PV 1, 2 and 3 facilities (which are the subject of separate EIA Processes) will be constructed within this corridor. The corridor exceeds 500 m in length, and as such, the co-ordinates taken every 250 m along the boundary of the corridor are included in Appendix A of this BA Report. The co-ordinates for the transmission line (based on the preliminary routing provided in Appendices A and C of this report) are also included in Appendix A of this BA Report.

The co-ordinates of the corners points of the corridor are also included in Appendix A of this report.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>The Rochdale Envelope Approach¹ was applied to determine a suitable approach to determine the corridor in which the proposed transmission line will occur. The Rochdale Envelope approach is named after two legal cases relating to a proposed business park in Rochdale in the United Kingdom. These cases considered applications for outline planning consent in the context of preparing an EIA. The goal of the Rochdale Envelope approach is to allow for an EIA to be undertaken, based on the 'worst case scenario', whereby the Competent Authority granting the EA will then decide whether, based on this 'worst case scenario', the environmental impacts are acceptable.</p> <p>This approach is very useful since normally an EIA or BA is undertaken prior to the technical assessment of the site which would consider the exact placement of, for example, the solar panels and associated infrastructure. The main principle behind this approach is that, should the development fall within the parameters set within this "envelope" (in this case, an electrical corridor), as determined by the BA Process, the placement of the different components could be determined at a later stage provided that the components fall within the parameters of the envelope. This approach therefore allows for flexibility to the developer during the detailed design phase in terms of</p>		

¹ Infrastructure Planning Commission (IPC), Using the 'Rochdale Envelope'. February 2011

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>engineering, design and construction parameters.</p> <p>As part of the BA, a large corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of this BA Report, as well as the EMPr included in Appendix G of this BA Report). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the corridor that was assessed. Based on this map, the preferred location and routing for the Kenhardt PV 1 transmission line avoids the sensitive features that were identified by the specialists within the corridor. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, a routing have also been preliminarily determined for this project, which is included in Appendices A and C of this BA Report, as well as the EMPr included in Appendix G of this BA Report. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout/routing or revisions to the layout/routing occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the EIA Phase. This is based on the understanding that the specialists have assessed the larger area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a “box” in which the project components can be constructed at whichever location (within its boundaries) without requiring an additional assessment or change in impact significance. Any changes to the layout within the boundaries of the corridor following the issuing of the EA (should it be granted), will therefore be considered to be non-substantive. However, if any changes to the layout/routing occur outside of the boundaries of the corridor following the issuing of the EA (should it be granted) will need to be undertaken as part of a separate EA Amendment process and will be considered as substantive.</p>		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
<p>The technology that is proposed for the construction and operation of the proposed transmission line and electrical infrastructure will be guided by national standards and best practice. The technology options and operational aspects are also governed by Eskom’s requirements and building specifications. This therefore limits the amount of variability in terms of the technology and operational processes. The type of technology used will relate to the infrastructure being installed and constructed, such as the type of conductors, pylon structures and design, use of Bird Flight Diverters, and building structures for the on-site substation. Other</p>

technology options for this project relate to the construction equipment and vehicles used during the construction phase, such as portable fire-fighting equipment (if necessary), stormwater management and spill contingency.

Alternative 2

Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)

No other alternatives are being considered for the proposed project. Refer to the explanations provided above regarding the alternative process.

Alternative 2

Alternative 3

e) No-go alternative

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Kenhardt PV 1 – Transmission Line project. This alternative would result in no environmental impacts (as identified in Section D of this BA Report) on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

The following implications will occur if the “no-go” alternative is implemented (i.e. if the proposed Kenhardt PV 1 – Transmission Line project is not constructed):

- There will be negative implications for the proposed Kenhardt PV 1 facility, as there will be no dedicated, fundamental electrical infrastructure to allow the PV facility to connect to the Eskom Nieuwehoop Substation and the national grid. This could possibly result in non-realisation of the benefits, such as economic spin offs and electricity generation, associated with the proposed Kenhardt PV 1 facility. This could also result in additional costs and expenditure, as well as additional timeframes required, due to the potential re-design of the Kenhardt PV 1 facility to align with an alternative substation within the region. Using an alternative substation within the region (dependent on capacity requirements) could result in longer transmission lines and associated gravel roads, which could in turn, cause additional negative impacts to the surrounding environment, including avifauna. If re-design is not financially and technically feasible, then the proposed Kenhardt PV 1 facility will not be able to be constructed as it will not have fundamental infrastructure to link it to the national grid. If the proposed Kenhardt PV 1 facility cannot be constructed as a result of the no-go of the proposed Kenhardt PV 1 – Transmission Line, this could, in turn, result in the following implications:
 - The landowners of the remaining extent of the Onder Rugzeer Farm 168, Portion 3 of Gemsbok Bult Farm 120, remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168 will not be able to derive benefits from the implementation of an additional land-use;
 - No additional power will be generated or supplied through means of renewable energy resources by this project at this location. The proposed 75 MW facility is predicted to generate approximately 200 GW/h per year which could power 20 000 households;
 - There will be no contributions and assistance to the government in achieving its proposed renewable energy target of 17 800 MW by 2030;
 - No additional power to the local grid will be provided via the Eskom grid, with approximately 90% coal-based power generation with associated high levels of CO₂ emissions and water consumption;
 - Electricity generation will remain constant (i.e. no additional renewable energy generation will

occur on the proposed site) and the local economy will not be diversified;

- Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital;
 - There will be no opportunity for additional employment in an area where job creation is identified as a key priority. Between 90 and 150 skilled and 400 and 460 unskilled employment opportunities are expected to be created during the construction phase of the proposed Kenhardt PV 1 facility. Approximately 20 skilled and 40 unskilled employment opportunities will be created over the 20 year lifespan of the proposed Kenhardt PV 1 facility;
 - There will be lost opportunity for skills transfer and education/training of local communities;
 - The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised; and
 - The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised.
- In addition, the following additional implications will occur if the "no-go" alternative is implemented:
- There will be further implications for the proposed Kenhardt PV 2 and PV 3 facilities, as these plants will share the same corridor (and potentially the same on-site substation) with that of Kenhardt PV 1 (therefore, a cumulative impact);
 - There will be no opportunity for additional employment in an area where job creation is identified as a key priority. Approximately 130 employment opportunities are expected to be created during the construction phase of the proposed Kenhardt PV 1 – Transmission Line project;
 - There will be lost opportunity for skills transfer and education/training of local communities; and
 - The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised.

Converse to the above, the following benefits could occur if the "no-go" alternative is implemented:

- There will be no development of electrical infrastructure and transmission lines that are associated with solar energy facilities at the proposed location;
- The agricultural land use will remain only;
- No threatened vegetation will be removed or disturbed during the development of the transmission line and electrical infrastructure;
- No potential impact to avifauna present in the area;
- No change to the current landscape will occur; and
- No additional water use and waste generation during the construction phase.

It is important to take into account that the country is facing serious power and water shortages due to its heavy dependency on fossil fuels such as coal. There is therefore a need for additional electricity generation options to be developed throughout the country. The purpose of the proposed Kenhardt PV 1 – Transmission Line project is to transmit electricity generated by a renewable energy resource into the national electricity grid. Many other socio-economic and environmental benefits will result from the development of this project such as development of renewable energy resources in the country and contribution to the increase of energy security, employment creation and local economic development (as noted above).

Hence, the "no-go" alternative will result in negative environmental impacts, by not going ahead with the project and it will also not result in any positive community development or socio-economic benefits and could, should an alternative connectivity option be considered to a different substation due to the rejection of the current proposal, lead to an increase in the negative impacts associated with the development of electrical infrastructure. Hence the "no-go" alternative is not a preferred alternative.

Note from the CSIR:

Appendix 1 of the 2014 EIA Regulations has certain requirements in terms of alternatives. Table 4 below indicates these requirements and also includes a response from the EAP showing how the requirements of the 2014 EIA Regulations have been addressed in this report.

Table 4: Requirements of Appendix 1 of the EIA Regulations

Requirements for a BA Report (in terms of alternatives) in terms of Appendix 1 of the 2014 NEMA EIA Regulations	Response from EAP
<p>A full description of the process followed to reach the proposed preferred alternative within the site, including:</p> <ul style="list-style-type: none"> ▪ (i) details of all the alternatives considered; 	<p>Refer to Section A (2) i.e. this section of the BA Report for a description of the alternatives considered, and a justification for the inapplicability of certain alternatives.</p>
<ul style="list-style-type: none"> ▪ (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; 	<p>Refer to Section C of this BA Report for a description of the Public Participation Process undertaken.</p>
<ul style="list-style-type: none"> ▪ (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; 	<p>Refer to Section C and Appendix E of this BA Report for a description of the issues raised by I&APs during the Public Participation Process.</p>
<ul style="list-style-type: none"> ▪ (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; 	<p>Refer to Section A (2) i.e. this section of the BA Report for a description of the alternatives considered. Site alternatives are not applicable as it is dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation.</p>
<ul style="list-style-type: none"> ▪ (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; 	<p>Refer to Section A (2) i.e. this section of the BA Report for a description of the alternatives considered, and a justification for the inapplicability of certain alternatives. Note that a complete impact assessment is included in Section D of this BA Report. The specialists assessed the worst case by studying the entire electrical infrastructure corridor, whilst the transmission line will only be constructed within a portion thereof. Alternatives are not applicable as it is dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation.</p>
<ul style="list-style-type: none"> ▪ (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; 	
<ul style="list-style-type: none"> ▪ (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; 	
<ul style="list-style-type: none"> ▪ (viii) the possible mitigation measures that could be applied and level of residual risk; 	
<ul style="list-style-type: none"> ▪ (ix) the outcome of the site selection matrix; 	
<ul style="list-style-type: none"> ▪ (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and 	<p>Based on the aspects considered in this section, the following concluding statement has been provided in terms of the preferred alternatives that have been considered in the BA Phase:</p> <ul style="list-style-type: none"> ▪ Development of the Kenhardt PV 1 – Transmission Line project, using various technological alternatives relating to the design and construction of the pylon structures on the preferred site (i.e. the remaining extent of Onder Rugzeer Farm 168, the remaining extent of Portion 3 of Gemsbok Bult Farm 120, the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168) is dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. The final layout of the transmission line has been informed by specialist studies during the BA Phase to avoid environmental sensitivities as far as possible.
<ul style="list-style-type: none"> ▪ (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity. 	

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

Note from the CSIR: The physical size and dimensions of the project components will be finalised upon completion of detailed engineering, which is subject to the issuing of an EA, should such an authorisation be granted (i.e. the detailed design will be undertaken after the EA has been issued). The details provided in this section are estimates and based on the worst case, where applicable.

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	Size of the activity:
Alternative A1 ² (preferred activity alternative):	
Transmission Line	Linear Activity – Refer to the Section Below 20 000 m ²
On-site Substation	Linear Activity – Refer to the Section Below
Gravel Road	Linear Activity – Refer to the Section Below
Widening of the Site Access Road (Unnamed Farm Access Road)	Linear Activity – Refer to the Section Below

or, for linear activities:

Alternative:	Length of the activity:
Alternative A1 (preferred activity alternative):	
Transmission Line	Approximately 4000 m
On-site Substation	Non-linear - Refer to the Section Above
Gravel Road	4000 m to 9000 m
Widening of the Site Access Road (Unnamed Farm Access Road)	4000 m to 9000 m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	Size of the site/servitude:
Alternative A1 (preferred activity alternative)	
Transmission Line	208 000 m ²
On-site Substation	20 000 m ²
Gravel Road	24 000 m ² to 54 000 m ²
Widening of the Site Access Road (Unnamed Farm Access Road)	24 000 m ² to 54 000 m ²

4. SITE ACCESS

Does ready access to the site exist?

YES ✓
Please see
explanation
below

If NO, what is the distance over which a new access road will be built

² "Alternative A.." refer to activity, process, technology or other alternatives.

Describe the type of access road planned:

As noted in Section A (1) (a) and (b) of this BA Report, the proposed project will include the construction of a gravel road below the proposed 132 kV transmission line. The proposed gravel road will follow the route of the transmission line and will extend approximately 4 km to 9 km in length and less than 6 m in width. Exact specifications will be confirmed during the detailed design phase. For the purposes of this BA Process, a 6 m width has been considered as the worst case.

In terms of access, the proposed project site can be accessed via the existing unnamed farm road and the existing Transnet Service Road (private). Both access routes are considered and included in the proposed project. The R27 extends from Keimoes (in the north) to Vredendal in the south. The R27 is 6 m wide and falls within a 45 m road reserve. This National Road is designed for minimum daily traffic exceeding 1000 vehicle units. The Transnet Service Road can be accessed from the R27. The existing gravel road (unnamed farm road) can be accessed from the R383 Regional Road also via the R27 National Road. The Transnet Service Road and unnamed farm road are both 7-8 m wide, however in certain sections, the unnamed farm road is believed to be about 2-3 m wide. A further access road will be constructed from either the Transnet Service Road or the unnamed farm road to the proposed Kenhardt PV 1, 2 and 3 facilities (which is being assessed separately as part of the EIA Processes).

Discussions are being held with Transnet and the Project Applicant regarding the potential use of the Transnet Road and associated specific requirements. Transnet have informed the Project Applicant of their requirements that need to be met should the Transnet Service Road be used to gain access to the site. These requirements will be considered in the design where required, and the details of the agreement will be finalised outside of this BA Process.

However, should the Transnet Service Road not be used for access, then the unnamed farm gravel road will be used. This farm road, however, will need to be widened by more than 6 m (where required). Exact specifications of the widening and upgrading of the unnamed farm gravel road will be confirmed during the detailed design phase.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

Note from the CSIR: The existing access to the site, as well as the proposed section requiring widening is shown on the locality map in Appendix A.1 of this BA Report, as well as Appendix C.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and

- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

Note from the CSIR: Refer to Appendix A.1 of this BA Report for the Locality Map.

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

Note from the CSIR: Refer to Appendix A.2 of this BA Report for the Layout/Route Map, as well as Appendix C.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100 m of the site and must be attached in Appendix A.

Note from the CSIR: Refer to Appendix A.3 of this BA Report for the Sensitivity Map, as well as Appendix C.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Note from the CSIR: Three photograph points which best represent the proposed project area were selected. Photographs were taken in the eight major compass directions at each photograph point. The co-ordinates of the photograph points are shown below:

Photograph Point 1 - 29° 10' 46.19" S and 21° 18' 4.63" E
Photograph Point 2 - 29° 9' 50.36" S and 21° 19' 9.51" E

Photograph Point 3 - 29° 9' 7.62" S and 21° 20' 13.72 "E

Additional photographs were also taken. All photographs are included in Appendix B of this BA Report.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Note from CSIR: As mentioned previously, preliminary layouts and routings have been provided in Appendices A and C of this BA Report. These preliminary layouts have been determined based on the Development Envelope and sensitivities identified by the specialists within the corridor. Any changes to the layout within the boundaries of the Development Envelope following the issuing of the EA (should it be granted) will be considered to be non-substantive. However, if any changes to the layout/routing occur outside of the boundaries of the Development Envelope following the issuing of the EA (should it be granted), this will need to be undertaken as part of a separate EA Amendment process and will be considered as substantive.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES ✓	NO	Please explain
<p>As noted above, the proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gembok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The project site is currently being used for agricultural purposes, predominantly grazing. Should the proposed projects (i.e. the Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line), and ultimately the Kenhardt PV 1, 2 and 3 facilities proceed, it is not expected that this will threaten the agricultural activities present on site. As noted in Appendix D.6 of this BA Report (Soils and Agricultural Potential Assessment), due to the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing.</p> <p>Currently, the site is used for grazing, which could continue in the surrounding regions, together with the generation of additional income via the leasing of the land to the Applicant. The potential negative impact of loss of agricultural land and the potential positive impact of additional land use income were both rated with a very low significance (without the implementation of mitigation measures) in the Soils and Agricultural Potential Assessment.</p>			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES ✓	NO	Please explain
<p>The !Kheis Municipality Draft Integrated Development Plan (IDP) (2012 – 2017 and 2015 – 2019) states that an opportunity exists to utilise solar energy more widely and lessen the dependence on wood and fire. This opportunity has been identified because not all people within the municipal area have access to electricity. Even though the proposed Kenhardt PV 1, 2 and 3 solar facilities (which are subject to separate EIA Processes, as noted above) will not provide electricity to the municipality directly, the energy produced by the facilities will feed into the national grid as a result of the proposed Kenhardt PV Transmission Line projects (i.e. this specific Kenhardt PV 1 – Transmission Line project will assist and enable the proposed Kenhardt PV 1 facility to feed the generated electricity to the national grid). In addition, on a local level, the proposed project will contribute towards job creation which is needed within the area.</p>			
<p>As noted above, the SEA for Wind and Solar PV development aims to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy projects, referred to as REDZs. The</p>			

proposed transmission line project, which will fundamentally support the proposed Kenhardt PV 1 facility, falls within one of the potential eight REDZ. Therefore, should the REDZ be established and renewable projects operate within these areas, Eskom may be able to unlock funding to proactively construct grid infrastructure to facilitate generation capacity from these areas. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area.

One of the priority issues identified within the !Kheis Municipality IDP (2012 – 2017 and 2015 – 2019) is the low levels of skilled people, as well as high levels of poverty and unemployment. The IDP (2012 – 2017 and 2015 – 2019) states that the objective to resolve this issue is to create an environment whereby the local community is empowered through capacity building and skills development (particularly for the youth). The proposed project will create job opportunities and economic spin offs during the construction phase (if an EA is granted by the DEA). It is estimated that approximately 130 employment opportunities will be created during the construction phase. It should however be noted that employment during the construction phase will be temporary. During the operational phase, the transmission line could possibly be operated by Eskom.

Therefore, the proposed transmission line project will fundamentally support and facilitate the optimal functioning of the proposed Kenhardt PV 1 solar energy facility, which would help to address the need for increased electricity supply while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area.

(b) Urban edge / Edge of Built environment for the area	YES	NO ✓	Please explain
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The proposed project falls approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The proposed project falls within a rural landscape.

(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO ✓	Please explain
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The proposed activity does not compromise any of the objectives set within the !Kheis Municipality Draft IDP (2012 – 2017 and 2015 – 2019). The proposed project will also be supportive of the IDP’s objective of creating more job opportunities. The proposed project will also create economic spin offs during the construction phase (if an EA is granted by the DEA). It is estimated that approximately 130 employment opportunities will be created during the construction phase. The proposed project will also provide fundamental infrastructure to ensure that the proposed Kenhardt PV 1 facility is able to operate and transmit the electricity that it will generate. The proposed project will therefore ultimately also assist in local job creation during the construction and operation phases of the proposed Kenhardt PV 1 facility project (if an EA is granted by the DEA).

(d) Approved Structure Plan of the Municipality	YES ✓	NO	Please explain
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It is not expected that the approval of the proposed project would compromise the integrity of the existing plans for the area. Furthermore, mitigation measures have been recommended as part of the BA Process to manage potential negative environmental impacts that may occur during the construction, operational and potential decommissioning phases. To this end, an EMPr, which is included as Appendix G of this BA Report, has been compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced.

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES ✓	NO	Please explain
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It is not expected that the approval of the proposed project would compromise the integrity of the existing plans and environmental priorities for the area. Furthermore, mitigation measures have been recommended as part of the BA Process to manage potential negative environmental impacts that may occur during the construction, operational and potential decommissioning phases. To this end, an EMPr, which is included as Appendix G of

this BA Report, has been compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced.

As noted above, the project site is currently being used for agricultural purposes, predominantly grazing. It should be noted that the existing livestock grazing is expected to continue in the area surrounding the transmission line. Furthermore, Section 2.1.4 of the Siyanda District Municipality (now known as ZF Mgcawu District Municipality) Environmental Management Framework states that “in the year 2000, the utilization of groundwater in the area was approximately in balance with a sustainable yield from this source. No significant potential for further development exists. Over-exploitation of the groundwater has not been experienced in the EMF area”. The Applicant planned to make use of groundwater as a water source during the construction phase. However, the Geohydrological Assessment (included in Appendix D.5 of this BA Report) has concluded that groundwater should not be used as a source of water, as the groundwater on site is limited and of a poor quality. Additional information regarding the possible use of groundwater included in Appendix D.5 of this BA Report.

(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
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Refer to explanations provided above.

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES ✓	NO	Please explain
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The !Kheis Municipality Draft IDP (2012 – 2017 and 2015 – 2019) states that an opportunity exists to utilise solar energy more widely and lessen the dependence on wood and fire. This opportunity has been identified because not all people within the municipal area have access to electricity. Even though the proposed Kenhardt PV 1, 2 and 3 solar facilities (which are subject to separate EIA Processes, as noted above) will not provide electricity to the municipality directly, the energy produced by the facilities will feed into the national grid as a result of the proposed Kenhardt PV Transmission Line projects (i.e. this specific Kenhardt PV 1 – Transmission Line project will assist and enable the proposed Kenhardt PV 1 facility to feed the generated electricity to the national grid). As noted above, the SEA for Wind and Solar PV development aims to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy projects, referred to as REDZs. The proposed project, which will fundamentally support the proposed Kenhardt PV 1 facility, falls within one of the potential eight REDZ. Therefore, should the REDZ be established and renewable projects operate within these areas, Eskom may be able to unlock funding to proactively construct grid infrastructure to facilitate generation capacity from these areas. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area.

One of the priority issues identified within the !Kheis Municipality IDP (2012 – 2017 and 2015 – 2019) is the low levels of skilled people, as well as high levels of poverty and unemployment. The IDP (2012 – 2017 and 2015 – 2019) states that the objective to resolve this issue is to create an environment whereby the local community is empowered through capacity building and skills development (particularly for the youth). The proposed project will create job opportunities and economic spin offs during the construction phase (if an EA is granted by the DEA). It is estimated that approximately 130 employment opportunities will be created during the construction phase. It should however be noted that employment during the construction phase will be temporary. During the operational phase, the transmission line could possibly be operated by Eskom.

Therefore, the proposed transmission line project will support and facilitate the optimal functioning of the proposed Kenhardt PV 1 solar energy facility, which would help to address the need for increased electricity supply while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area.

<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	<p>YES ✓</p>	<p>NO</p>	<p>Please explain</p>
<p>As noted above, South Africa has a high level of Renewable Energy potential and presently has in place a generation target of 10 000 GWh of Renewable Energy. As noted above, at a national level, the DOE has set the target of having 17 800 MW of electricity generated from Renewable Energy sources contributing to the national grid by 2030 to ensure the continued uninterrupted supply of electricity. As noted above, Scatec Solar intends to submit the Kenhardt PV 1, 2 and 3 (EIA Projects) for Round 5 REIPPPP and this project (i.e. Kenhardt PV 1 – Transmission Line) can therefore contribute to the IPP goals and feed into the national grid, which results in this project having national importance. Furthermore, the proposed transmission line project will ensure that the proposed Kenhardt PV 1, 2 and 3 (EIA Projects) are viable for submission as part of the REIPPPP as it will ensure fundamental connection to the national grid.</p> <p>At a local level, the !Kheis Municipality Draft IDP (2012 – 2017 and 2015 – 2019) states that an opportunity exists to utilise solar energy more widely (especially in the remote areas of the municipality) and lessen the dependence on wood and fire. This opportunity has been identified because not all people within the municipal area have access to electricity. The IDP (2015 – 2019) also states that due to small communities present in sparsely populated areas, effective distribution of electricity becomes difficult in some areas. Even though the proposed Kenhardt PV 1, 2 and 3 solar facilities (which are subject to separate EIA Processes, as noted above) will not provide electricity to the municipality directly, the energy produced by the facilities will feed into the national grid as a result of the proposed Kenhardt PV Transmission Line projects (i.e. this specific Kenhardt PV 1 – Transmission Line project will assist and enable the proposed Kenhardt PV 1 facility to feed the generated electricity to the national grid). In addition, on a local level, the project will contribute towards job creation which is needed within the area.</p>			
<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	<p>YES <i>Refer to the explanation below</i></p>	<p>NO</p>	<p>Please explain</p>
<p>Some services are currently available to cater for the proposed development; however services to support the proposed transmission line will need to be constructed as well (such as the proposed gravel road for maintenance purposes).</p> <p>Furthermore, as noted above, existing roads (such as a private Transnet Service Road or an unnamed farm road) will be used to gain access to the site. The Transnet Service Road can be accessed from the R27 and the farm road can be accessed from the R383 Regional Road also via the R27 National Road. An internal gravel road may also be constructed from either the Transnet Service Road or the unnamed farm road. If the Transnet Service Road cannot be used, the unnamed farm road will need to be widened to approximately 8.5 m.</p> <p>Existing municipal services for the handling of waste, provision of water and sewage handling are expected to be used for the proposed project. Confirmation of the availability of the services will be obtained during the 30-day review of the BA Report.</p>			

<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO ✓	Please explain
<p>There is no anticipated negative impact on municipal infrastructure planning (no clash of priority, and/or placement) as additional infrastructure required to maintain the proposed transmission line would be provided and maintained by the Applicant or Eskom (as explained above). The activity is furthermore proposed on agricultural land with little or no existing and planned infrastructure. The opportunity cost of constructing the proposed project might increase the viability of agricultural productivity due to financial advantage (i.e. farmers will receive payments for lease of the property per quarter or year). The opportunity cost of not constructing the proposed transmission line to service the proposed Kenhardt PV 1 facility would be the maintenance of the current status quo, which is marginal agriculture and grazing.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES ✓	NO	Please explain
<p>The National Integrated Resource Plan for Electricity (IRP2) (2011) suggests that 42% of national energy supply must come from renewable energy sources between 2010 and 2030. Therefore, this project will provide the necessary infrastructure to fundamentally support the proposed Kenhardt PV 1, which is aligned with the government's plan to increase renewable energy sources.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	YES ✓	NO	Please explain
<p>As discussed above, the solar resource of this area is high, which makes it a very favourable location for the proposed Kenhardt PV 1, 2 and 3 facilities (which are the subject of separate EIA Processes). The location of the proposed transmission line project is highly dependent on the location of the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. If the proposed Kenhardt PV 1 facility cannot connect to the Nieuwehoop Substation, this could also result in additional costs and expenditure, as well as additional timeframes required, as a result of the potential re-design of the Kenhardt PV 1 facility to align with an alternative substation within the region. Using an alternative substation within the region (dependent on capacity requirements) could result in longer transmission lines and associated gravel roads. This could result in additional negative impacts to the surrounding environment, including avifauna.</p>			
<p>Due to the presence of the Eskom Nieuwehoop Substation, the land use is favoured from an electrical landscape perspective. In addition, the landscape of the immediate adjacent area is already impacted by the ore freight railway line and will become even more industrialised by the Eskom Nieuwehoop substation and high voltage transmission lines. As noted in the Visual Impact Assessment (Appendix D.2 of this BA Report), the visual intrusion will be low for visual receptors on surrounding farms since the landscape is already transformed by existing structures (as mentioned above).</p>			
<p>As noted in Appendix D.6 of this BA Report (Soils and Agricultural Potential Assessment), due to the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing. Currently, the site is used for grazing, which could continue in the surrounding regions, together with the generation of additional income via the leasing of the land to the Applicant. The potential negative impact of loss of agricultural land and the potential positive impact of additional land use income were both rated with a very low significance (without the implementation of mitigation measures) in the Soils and Agricultural Potential Assessment.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES ✓	NO	Please explain
<p>Based on the findings of this BA, the proposed project would not have a significant ("high") negative impact on</p>			

the receiving environment, with the implementation of suitable mitigation measures. As noted in Soils and Agricultural Potential Assessment, due to the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing. Currently, the site is used for grazing, which could continue in the surrounding regions, together with the generation of additional income via the leasing of the land to the Applicant. The potential negative impact of loss of agricultural land and the potential positive impact of additional land use income were both rated with a very low significance (without the implementation of mitigation measures) in the Soils and Agricultural Potential Assessment.

However, it is also important to point out that the proposed project will be designed according to relevant national specifications and standards which are regarded as best practice in the renewable energy sector.

Based on the above, the construction of the proposed project is the best practicable option for the land. In addition, the construction the proposed transmission line (and ultimately the proposed Kenhardt PV 1 facility) would have a positive socio-economic impact on the area.

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES ✓	NO	Please explain
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Based on the findings of this BA, the proposed project would not have a significant (“high”) negative impact on the receiving environment, with the implementation of suitable mitigation measures. As noted in Soils and Agricultural Potential Assessment, due to the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing. Currently, the site is used for grazing, which could continue in the surrounding regions, together with the generation of additional income via the leasing of the land to the Applicant. The potential negative impact of loss of agricultural land and the potential positive impact of additional land use income were both rated with a very low significance (without the implementation of mitigation measures) in the Soils and Agricultural Potential Assessment.

In addition, the construction the proposed transmission line (and ultimately the proposed Kenhardt PV 1 facility) would have a positive socio-economic impact on the area.

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES ✓	NO	Please explain
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Various other solar energy facilities and electrical transmission lines have been proposed in the immediate area. The Eskom Nieuwehoop Substation is presently under construction, while three solar energy facilities have been granted EA (although it is unknown when they will be built).

12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO ✓	Please explain
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No negative impacts of a high significance (with the implementation of mitigation measures) have been identified as part of the BA.

The impacts on health and wellbeing are expected to be minimal as the project is taking place within a sparsely populated region. Dust may be generated during the construction phase; however it is expected to be of a short-term duration and of low significance. However, where applicable, mitigation measures relating to potential impacts on the health and wellbeing of people (such as construction staff, farm workers, construction staff at the Eskom Nieuwehoop Substation and the operational staff of the ore railway line) have been included in the EMPr (Appendix G of the BA Report). Odours will be minimal during the construction phase and non-existent during the operational phase.

During the construction phase, noise may be generated as a result of the operation of equipment, vehicles and machinery, the transportation of construction materials and staff to and from site, the establishment of site construction areas, as well as general construction activities. However, the noise levels and impacts will be short-term and are not expected to be significant during the construction phase. During the operational phase, the proposed transmission line will not generate any noise. Mitigation measures (where applicable) have been included in the EMPr (Appendix G of the BA Report) to reduce the negative noise impacts during the construction phase.

<p>In terms of visual character and sense place, the visual landscape and the agricultural landscape has been altered by the ore freight railway line. The site is expected to become even more industrialised by the Eskom Nieuwehoop Substation and high voltage transmission lines. As noted above, this has been assessed in the Visual Impact Assessment (Appendix D.2 of this BA Report).</p>			
<p>Notwithstanding the above, the socio-economic benefits likely to result from the proposed project (e.g. creation of jobs and regional economic development) would most likely outweigh the issues mentioned above.</p>			
<p>13. Will the proposed activity/ies compromise the “urban edge” as defined by the local municipality?</p>	YES	NO ✓	Please explain
<p>The proposed project falls approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The proposed project falls within a rural landscape.</p>			
<p>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</p>	YES	NO <i>Refer to the explanation below</i>	Please explain
<p>The proposed project itself is not part of any of the SIPS. However, as noted above, the SEA for Wind and Solar PV development aims to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy projects, referred to as REDZs. The proposed project, which will fundamentally support the proposed Kenhardt PV 1 facility, falls within one of the potential eight REDZ. Therefore, should the REDZ be established and renewable projects operate within these areas, Eskom may be able to unlock funding to proactively construct grid infrastructure to facilitate generation capacity from these areas. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area. Even though the proposed Kenhardt PV 1, 2 and 3 solar facilities (which are subject to separate EIA Processes, as noted above) will not provide electricity to the municipality directly, the energy produced by the facilities will feed into the national grid as a result of the proposed Kenhardt PV Transmission Line projects (i.e. this specific Kenhardt PV 1 – Transmission Line project will assist and enable the proposed Kenhardt PV 1 facility to feed the generated electricity to the national grid).</p>			
<p>15. What will the benefits be to society in general and to the local communities?</p>	Please explain		
<p>The socio-economic benefits likely to result from the proposed project (e.g. creation of jobs and regional economic development) would most likely outweigh the minor issues note above, such as dust generation, noise, impacts to the visual landscape, and odour emissions.</p>			
<p>16. Any other need and desirability considerations related to the proposed activity?</p>	Please explain		
<p>The need and desirability considerations have been described above.</p>			
<p>17. How does the project fit into the National Development Plan for 2030?</p>	Please explain		
<p>The National Development Plan (National Planning Commission, 2011, p.10) proposes to create 11 million jobs by 2030 by:</p> <ul style="list-style-type: none"> ▪ “Realising an environment for sustainable employment and inclusive economic growth; ▪ Promoting employment in labour-absorbing industries; ▪ Raising exports and competitiveness; ▪ Strengthening government’s capacity to give leadership to economic development; and ▪ Mobilising all sectors of society around a national vision”. <p>Approval of this BA project will enable and facilitate the construction of a larger suite of PV projects proposed by Scatec Solar, which will play a role in enhancing employment and economic growth objectives by creating employment opportunities and contributing to economic growth.</p>			
<p>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</p>	Please explain		
<p>The general objectives of Integrated Environmental Management set out in Section 23 of the NEMA and how these objectives have been taken into account in this BA Process is provided below.</p>			

Section 23 in NEMA:	How it has been addressed in this BA Process:
(2) The general objective of integrated environmental management is to: (a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;	Discussed in Question 19 below.
(b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;	Potential impacts on the environment, society, the economy and cultural heritage, occurring as a result of the proposed project, have been identified and assessed in Section D of this BA Report. Mitigation measures to minimise negative impacts and maximise positive impacts have also been suggested in Section D of this BA Report, as well as Appendix G (EMPr).
(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;	Assessing the potential impacts of the proposed project warrants that all effects associated with the proposed project have received adequate consideration prior to any action relating to these activities being undertaken.
(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;	Appropriate public participation has been undertaken for the proposed project, in compliance with the 2014 EIA Regulations. The Public Participation Process is described in Section C of this BA Report.
(e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and	The specialist studies undertaken as part of the BA Process and included in Appendix D of this BA Report assisted in the identification and description of environmental attributes and significant environmental impacts, which are indicated and assessed in Section D of this BA Report as well. Mitigation measures have also been suggested in Section D of this BA Report, as well as Appendix G (EMPr).
(f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.	The EMPr (included in Appendix G of this BA Report) includes mitigation measures to minimise negative environmental impacts, as well as mitigation objectives and management.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The principles of NEMA have been considered in this assessment through:

- Compliance with the requirements of relevant legislation in undertaking the assessment of potential impacts;
- Implementation of the principle of sustainable development where appropriate mitigation measures have been recommended for impacts which cannot be avoided;
- Ensuring that the successful implementation and appropriate management of this project will aid in achieving the principle of minimisation of pollution and environmental degradation;
- Undertaking the BA Process in an inclusive and transparent manner; and
- Making great efforts to involve I&APs, stakeholders and relevant organs of state in the process such that an informed decision regarding the project can be made by the Competent Authority.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
NEMA (Act 107 of 1998, as amended)	The proposed project will require the implementation of appropriate environmental management practices.	National Department of Environmental Affairs	19 November 1998
NEMA EIA Regulations published in Government Notice R982, R983, R984 and R985	These Regulations provide the procedures that need to be followed for the BA Process	National Department of Environmental Affairs	8 December 2014

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
NEMA EIA Regulations published in Government Notice R983 and R985	These Regulations contain the relevant listed activities that were triggered, thus requiring a BA. Please refer to Section A (1) (b) of this BA Report for the complete list of listed activities.	National Department of Environmental Affairs	8 December 2014
National Environmental Management: Waste Act (Act 59 of 2008)	General and hazardous waste will be generated during the construction phase, which will require proper management.	National Department of Environmental Affairs	6 March 2009
National Environmental Management: Waste Amendment Act (Act 26 of 2014)	General and hazardous waste will be generated during the construction phase, which will require proper management.	National Department of Environmental Affairs	2 June 2014
National Environmental Management: Air Quality Act (Act 39 of 2004)	The proposed stockpiling activities, including earthworks, may result in the unsettling of, and temporary exposure to, dust. Appropriate dust control methods will need to be applied.	National Department of Environmental Affairs	19 February 2005
Water Services Act (Act 108 of 1997)	Water will be required during the construction and decommissioning phases of the proposed project, for consumption purposes, earthworks and grassing etc.	National Department of Water Affairs	1997
Hazardous Substances Act (Act 15 of 1973)	During the proposed project, fuel and diesel will be utilised to power vehicles and equipment. In addition, potential spills of hazardous materials could occur during the construction and decommissioning phases.	Department of Health	1973
Environmental Conservation Act (ECA) (Act 73 of 1989 Amendment Notice No.1183 of 1997)	ECA was promulgated prior to the NEMA, and was the main piece of legislation in dealing with environmental issues in South Africa. The ECA has largely been repealed and replaced with NEMA.	National Department of Environmental Affairs	1997
National Forests Act (Act 84 of 1998)	As noted in Appendix D.1 of this BA Report (Ecological Impact Assessment), the National Forest Act (Act 84 of 1998) governs the removal, disturbance, cutting or damage and destruction of identified "protected trees". Listed species that may be encountered in the area include <i>Boscia</i> spp and possibly <i>Acacia erioloba</i> . Neither of these species were identified as falling within the proposed corridor. It is unlikely that an application for the "clearing of a natural forest", as defined within the Act, will be required on the route in question.	Department of Agriculture, Forestry and Fisheries	1998
National Water Act (NWA) (Act 36 of 1998)	Water will be utilised during the proposed project. The unlikely need for a Water Use Licence, as a result of the proposed transmission line, will be determined by the Department of Water and Sanitation (during the 30-day review of the BA Report). It is noted that the water courses (i.e. minor drainage lines) do not meet the criteria to be termed "wetlands", while the final routing of the power line may fall in excess of 500 m from the water courses, thus not necessitating a Water Use Licence application.	Department of Water Affairs	1998
Integrated Environmental Management (IEM) guideline series published by the DEA (various documents dated from	The IEM Guideline series will provide guidance on conducting and managing all phases and components of the required BA	National Department of Environmental Affairs	2002 - present

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
2002 to present)	and public participation processes, such that all associated tasks are performed in the most suitable manner.		
National Heritage Resources Act (Act 25 of 1999)	The proposed project may require a permit in terms of the National Heritage Resources Act prior to any fossils/artefacts being removed by professional palaeontologists/ archaeologists.	National Department of Arts and Culture	1999
Conservation of Agricultural Resources Act (Act 43 of 1983)	The Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983) has categorised a large number of invasive plants together with associated obligations of the land owner. Invasive plants listed in CARA may occur on site (as noted in the Ecological Impact Assessment in Appendix D.1 of this BA Report). Invasive plant species that should be removed or maintained only under certain commercial situations are identified in terms of the CARA. This Act will be applicable to the project if and where such plants arise within or adjacent to the project area. Notably most listed alien invasive species are propagated and driven by the disturbance of land during and following construction.	National Department of Agriculture	1983
Northern Cape Nature Conservation Act (Act 9 of 2009)	<p>All species listed by the Northern Cape Nature Conservation Act will require removal permits should they be impacted upon by the construction activities. The Northern Cape Conservation Act under its pertinent regulation, governs the disturbance of species listed in Tables 1 and 2 of the Ecological Impact Assessment (included in Appendix D.1 of this BA Report), or possibly other species not yet identified on route.</p> <p>A permit from the Provincial Department of Environment and Nature Conservation will be required in order to disturb or translocate such species. Species that would require such permitting include <i>Aloe dichotoma</i> and <i>Aloe claviflora</i> which has been identified within the proposed corridor. The Aloe conspecies have been excluded from the development footprint (i.e. routing of the transmission line will avoid these species).</p> <p>The absence or presence of these species will be confirmed as part of the plant rescue and protection plan and should any species be present and determined that they will be impacted on, permits will be obtained from Department of Environment and Nature Conservation.</p>	Northern Cape Department of Environment and Nature Conservation	2009
National Environmental Management: Biodiversity Act (Act 10 of 2004)	This Act serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. The proposed development, taking place in the identified Bushmanland Arid Grassland environment, may not necessitate any particular application for a change in land	National DEA	September 2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>use from an ecological perspective, however the effective disturbance and removal of species identified in Tables 1 and 2 of the Ecological Impact Assessment (included in Appendix D.1 of this BA Report), as well as possible other species (i.e. TOPS species), will require specific permission from the applicable authorities.</p> <p>In addition, the planting and management of exotic plant species on route, if and where required, will be governed by the Alien and Invasive Species (AIS) regulations, which were gazetted in 2014. These regulations compel landowners to manage exotic weeds on land under their jurisdiction and control.</p>		
Astronomy Geographic Advantage (Act 21 of 2007).	<p>The Astronomy Geographic Advantage (Act 21 of 2007) aims is to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; to provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and to provide for matters connected therewith.</p> <p>This site falls within 20 km of a Square Kilometre Array (SKA) station and based on distance to the nearest SKA station, the location of the station, and the information currently available on the detailed design of the PV installation, the proposed facility poses a medium to high risk of detrimental impact on the SKA.</p> <p>Electro Magnetic Interference and Radio Frequency Interference studies have been commissioned by the Project Applicant to determine the impact of the proposed project on the</p>	Department of Science and Technology	2007

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES ✓	
50 m ³	

If YES, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

The quantity of waste generated will depend on the construction phase, which is estimated is extend 12 to 14 months (as mentioned in Section A (1) (a) of this BA Report). However, it is estimated that 50 m³ of waste will be generated every month during the construction phase. During the construction phase, the following waste materials are expected:

- Packaging material, such as the cardboard, plastic and wooden packaging and off-cuts;
- Hazardous waste from empty tins, oils, soil containing oil and diesel (in the event of spills), and chemicals;

- Building rubble, discarded bricks, wood and concrete;
- Domestic waste generated by personnel; and
- Vegetation waste generated from the clearing of vegetation.

Solid waste will be managed via the EMPr (Appendix G of the BA Report), which incorporates waste management principles. As mentioned previously, general waste will be temporarily stockpiled in a designated area on site and thereafter removed and disposed at a registered waste disposal facility on a regular basis by an approved waste disposal Contractor (i.e. a suitable Contractor). Any hazardous waste (such as the contaminated soil) will be temporarily stockpiled (for less than 90 days) in a designated area on site (i.e. placed in leak-proof storage skips), and thereafter removed off site by a suitable service provider for safe disposal at a registered hazardous waste disposal facility.

Waste disposal slips and waybills will be obtained for the collection and disposal of the general and hazardous waste. These disposal slips (i.e. safe disposal certificates) will be kept on file for auditing purposes as proof of disposal.

Where will the construction solid waste be disposed of (describe)?

All waste will be collected and temporarily stored in skips on site. The waste will then be emptied into trucks and disposed of at a registered/licenced waste disposal facility by an approved Contractor. The waste disposal facility selected will be suitable and able to receive the specified waste stream (i.e. hazardous waste will only be disposed of at a registered/licenced waste disposal facility). The details of the disposal facility will be finalised during the contracting process, prior to the commencement of construction.

Where possible, recycling and re-use of material will be encouraged.

Will the activity produce solid waste during its operational phase?

NO ✓

If YES, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

Not applicable, the proposed project will not generate any waste during the operational phase. Refer to the explanation below.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Not applicable, the proposed project will not generate any waste during the operational phase. Refer to the explanation below.

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

Not applicable, the proposed project will not generate any waste during the operational phase. Refer to the explanation below.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Note from the CSIR: As noted in Section A (1) of this BA Report, during the operational phase of the proposed transmission line, waste generation is not applicable. Only the following activities will occur during the operational phase:

- The transmission of electricity generation from the proposed 75 MW Kenhardt PV 1 facility to the Eskom Nieuwehoop Substation; and
- Maintenance of the transmission line servitude including the gravel road.

Therefore, during the life span of the power line (approximately 20 years), on-going maintenance will be required on a scheduled basis. This maintenance work will be undertaken by contractors employed by the Project Applicant or Eskom, and in compliance with the EMPr.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

NO ✓
Refer to the explanation below.

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Note from the CSIR: It is important to note that the proposed project does not trigger any activities listed in Categories A and B of the List of Waste Management Activities published in GN 921 and as such a Waste Management Licence is not required. Therefore, it is of the opinion of the EAP that a Scoping and EIA is not warranted.

A Waste Management Licence, in terms of the NEMWA, is not required when activities listed in Category C are triggered; however instead, compliance with the relevant National Norms and Standards must be achieved. Activity 2 of Category C of GN 921 states the following: “the storage of hazardous waste at a facility that has the capacity to store in excess of 80 m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste”. It is estimated that during the construction phase, limited amounts of hazardous waste will be generated. The type of hazardous waste will be limited to waste hydraulic oils; waste engine, gear and lubricating oils; waste insulating and heat transmission oils; wastes of liquid fuels; or hazardous portions of other oil wastes. This could occur as a result of fuel spillages on site (due to construction equipment and vehicles). It is not likely that more than more than 80 m³ of waste fuel spillages will emanate from the construction process that will need to be stockpiled on site for longer than 90 days. Therefore, the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) will not need to be complied with. However, these recommendations have been included in the EMPr.

Hazardous waste generated during the construction phase, will be temporarily stored in designated sealed containers on impervious surfaces. The hazardous waste will be collected by an appointed waste removal Contractor and disposed of at a licenced/registered hazardous waste disposal facility. Waste disposal slips and waybills will be obtained for the collection and disposal of the hazardous waste. These disposal slips will be kept on file for auditing purposes as proof of disposal.

Is the activity that is being applied for a solid waste handling or treatment facility?

NO ✓

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

NO ✓

If YES, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site?

NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

NO ✓
Refer to the explanation below (only normal sewage).

If YES, provide the particulars of the facility:

Facility name:
Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

[Redacted area containing contact details for the facility]

Cell:
Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not applicable. Refer to the explanation provided below.

Note from the CSIR: The proposed project will require sewage services during the construction. Low volumes of sewage or liquid effluent are estimated during both phases. Liquid effluent will be limited to the ablution facilities during the construction and operational phases. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction and operational phases, which will be regularly serviced and emptied by a suitable (private) contractor on a weekly basis. The waste water will be transported to a nearby Waste Water Treatment Works for treatment. Due to the remote location of the project site; a conservancy tank or septic tank system could be used on site, which is expected to be serviced by the municipality. Feedback from the municipality (in terms of capacity) will be sought during the EIA Phase. Due to the remote locality of the farm, sewage cannot be disposed in the municipal waterborne sewage system.

As noted in Section 1 (A) of this BA Report, the proposed project will require sewage services during the construction phase. Low volumes of sewage or liquid effluent are estimated. Liquid effluent will be limited to the ablution facilities during the construction phase. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction phase, which will be regularly serviced and emptied by a suitable (private) Contractor on a weekly basis. The waste water will be transported by the Contractor to a nearby Waste Water Treatment Works for treatment. Due to the remote location of the project site; a conservancy tank or septic tank system could be used on site, which is expected to be serviced by the municipality. Feedback from the municipality (in terms of capacity) will be sought during the BA Phase. Due to the remote locality of the farm, sewage cannot be disposed in the municipal waterborne sewage system.

During the operational phase of the proposed transmission line, sewage generation is not applicable.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

NO ✓

If YES, is it controlled by any legislation of any sphere of government?

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

During the construction phase, dust will be generated from the earthworks and excavation required for the construction of the proposed infrastructure and building foundations, the removal of vegetation, the movement of vehicles and equipment accessing the site, and the infilling of excavations and levelling. Appropriate mitigation measures will be implemented during the construction phase to reduce the dust levels. Approved soil stabilizing agents may need to be used to minimise dust. Dust generation during the construction phase will be of a short-term duration and is predicted to be of low significance with the implementation of mitigation measures. Appropriate mitigation and management measures are included in the EMPr (Appendix G of the EMPr).

The construction vehicles and equipment will also generate exhaust emissions. However, these emissions are also expected to be short-term in duration and of low significance with the implementation of mitigation measures. Appropriate mitigation and management measures are included in the EMPr (Appendix G of the EMPr) with regards to traffic control.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority.

Note from the CSIR: As noted above, a Waste Management Licence is not required for the proposed project. Refer to Section A (12) (a) of this BA Report, which explains that a Waste Management Licence is not required for the proposed project in terms of the NEMWA.

e) Generation of noise

Will the activity generate noise?

YES

If YES, is it controlled by any legislation of any sphere of government?

NO

Describe the noise in terms of type and level:

During the construction phase, noise will be generated by the construction activities, earthworks, personnel, equipment and vehicles on the site. The levels of noise are not expected to be excessive and will be in line with standard industry levels associated with the proposed activity. In addition, noise generation during the construction phase is considered to be localised and short-term, with a low to very low significance (with the implementation of mitigation measures). During the construction phase, the ambient noise is not expected to exceed 45 dB(A) during the day and 35 dB(A) at night for rural districts (as required by SANS 10103:2008). In addition, the proposed project will not generate any noise during the operational phase.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

Note from the CSIR: Water will be used during the construction phase mainly for earthworks, domestic purposes, dust control and re-vegetation watering processes. Water will be sourced from the municipal system.

It was noted during the Project Initiation Phase that groundwater could be used from existing boreholes if it was available and of a suitable quality. It was planned to construct water pipelines in order to transfer groundwater from existing boreholes to the proposed solar facility (where the water will be distributed to the transmission line area). However, the Geohydrological Assessment (undertaken as part of the BA Process and included in Appendix D.5 of this BA Report) recommends that the groundwater is not suitable for use during the construction phase. Therefore, water pipelines will not need to be constructed in order to transfer groundwater from existing boreholes. As a result, water will therefore be sourced from the municipality. Tanks will be provided on site for the storage of municipal water during the construction phase. The tanks will have a capacity of 10 000 liters each. Therefore, no abstraction of groundwater will be undertaken during the construction phase, and as such a Water Use Licence will not be required in this regard.

The Ecological Impact Assessment specialist study (included in Appendix D.1 of this BA Report), also explains that at this point, there is no necessity for a Water Use Licence, as a result of the proposed transmission line, however this will be determined by the Department of Water and Sanitation (during the 30-day review of the BA Report). It is noted that the water courses (i.e. minor drainage lines) do not meet the criteria to be termed "wetlands", while the final routing of the power line may fall in excess of 500 m from the water courses, thus not necessitating a Water Use Licence application.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

The design takes the position of the optimum solar radiation into account in order to efficiently capture solar energy, generate the electricity from the renewable source and transmit the generated electricity.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not applicable

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section? YES
✓

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Note from the CSIR: The proposed electrical corridor is not large and does not have varying environmental features within the site.

As discussed in Section 1 (A) above, only one site and location alternative (i.e. the preferred alternative) is applicable.

Note that the specialist declarations of interest are included in Appendix I of this BA Report, with the complete specialist studies included in Appendix D.

**Property description/
physical address:**

Province	Northern Cape
District Municipality	ZF Mgcawu District Municipality
Local Municipality	!Kheis Local Municipality
Ward Number(s)	Not Applicable
Farm name and number	<ul style="list-style-type: none"> ▪ Remainder of farm Onder Rugzeer Number 168 ▪ Remaining extent of Portion 3 of the Farm Gemsbok Bult 120 ▪ Remainder of Boven Rugzeer 169 ▪ Portion 4 of Onder Rugzeer Farm 168
Portion number	<ul style="list-style-type: none"> ▪ Remainder of farm Onder Rugzeer Number 168 – Portion 0 ▪ Remaining extent of Portion 3 of the Farm Gemsbok Bult 120 - Portion 3 ▪ Remainder of Boven Rugzeer 169 – Portion 0 ▪ Portion 4 of Onder Rugzeer Farm 168 – Portion 4
SG Code	<ul style="list-style-type: none"> ▪ C03600000000016800000 ▪ C03600000000012000003 ▪ C03600000000016900000 ▪ C03600000000016800004

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agricultural land-use - mainly livestock grazing

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES ✓

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat ✓	1:50 – 1:20 ✓	
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Alternative S2 (if any):

Alternative S3 (if any):

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- | | | | | | |
|---------------------------------|--|-------------------|---|----------------------------------|---|
| 2.1 Ridgeline | | 2.4 Closed valley | | 2.7 Undulating plain / low hills | ✓ |
| 2.2 Plateau | | 2.5 Open valley | | 2.8 Dune | |
| 2.3 Side slope of hill/mountain | | 2.6 Plain | ✓ | 2.9 Seafront | |
| 2.10 At sea | | | | | |

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	NO ✓		
Dolomite, sinkhole or doline areas	NO ✓		
Seasonally wet soils (often close to water bodies)	NO ✓		
Unstable rocky slopes or steep slopes with loose soil	NO ✓		
Dispersive soils (soils that dissolve in water)	NO ✓		
Soils with high clay content (clay fraction more than 40%)	NO ✓		
Any other unstable soil or geological feature	NO ✓		
An area sensitive to erosion	YES ✓		

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

Note from the CSIR: A detailed Soils and Agricultural Potential Assessment is included in Appendix D.6 of this BA Report, which provides a detailed description of the soil conditions on site. The Geohydrological Assessment included in Appendix D.5 of this BA Report provides a detailed assessment of the groundwater and provides a description of the geology. The desktop Palaeontological Impact Assessment (Appendix D.4 of this BA Report) also includes a description of the geology of the area.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens ^E ✓	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “^E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

Note from the CSIR: A detailed Ecological Impact Assessment is included in Appendix D.1 of this BA Report, which provides information on the groundcover in terms of terrestrial vegetation.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO ✓	UNSURE
Non-Perennial River	YES ✓	NO	UNSURE
Permanent Wetland	YES	NO ✓	UNSURE
Seasonal Wetland	YES	NO ✓	UNSURE
Artificial Wetland	YES	NO ✓	UNSURE
Estuarine / Lagoonal wetland	YES	NO ✓	UNSURE

Note from the CSIR: A detailed Ecological Impact Assessment is included in Appendix D.1 of this BA Report, which provides information on the surface water in terms of aquatic ecology.

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The proposed powerline corridor traverses lands presently set aside for the grazing of livestock. The proposed Kenhardt PV 1 transmission line corridor can be described as a generally level portion of

land, with a low gradient draining towards the west, into a shallow drainage feature known locally as “Wolfkopseloop” (as shown in Figure 3 below). This drainage line serves an area of approximately 280 km², most of which lies outside of the study area. Wolfkopseloop drains into the Hartebees River, which in turn serves the Sout River and Orange River systems. Minor drainage lines (shown in white in Figure 3 below) that serve the Wolfkopseloop River flow through certain sections of the transmission line corridor. The Wolfkopseloop system and its immediate tributaries may be regarded as major drainage features.

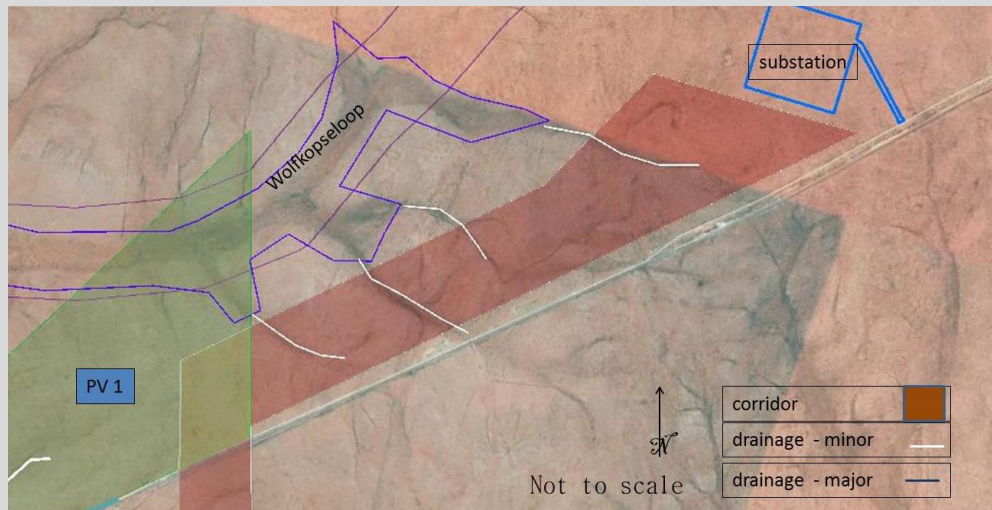


Figure 3: Image showing the proposed corridor associated with the Kenhardt PV 1 transmission line lying between the proposed Kenhardt PV 1 facility and Eskom Nieuwehoop Substation. The Wolfkopseloop feature and its associated drainage lines, lying to the north of the corridor, are considered a major hydrogeomorphic feature and is outlined in purple. Minor dendritic drainage features are identified in white (SDP, 2016).

As indicated above, surface drainage along the proposed transmission line corridor traverses a number of minor drainage lines which serve the (major) Wolfkopseloop drainage feature. These drainage features do not show specific hygrophilous vegetation characteristics as may be defined, nor do they show the presence of geohydromorphic soils, primarily on account of the erratic levels of inundation over extended periods of time, which is driven by the intensity and erratic rainfall experienced in this region. The drainage lines show short term inundation during high rainfall periods, “every 4 to 5 years” (S Strauss pers. comm.) (i.e. are non-perennial). Flow is sluggish under these conditions, and following the cessation of rains, the water rapidly drains from route on account of the percolative, sandy conditions, or is lost to evaporation. For this reason, the major drainage lines have been delineated according to geomorphological features and an apparent change in vegetation form from a sparse and arrested growth form to a more verdant state.

Hydrogeomorphological features are indicated primarily by evidence of flow or deposition of materials (Brinson et al 1993; USDA 2008) while verdant vegetation establishment is a combination of both improved plant water relations and increased nutrient availability. Therefore major drainage features were allied with a combination of both vegetation structure and significant geohydromorphic indicators, while minor drainage features were distinguished through the presence of a more verdant vegetative association and in some cases indicators of minor surface flow (‘rills’).

The interface between major and minor drainage lines is often vague, however where rills exceeded a depth of 30cm (gullies), such features were defined as “major” drainage systems.

The Ecological Impact Assessment (Appendix D.1 of this BA Report) has applied a 32 m “buffer” or “setback” around the major drainage lines (i.e. Wolfkopseloop), which is an indicative “norm” recommended by the various authorities. This buffer is considered acceptable in light of the fact that hydrogeomorphic features are the primary dictate in the identification and delineation of the major drainage lines, rather than other functional features such as geohydromorphic soil conditions or botanical species diversity and compositional variation. The application of 32 m from such features is expected to accommodate both the variation in habitat structure and the erosive action associated with gullies and larger drainage features.

On the other hand, the Ecological Impact Assessment (Appendix D.1 of this BA Report) concluded that the “minor” drainage features are not considered to require exclusion from any land use change or proposed construction. The assessment notes that it would however be best for the design of the proposed transmission line to note the presence of these minor features and avoid establishing structures such as buildings and other permanent and significant structures (powerline towers) within them.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area ✓	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture ✓
Retail commercial & warehousing	Old age home	River, stream or wetland ✓
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge ✓
Heavy industrial ^{AN}	Railway line ^N ✓	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site (<u>Refer to Section 7 below</u>)
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Note from the CSIR: As noted above, the proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The proposed project will take place approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province.

The Ecological Specialist notes that the proposed electrical infrastructure corridor lies within open tussock grasslands primarily utilised for the expansive grazing of livestock. As such, the area can in general be considered “natural” given the historical context of such grazing, as well as the general alignment of the region with Bushmanland Arid Grassland veld type.

Furthermore, as described above, a non-perennial stream, the Wolfkopseloop stream, lies approximately 300 m to the west of the proposed electrical infrastructure corridor. This stream is a typical xeric environment drainage system, with little riparian determinants present. The system is subject to flow on an irregular inter annual basis. The proposed electrical infrastructure corridor will traverse minor dendritic drainage features associated with the Wolfkopseloop system.

The Ecological Impact Assessment (Appendix D.1 of the BA Report) also notes that a dolerite koppie lies to the south east of the site. This low lying feature comprises primarily of weathered dolerite and lies within a level calcrete and Aeolian driven environment, similar to the subject site.

A Visual Impact Assessment is included in Appendix D.2 of this BA Report, which provides information on the land uses of the surrounding area. The Soils and Agricultural Potential Assessment (Appendix D.6 of this BA Report) provides an assessment of the soil and agricultural potential on site, as well as the impact that the proposed project will have on the existing land use (which is largely grazing). The Ecological Impact Assessment included in Appendix D.1 of this BA Report provides information on the surface water, and terrestrial and aquatic ecology, as well as the impact that the proposed project will have on the drainage lines and dolerite koppie. The dolerite koppie is also described in the Heritage Impact Assessment (Archaeology and Cultural Landscape), which is included in Appendix D.3 of this BA Report. Overall, the specialist studies included in Appendix D of this BA Report provide a description of the prominent features that currently occur within a 500 m radius of the site and give description of how this influences the proposed project or how it may be impacted on by the proposed project.

If any of the boxes marked with an “N” are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

The Transnet Freight Rail Sishen-Saldanha Railway Line and associated infrastructure (including the maintenance road) occurs within 500 m of the proposed electrical corridor (i.e. to the east of the corridor). As such the railway line altered surface water flow into the study area following its construction. Other than such variance, the railway line has little ecological impact on the corridor site.

The Project Applicant has initiated discussions with Transnet Freight Rail to confirm their requirements to allow the transmission line to cross the railway line, as well as to allow the use of the Transnet Service Road as an access to the site. These requirements will be considered in the design where required, and the details of the agreement will be finalised outside of this BA Process.

Impacts of the proposed project on the surrounding infrastructure (such as the Transnet Freight Rail and the surrounding road network) have been discussed in this BA Report. Management actions regarding the use of the Transnet Service Road in terms of traffic impacts are included in the EMPr (Appendix G of this BA Report).

If any of the boxes marked with an “An” are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not Applicable

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not Applicable

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO ✓
Core area of a protected area?	YES	NO ✓
Buffer area of a protected area?	YES	NO ✓
Planned expansion area of an existing protected area?	YES	NO ✓
Existing offset area associated with a previous Environmental Authorisation?	YES	NO ✓
Buffer area of the SKA? <i>Note from the CSIR: Refer to the explanation provided below</i>	YES	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

Note from the CSIR: As noted in the Ecological Impact Assessment (Appendix D.1 of this BA Report), the proposed corridor does not lie within protected areas, nor within 5 kilometres of a protected area, nor within 10 kilometres of a World Heritage site and does not form part of a Critical Biodiversity Area. The various regulations within NEMA and the Protected Areas Act are not applicable to this site. It is also noted that the corridor does not fall within any expansion area in terms of a conservation strategy for the Northern Cape.

In terms of the SKA, the Astronomy Geographic Advantage (Act 21 of 2007) aims to provide for:

- the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy;
- intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and
- matters connected therewith.

The overall purpose of the Act is to preserve the geographic advantage areas that attract investment in astronomy. The entire Northern Cape Province, excluding the Sol Plaatjie Municipality, has been declared an Astronomy Advantage Area. The South African MeerKAT radio telescope is currently being constructed about 90 km north-west of Carnarvon in the Northern Cape Province. The MeerKAT radio telescope is a precursor to the SKA telescope and will be integrated into the SKA Phase 1 (SKA South Africa, 2014).

According to the SKA Project Office, the nearest SKA station has been identified as SKA Station ID 2362, at approximately 20 km from the proposed project. The SKA have been pre-identified as a key stakeholder and therefore included on the project database of I&APs (as shown in Appendix E.5 of this BA Report). As such, the SKA office was provided with a copy of the BID, Letter 1, and Comment and Registration Form during the Project Initiation Phase. Comments received from the SKA Project Office during the Project Initiation Phase are included in Appendix E.6 of this BA Report.

According to the SKA, based on distance to the nearest SKA station, the location of the station, and the information currently available on the design of the PV installation, the proposed facility poses a medium to high risk of detrimental impact on the SKA. In line with this, Electro Magnetic Interference and Radio Frequency Interference studies have been undertaken and commissioned by the Project Applicant to determine appropriate mitigation and management measures to reduce the risk of a detrimental impact on the SKA project. This technical report, compiled by MESA Solutions (PTY) Ltd, is included in Appendix D.9 of this BA Report.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

NO ✓
Refer to the explanation provided below

A Heritage Impact Assessment (Archaeology and Cultural Landscape) has been undertaken as part of this BA Process and is included in Appendix D.3 of this BA Report. A desktop Palaeontological Impact Assessment has also been undertaken and is included in Appendix D.4 of this BA Report.

In terms of archaeological heritage, the area is relatively flat, although gently undulating terrain occurs in places. A pan occurs at the northern end of the proposed corridor, while a small rocky koppie occurs in the southern part of the corridor (as shown in Figure 4 below).

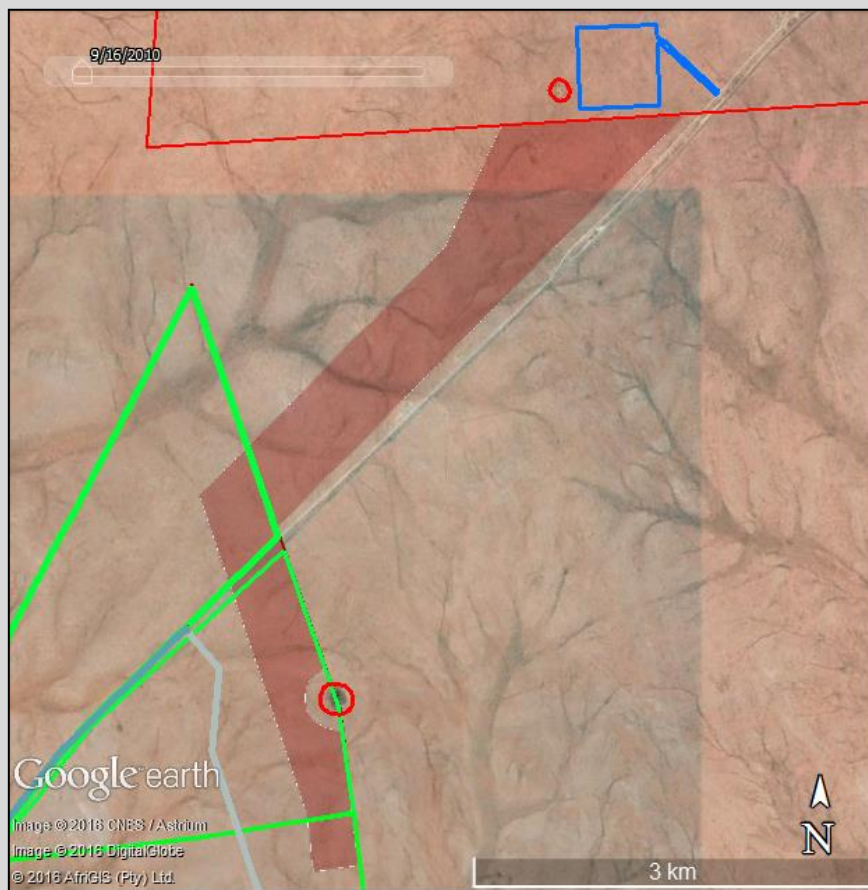


Figure 4: Aerial view of the study area showing the two areas to be avoided (red circles: dolerite koppie (in the south) and pan (in the north)) in relation to the proposed transmission line corridor (shaded red) (Orton, 2016).

During the survey undertaken as part of the assessment, archaeological material in the form of background scatter was located across much of the general area but impacts to this material would be of very low significance. No archaeological sites or graves were found along the alignment of the proposed transmission line corridor but sites may be expected in association with the pan and koppie.

Although sites of high significance are unlikely to occur, these two areas should be avoided with buffers of 75 m radius from the centre of the pan and 120 m radius from the summit of the koppie as a precautionary measure. The landscape was identified as a heritage resource however, due to the presence of electrical and other infrastructure in the area, the significance of new impacts is considered to be very low and no mitigation is suggested. The significance of the potential impacts to archaeological resources and graves is rated as being very low, while the impacts to the landscape are also rated with a very low significance (without the implementation of mitigation measures). Aside from avoiding the pan and koppie, no mitigation measures are suggested. Refer to the complete Heritage Impact Assessment (included in Appendix D.3 of this BA Report) for a detailed description of the surrounding heritage.

In terms of palaeontology, the proposed electrical corridor is underlain at depth by Precambrian basement rocks (c. 1-2 billion years old) assigned to the Namaqua-Natal Province. These ancient igneous and high-grade metamorphic rocks - mainly granites and gneisses of the Keimoes Suite and Jacomynspan Group - crop out at surface in small areas and are entirely unfossiliferous. A large proportion of the basement rocks are mantled by a range of superficial sediments of Late Caenozoic age that may contain sparse fossil remains. These predominantly thin, unconsolidated deposits include small patches of calcretes, gravelly to sandy river alluvium, pan sediments, surface gravels, colluvium (scree) as well as Pleistocene to Recent wind-blown sands of the Gordonia Formation (Kalahari Group). Most of these younger rock units are of widespread occurrence and low palaeontological sensitivity. Scientifically important vertebrate fossil remains (e.g. Pleistocene mammalian bones and teeth) have been recorded within older stratified pan and river sediments elsewhere in the Bushmanland region where they are often associated with stone artefacts, while a limited range of trace fossils (e.g. plant root casts, termitaria and other invertebrate burrows) may be found within calcrete horizons.

No previously recorded areas or sites of exceptional fossil heritage sensitivity or significance have been identified within the Kenhardt PV project area as a whole, including the transmission line corridor. Due to (1) the inferred scarcity of scientifically important fossil remains within the study areas, as well as (2) the small scale of excavations for electrical pylon footings concerned, the overall impact significance of the construction phase of the proposed transmission line is assessed as very low (before and after mitigation). The potentially fossiliferous sedimentary rock units represented within the study area (e.g. Gordonia aeolian sands, calcrete) are of widespread occurrence and this is also likely to apply to most of the fossils they contain.

Given the low palaeontological sensitivity of the eastern Bushmanland region, as determined from desktop and field-based studies, as well as the inferred very low impact significance of the proposed transmission line for fossil heritage conservation, no specialist palaeontological monitoring or mitigation is recommended, pending the discovery of substantial new fossil remains during construction. During the construction phase all substantial bedrock excavations should be monitored for fossil material by the responsible Environmental Control Officer (ECO). Should significant fossil remains - such as vertebrate bones and teeth, plant-rich fossil lenses, petrified wood or dense fossil burrow assemblages - be exposed during construction, the responsible ECO should safeguard these, preferably *in situ*. The South African Heritage Resources Authority (SAHRA) should be alerted as soon as possible, so that appropriate action can be taken by a professional palaeontologist (commissioned by the Project Applicant). Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist. The palaeontologist concerned with mitigation work will need a valid fossil collection permit from SAHRA and any material

collected would have to be curated in an approved depository (e.g. museum or university collection). Refer to the complete desktop Palaeontological Impact Assessment (included in Appendix D.4 of this BA Report) for a detailed description of the palaeontology in the region.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:



Will any building or structure older than 60 years be affected in any way?

	NO ✓
--	------

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO ✓
--	------

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

Note from the CSIR: In terms of archaeological heritage, the National Heritage Resources Act (Act 25 of 1999) does not require the developer to obtain permits prior to construction. However, any archaeological mitigation work (i.e. test excavations, sampling etc.) that may be required (in the event of archaeological resources of significance being found within the development footprint during construction) would need to be conducted under a permit issued to, and in the name of, the appointed archaeologist. The permit application process allows the heritage authorities to ensure that a suitably qualified and experienced archaeologist undertakes the work and that the proposed excavation/sampling methodology is acceptable.

In terms of palaeontological heritage, where palaeontological mitigation of a development project is required, the palaeontologist concerned with mitigation work would need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection). All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies recently developed by SAHRA.

8. SOCIO-ECONOMIC CHARACTER

Note from the CSIR: A detailed Social Impact Assessment is included in Appendix D.7 of this BA Report, which provides information on the socio-economic environment.

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Note from the CSIR: It must be noted that documented data on the study area, particularly in terms of area specific (i.e. Kenhardt and surrounds) socio-economic data, is very limited. Accordingly, the available data is interpreted in terms of professional opinion and generally accepted trends within the study area and South Africa.

Demographic Profile:

The ZF Mgcau District Municipality (DM) comprises six Local Municipalities namely: Mier; Kai! Garib; Khara Hais; Tsantsabane, !Kheis and Kgatelopele and is classified as a Category C municipality (Figure 5). The ZF Mgcau DM covers an area of approximately 100 000 km² (almost 30 % of the Province) (ZF Mgcau DM IDP, 2014) and according to the 2011 Census has approximately 236 783 inhabitants.

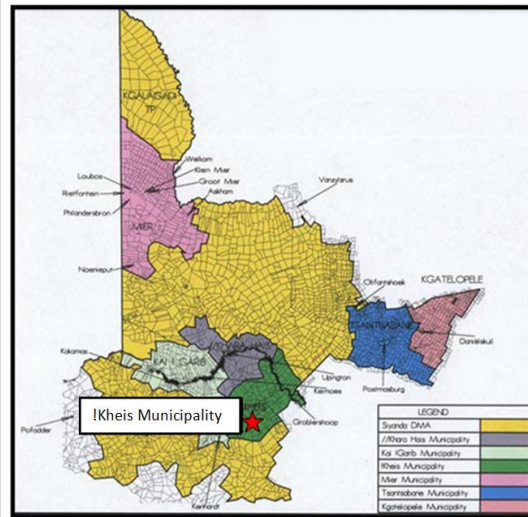


Figure 5: Siyanda DM (now known as ZF Mgcawu DM) boundary and boundaries of local municipalities (Siyanda DM IDP, 2013)

The actual project footprint is located within the !Kheis Local Municipality. However, the closest urban center, Kenhardt, is located in the Kai !Garib Local Municipality.

A total of 16 703 households resides in the Kai !Garib Local Municipality, with 35 % of households being female headed. The total female population dominates the total male population by 8.5 % (Kai !Garib Draft IDP, 2014). Population of the working age demographic (i.e. 15 to 65 years) makes-up 70.5 % of the population, whereas those below 15 years of age comprise 24.4 % of the population, and the above 65 years age group makes-up 5.1 % of the population of the Kai !Garib Local Municipality. Accordingly, the dependency ratio (i.e. the economically active population vs. the non-economically active population: 24.4 % + 5.1 %) is 29.5 % (du Toit, 2015).

The !Kheis Local Municipality consists of a total of 4146 households, with 34.6 % of households being female headed. Population of the working age demographic (i.e. 15 to 65 years) makes-up 70.5 % of the population, whereas those below 15 years of age comprises 35 % of the population, and the above 65 years age group makes-up 5.1 % of the population (Statistics SA, 2015).

This data is suggestive of an area with a relatively high level of vulnerable people groups (i.e. woman and children) and, potentially, a corresponding high level of vulnerable households.

The !Kheis Local Municipality, in which the proposed project is located, has a population of 16 637, according to the 2011 Census (Statistics SA, 2015). As shown in Table 5, the !Kheis Local Municipality constitutes 8 % of the total population of the ZF Mgcawu DM.

Table 5: Population of the Local Municipalities within the ZF Mgcawu DM (Statistics SA, 2011)

Municipality	Census 2001	Census 2011	% of the total population	Difference	Area (Km ²)	Persons / Km ²
Mier	7207	7003	3%	493	22468	0.3
Kai Garib	58 617	65 869	24%	799	26357	2.1
//Khara Hais	77 919	93 494	42%	25249	21780	4.6
!Kheis	16 538	16 637	8%	2797	11107	1.7
Tsatsabane	27 082	35 093	12%	4018	18330	1.5
Kgatelopele	14 743	18 687	9%	6755	2478	8.7
Total	202 106	236 783	100%	35903	102520	2.3

Afrikaans is the dominant language (76.4 %) and Setswana the second largest language (15.8 %) spoken in the ZF Mgcawu DM. Within the !Kheis Local Municipality 94 % of the population speaks Afrikaans and 1.9 % Setswana. The population of the ZF Mgcawu DM is predominantly Coloured (61.2 %), followed by Black Africans (29.8 %) and Whites (8.3 %), with the !Kheis Local Municipality containing a similar racial population group composition (as shown in Figure 6).

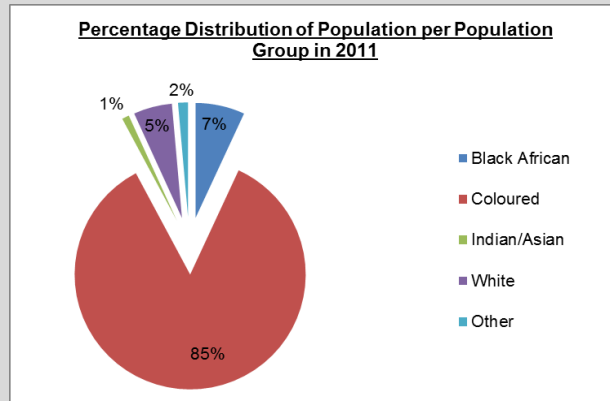


Figure 6: Percentage Distribution of Population per Population Group for the !Kheis Local Municipality in 2011 (Statistics South Africa, 2015).

The age distribution of the ZF Mgcawu DM (shown in Figure 7 below) is represented by a majority of young people, i.e. persons younger than 40 years old (Statistics SA, 2011).

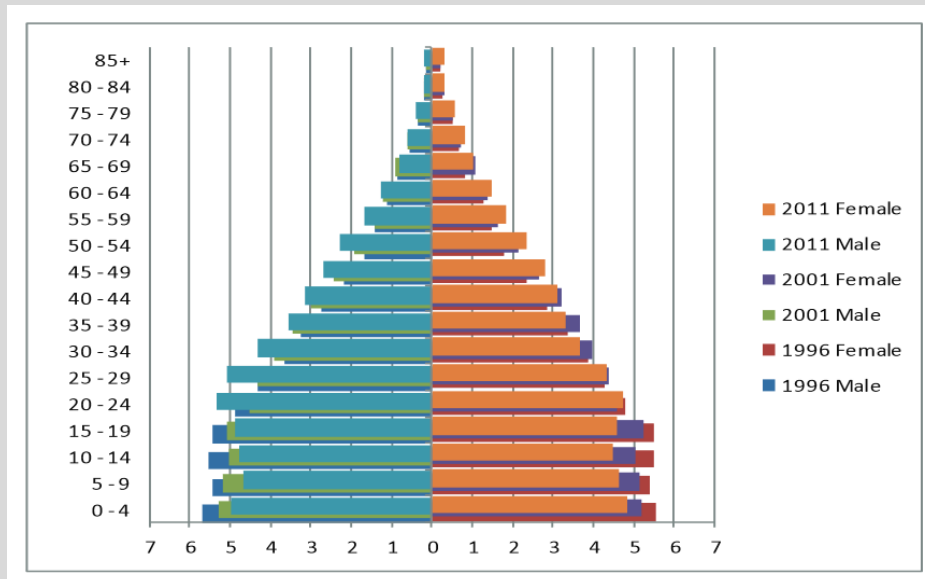


Figure 7: Age Distribution of the ZF Mgcawu DM (Statistics South Africa, 2011).

Level of unemployment:

The 2011 census indicates that 22 % and 34 % of the economically active population (between the ages of 15-34) in the ZF Mgcawu DM and the !Kheis Local Municipality, respectively, are unemployed. The !Kheis Local Municipality has the highest unemployment percentage of all the local municipalities falling within the ZF Mgcawu DM. Also, nearly a third of the population is economically inactive which suggests that individual and household incomes generated in the study area are being

used to support a substantial amount of dependents. This in turn exacerbates the level of household vulnerability in the area.

The unemployment rate for the Kheis Local Municipality in 2001 was 20 % and in 2011 was 28 % (Statistics SA, 2015). The official unemployment rate of 10 % (based on the 2011 Census) has decreased by 6.1 % since the 2001 Census measurement of 16.1 % for the Kai !Garib Local Municipality. The economic sector is dominated by agriculture which provides 51.8 % of jobs, followed by the Community and Government Services sector with 15.9 %. The number of jobs generated by the agricultural sector needs to be interpreted within the context of the Kai !Garib Municipality. The vast majority of the land area occupied by the Kai !Garib Municipality consists of agricultural land, accordingly, it is unsurprising that agriculture would register as the major employer at municipal (i.e. regional) level.

However, the distribution of jobs within urban centers, like Kenhardt, does not necessarily follow this agriculturally dominated pattern. If the prevailing practice of predominantly male-oriented employment within the agricultural sector (specifically in terms of sheep farming) is assumed, the 51.8 % of jobs generated by the agricultural sector could in fact be heavily skewed towards men. This in turn is suggestive of a female dominated population which is heavily dependent on other economic sectors (i.e. non-agricultural sectors) for their income, and could very well imply that socio-economic impacts on urban centers, like Kenhardt, could be of more significance than farm-based impacts.

Economic profile of local municipality:

The Northern Cape Province has the third highest per capita income of all nine provinces; however, income distribution is extremely skewed, with a high percentage of the population living in extreme poverty. Approximately 60 % of ZF Mgcau DM’s population has an income of between R 0 to R 800 per month. Approximately 7.7% of the population of the !Kheis Local Municipality has no income, whereas the majority of the population (i.e. 28.30 %) earns between the R 19 601 – R 38 200 income bracket, as shown in Figure 8 below.

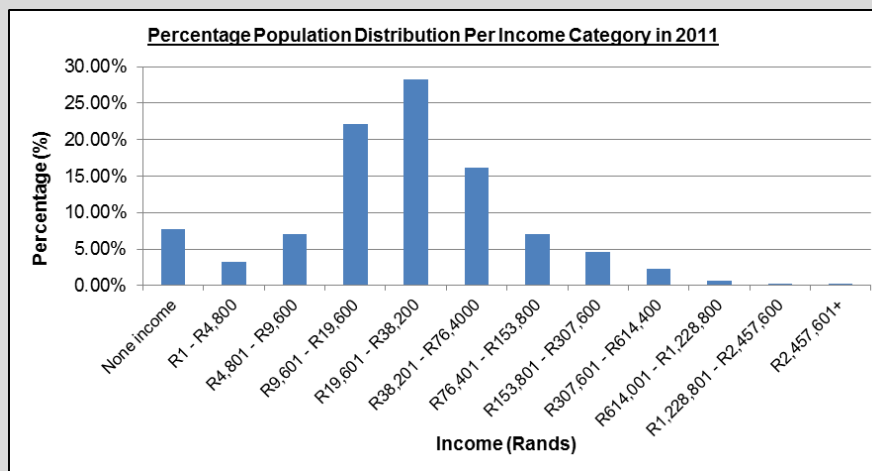


Figure 8: Income Distribution of the !Kheis Local Municipality in 2011 (Statistics South Africa, 2015).

The economy of the ZF Mgcau DM is dominated by mining and agriculture and accounts for up to 30 % of the Northern Cape’s economy. Agriculture is the major industry in the district, contributing to job creation and economic growth. The region is characterised by livestock farming which occurs

mainly on large farms that are managed for extensive production. The majority of these farms are privately owned. According to the !Kheis Local Municipality's IDP, the area is ideal for stock-farming, with the main focus being on sheep farming. The stock-farming industry also provides work to local people.

The ZF Mgcawu DM has a unique landscape that has the potential to contribute to and provide for a range of local and international tourist activities and destinations. The main attractions and destinations in the area are the Augrabies Falls National Park and the Kgalagadi Transfrontier Park. The presence of the Orange River is also a tourism asset providing several tourism opportunities. The natural appearance of the area also supports agricultural tourism. The ZF Mgcawu DM IDP indicates that tourism is one of the most important economic sectors in the Northern Cape as well as within the ZF Mgcawu DM boundaries. Tourism is a growing component of the economy of the Northern Cape and the IDP indicates that, after the agricultural sector, the local tourism industry should become the most important economic activity in the area within the next ten years. This is based on the current growth rate in both development and employment.

Level of education:

In terms of education, only 9.5 % of the total population of ZF Mgcawu DM has no formal schooling, while 13.5 % of the !Kheis Local Municipality's population is unschooled. Based on the 2011 Census, 3.1 % of the population of the !Kheis Local Municipality has no form of education, 55 % has some primary schooling, 7.5 % completed primary school, 5.7 % completed secondary school and 0.5 % has higher education, as shown in Figure 9 below.

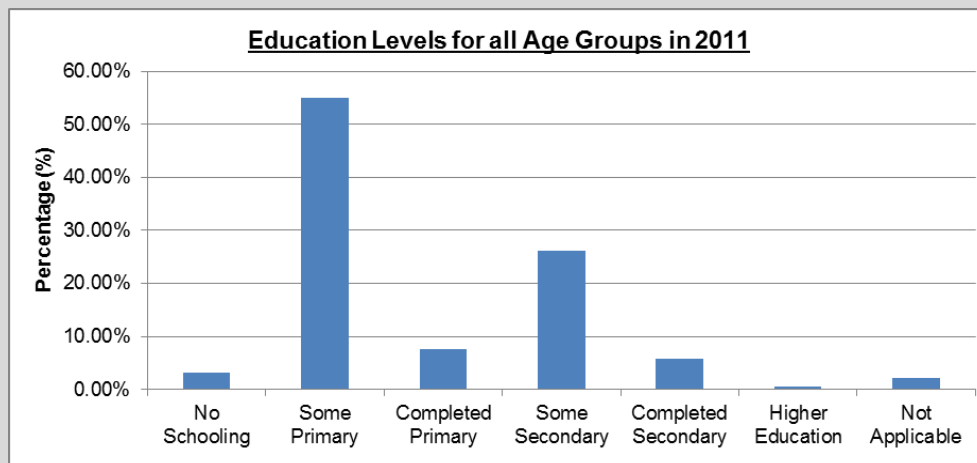


Figure 9: Education Levels of the !Kheis Local Municipality in 2011 (Statistics South Africa, 2015).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

How many new employment opportunities will be created in the development and construction phase of the activity/ies?

± R 150 million to R 250 million
Not Applicable
YES
YES
Approximately 130

What is the expected value of the employment opportunities during the development and construction phase?	± R 10 million
What percentage of this will accrue to previously disadvantaged individuals?	± 60 %
How many permanent new employment opportunities will be created during the operational phase of the activity?	Eskom Operated
What is the expected current value of the employment opportunities during the first 10 years?	Eskom Operated
What percentage of this will accrue to previously disadvantaged individuals?	Eskom Operated

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

Note from the CSIR: As noted in the Ecological Impact Assessment (Appendix D.1 of this BA Report), the proposed corridor does not lie within protected areas, nor within 5 kilometres of a protected area, nor within 10 kilometres of a World Heritage site and does not form part of a Critical Biodiversity Area. The various regulations within NEMA and the Protected Areas Act are not applicable to this site. It is also noted that the corridor does not fall within any expansion area in terms of a conservation strategy for the Northern Cape.

Refer to the Ecological Impact Assessment in Appendix D.1 of this BA Report for a complete description of the biodiversity occurring on the site and associated potential impacts of the proposed project activities.

- a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA) ✓	No Natural Area Remaining (NNR)	

Note from the CSIR: Refer to the note above and the Ecological Impact Assessment in Appendix D.1 of this BA Report for a complete description of the biodiversity occurring on the site and associated potential impacts of the proposed project activities.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	80%	Much of the area aligns with the identified veld type of Bushmanland Arid Grassland. Although subject to extensive and significant grazing, species composition is in line with such veld type.
Near Natural (includes areas with low to moderate level of alien invasive plants)	17%	Some portions of the surrounding area have been subject to alteration through grazing, the establishment of camps, boreholes and other agricultural activities.
Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	3%	A minor portion of the land in and around the subject site has been transformed to accommodate infrastructure such as roads and railway lines, as well as substations and roadways.

Note from the CSIR: Refer to the note above and the Ecological Impact Assessment in Appendix D.1 of this BA Report for a complete description of the biodiversity occurring on the site and associated potential impacts of the proposed project activities.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems								
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline			
	Endangered									
	Vulnerable									
	Least Threatened ✓	YES ✓	NO	UNSURE	YES	NO ✓	YES	NO ✓		

Note from the CSIR: Refer to the note above and the Ecological Impact Assessment in Appendix D.1 of this BA Report for a complete description of the biodiversity occurring on the site and associated potential impacts of the proposed project activities. Also refer to Section B (5) of this BA Report for a description of the aquatic systems on site.

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Refer to the note above and the Ecological Impact Assessment in Appendix D.1 of this BA Report for a complete description of the biodiversity occurring on the site and associated potential impacts of the proposed project activities. Also refer to Section B (5) of this BA Report for a description of the aquatic systems on site.

The site is considered to fall within a xeric environment (dry or semi desert) and as such, is subject to significant seasonal to daily fluctuations in meteorological and physical factors which influence the prevailing ecology. In addition to the above, anthropogenic interventions associated with both the presence of livestock on the land in question, as well as indirect influences arising from the establishment of infrastructure (roads and rail) have served to alter other biophysical factors, including surface hydrology and the nature and composition of habitat.

The transmission line corridor falls within the Bushmanland Arid Grassland Veld type, which is typically dominated by *Aristida* spp grasses. The proposed powerline route will traverse one existing camp, which at the time contained livestock. The dominant vegetation form is a *Rhigozum* – *Aristida* association with some quartz exposures.

Two consocieties of the quiver tree, *Aloe dichotoma* are noted, these lying to the west and to the east of the proposed transmission line corridor (Figure 10). In addition, *A claviflora* are also evident in association with *A dichotoma* (Figure 11). These consocieties have been identified in the planning of the corridor. The routing of the transmission line must avoid the *Aloe* consocieties identified. This may be achieved, preferably by locating the final route proximal to the existing railway line/roadway, or less favourably by spanning over the associates. Mitigation and management measures proposed are that the actual powerline lie either to the south or north of the identified associates and where applicable, towers be suitably positioned at points distal from these communities. The relocation of these specimens is possible; however this method should be avoided. Towers should be spaced adequately to avoid the necessity for relocation. A 60 m buffer should be implemented around the *Aloe* consocieties.

The Northern Cape Conservation Act under its pertinent regulation governs the disturbance of species listed in Tables 1 and 2 shown in the Ecological Impact Assessment in Appendix D.1 of this BA Report, or possibly other species not yet identified on route. A permit from the Provincial Department of Environment and Nature Conservation will be required in order to disturb or translocate such species. Species that would require such permitting include *Aloe dichotoma*, which has been identified within the proposed corridor.

Common to the dendritic and minor surface drainage features that dissect the line route are more verdant associations of *Rhigozum trichotomum*, *Aristida ascensionis* and *A congesta*. *Stipagrostis ciliata* is also common to these features. A list of species identified across the proposed transmission line route is presented in the Ecological Impact Assessment in Appendix D.1 of this BA Report.



Figure 10: Image indicating *A dichotoma* in foreground and prevailing habitat to the west of the proposed powerline route/corridor.



Figure 11: Image indicating *Aloe concocies* that lies to the east of the proposed powerline route/corridor. *A claviflora* in foreground.

The drainage features are typical of xeric environments, indicated by only geomorphological determinants, derived during high rainfall and flood conditions. For long periods of time, often extending over several years, no flow is evident within these systems. Figure 12 below, indicates the general nature of drainage features associated with the Wolfkopseloop system.



Figure 12: Image indicating the nature of drainage lines (primarily more verdant vegetation) and low depressions.

SECTION C: PUBLIC PARTICIPATION

Note from the CSIR: This section provides an overview of the tasks undertaken during the BA Phase, with a particular emphasis on providing a clear record of the PPP followed. As discussed in Section A (1) of this BA Report, three Solar PV projects are being proposed by the Applicant which requires a Scoping and EIA Process. These projects are referred to as Kenhardt PV 1, Kenhardt PV 2, and Kenhardt PV 3. Separate EIA Processes are being undertaken for the construction of the proposed PV facilities. The proposed Solar PV facilities also require transmission lines and associated electrical infrastructure to facilitate the connection to the Eskom Nieuwehoop Substation (which require separate BA Processes). These separate BA Projects are referred to as Kenhardt PV 1 – Transmission Line (i.e. this BA Report), Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line.

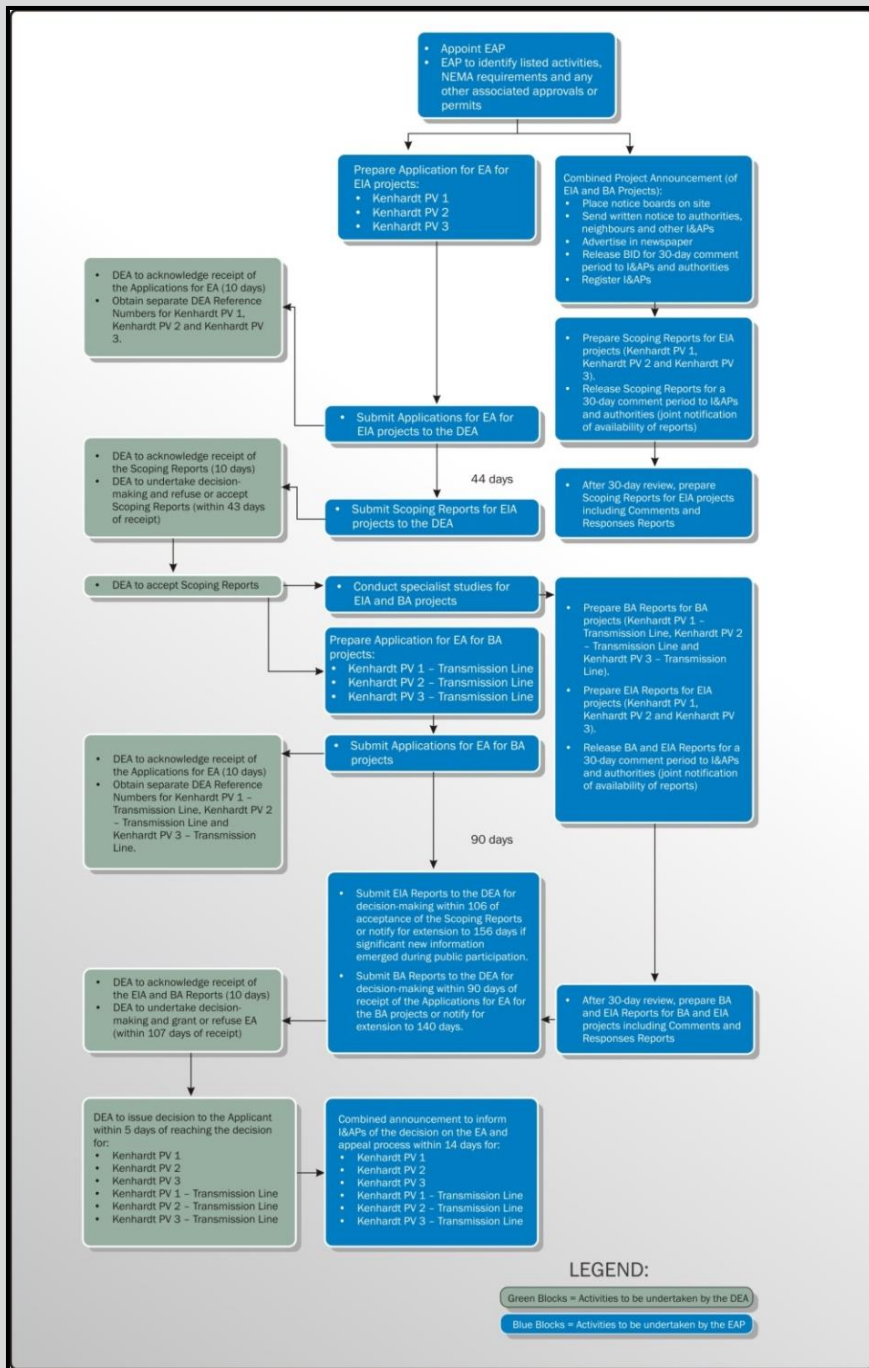


Figure 13: Joint PPP proposed for the Kenhardt PV EIA and BA Projects

As noted above, an integrated PPP is being undertaken for the Scoping and EIA Projects (i.e. Kenhardt PV 1, PV 2 and PV 3) and the BA Projects (i.e. Kenhardt PV 1 – Transmission Line (this BA Report), Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line). This integrated approach was discussed and approved by the DEA at a pre-application meeting, which was held on 17 September 2015. Appendix J.2 of this BA Report includes a copy of the agenda and notes of the meeting, as well as the presentation given by the CSIR at the pre-application meeting.

Integrated PPP for the proposed projects will entail that all public participation documents (such as newspaper advertisements, site notices, notification letters etc.) will serve to notify the public and organs of state of the joint availability of all reports for the abovementioned projects and will provide I&APs with an opportunity to comment on the reports. This process is outlined in Figure 13. This approach is proposed due to the close proximity of the sites (i.e. the proposed projects will take place within the same geographical area) and that proposed project will entail the same activity (i.e. generation of electricity with the use of solar PV panels and transmission of electricity via transmission lines).

The BA and EIA Processes commenced in July 2015, during which the proposed projects were announced in the public domain via the release of the Background Information Document (BID). Following the release of the BID, and the closure of the associated 30-day comment period, the Applications for EA for the Scoping and EIA Projects (i.e. Kenhardt PV 1, PV 2 and PV 3) were submitted to the DEA and the Scoping Reports were released to I&APs and the authorities for comment (as part of the EIA Phase). The next phase entailed the completion of the finalised Scoping Reports in November 2015 and the submission to the DEA (as part of the EIA Phase). The finalised Scoping Reports were accepted by the DEA on 8 December 2015, which marked the end of the Scoping Phase, after which the EIA Process moved into the impact assessment and reporting phase. The BA impact assessment and reporting phase also commenced at this point to allow for a combined process.

The current phase in the process includes the concurrent release of the EIA Reports (for the Kenhardt PV 1, PV 2 and PV 3 EIA Projects) and the BA Reports (for the Kenhardt PV 1 – Transmission Line (this BA Report), Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line BA Projects) to I&APs for a 30-day comment period.

1. ADVERTISEMENT AND NOTICE

Publication name	The Gemsbok	
Date published	29 July 2015	
Site notice position	Latitude	Longitude
	Refer to Table 6 below	Refer to Table 6 below
Date placed	3 August 2015 and 10 September 2015	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

Note from the CSIR: Appendix E.1 of this BA Report includes proof of the placement of the newspaper advertisement and site notice board.

Newspaper Advertisement:

In order to notify and inform the public of the proposed project and invite I&APs to register on the project database, the BA Processes (combined with the EIA Processes) was advertised in one local newspaper (i.e. The Gemsbok), as indicated above. A copy of the advertisement placed is contained in Appendix E.1 of this BA Report. The newspaper advertisement also provided the details of the project website (i.e. <http://www.csir.co.za/eia/ScatecSolarPV/>), where information available on the project could be downloaded from.

It is important to note that The Gemsbok is a weekly newspaper and is distributed on Wednesdays and dated for the Fridays. The Gemsbok is therefore distributed from Wednesday onwards and was released on 29 July 2015 for the proposed projects. The Gemsbok is distributed in Upington, Aggenys, Alexanderbaai, Augrabies, Boesmanland, Brandvlei, Calvinia, Garies, Groblershoop, Grootdrink, Kakamas, Kamieskroon, Kanoneiland, Kathu, Keimoes, Kenhardt, Kuruman, Lambersdrift, Leerkrans, Marydale, Nababeep, Okiep, Olifantshoek, Pofadder, Port Nolloth, Postmasburg, Prieska, Sishen and Springbok.

A newspaper advertisement will also be placed in The Gemsbok to notify I&APs of the release of the BA Reports (and EIA Reports) for comment. A copy of this advertisement will be placed in the finalised BA Reports, which will be submitted to the DEA for decision-making.

Site Notice Board:

Regulation 41 (2) (a) of the 2014 EIA Regulations requires that a notice board providing information on the project and EIA Process is fixed at a place that is conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the application will be undertaken or any alternative site. To this end, an 841 mm x 594 mm notice board was placed at the locations shown in Table 6 on 3 August 2015 and 10 September 2015. Overall, four notice boards were placed for the proposed projects. A copy of the notice boards and proof of placement thereof is included in Appendix E.1 of this BA Report.

Table 6: Site Notice Boards Placed for the Commencement of the BA, Scoping and EIA Processes (Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line (i.e. this project), Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line)

Location	Co-ordinates	Language
Entrance to the Transnet Service Road, which serves as one of the access routes to the (preferred and alternative) project sites.	29° 19' 47.79" S and 21° 9' 15.53" E	Afrikaans
Entrance to the alternative access road (unnamed farm road), which serves as one of the access routes to the (preferred and alternative) project sites.	29°16' 21.13" S and 21°19' 15.17" E	English
Kenhardt Petrol Station	29° 20' 52.23" S and 21° 9' 7.97" E	Afrikaans
Kai !Garib Municipality Offices in Kenhardt	29° 20' 56.01" S and 21° 9' 7.69" E	English

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 982.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 982.

Note from the CSIR: Refer to the section below which provides a detailed outline of the measures taken to include all potential I&APs during the BA Process (as required by Regulation 41(2)(e), 41(6) and 41(2)(b) of GN R982, in terms of the 2014 EIA Regulations). Appendix E.2 contains copies of registered mailing receipts (as proof of correspondence) and Appendix E.5 contains a detailed copy of the I&AP database which indicates interaction with I&APs, key stakeholders and all I&APs registered on the project database during the BA Process.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 982.

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Note from the CSIR: Refer to Appendix E.5 for the complete I&AP database.	Note from the CSIR: Refer to Appendix E.5 for the complete I&AP database.	Note from the CSIR: Refer to Appendix E.5 for the complete I&AP database.

Note from the CSIR: Appendix E.5 includes a copy of the I&AP Database in the format indicated in the table above.

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E.2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

Note from the CSIR:

Proof of registered mailing for Letter 1 to I&APs, as well as emails sent during the Project Initiation Phase (i.e. release of the BID) are included in Appendix E.2 of this BA Report.

In terms of Regulation 41(2)(e) of GN R982, at this stage of the assessment process no persons have been identified as desiring but unable to participate in the process. Therefore, no alternative methods have been agreed to by the competent authority.

In line with Regulation 41(2)(b) of GN R982 and prior to the commencement of the BA Process (and advertising the EA Process in the local print media), an initial database of I&APs (including key stakeholders and organs of state) was developed for the combined BA and EIA Processes. This was supplemented with input from the EIA Project Managers, CSIR, and the Project Applicant, Scatec Solar. A total of 54 I&APs were included on the project database in this manner. Appendix E.5 of this BA Report contains the current I&AP database, which has been updated to include requests to register interest in the project, and comments received. At the time of compiling this BA Report for release to I&APs and stakeholders, the database stands at **80 I&APs**.

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs will be ongoing for the duration of the study. Stakeholders from a variety of sectors, geographical locations and/or interest groups can be expected to show an interest in the proposed project, for example:

- Provincial and Local Government Departments;
- Local interest groups, for example, Councillors and Rate Payers associations;
- Surrounding landowners;
- Farmer Organisations;
- Environmental Groups and NGOs; and
- Grassroots communities and structures.

In terms of the electronic database, I&AP details are being captured and automatically updated as and when information is distributed to or received from I&APs. This ongoing record of communication is an important component of the PPP. It must be noted that while not required by the regulations, those I&APs proactively identified at the outset of the BA Process will remain on the project database throughout the process and will be kept informed of all opportunities to comment and will only be removed from the database by request.

As noted above, the proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gembok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. Van Niekerk Gesintrust is the owner of the land on which the proposed project will take place (i.e. the remaining extent of Onder Rugzeer Farm 168 and the

Remainder of Boven Rugzeer 169). The proposed transmission line will connect to the Eskom Nieuwehoop Substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, and this falls within a servitude created by Eskom. Eskom have been informed of the proposed project. In addition, the owner of the remaining extent of Portion 3 of Gemsbok Bult Farm 120 is Kamkuip Boerdery (Pty) Ltd, whilst the owner of the remaining extent of Portion 4 of Onder Rugzeer Farm 168 is Transnet Freight Rail. Van Niekerk Gesintrust, Eskom, Kamkuip Boerdery (Pty) Ltd and Transnet Freight Rail have been informed of the proposed project and they are included on the database of I&APs (as included in Appendix E.5). Therefore, written notice has been provided to the occupiers of the site (in accordance with Regulation 41 (2) (b) (i) of the 2014 EIA Regulations) is not applicable.

As noted above, the initial database included 54 I&APs, including affected organs of state and authorities. Letters regarding the combined BA and EIA Processes were mailed to all pre-identified key stakeholders on the database via Letter 1. This letter, dated 30 July 2015, provided I&APs with a 30-day period to register their interest on the project database. The registration period concluded on 31 August 2015. Appendix E.2 of this report contains copies of correspondence and information distributed to I&APs during the Project Initiation Phase (i.e. for the release of the BID). It is important to note that the correspondence sent to I&APs (i.e. Letter 2 and emails) for the release of the Scoping Reports is included as appendices to the separate EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 projects. This BA Report only includes correspondence sent to I&APs for the Project Initiation Phase and the combined release of the BA and EIA Reports (which will be included in the finalised BA Reports for submission to the DEA for decision-making in terms of Regulation 20 (1) of the 2014 EIA Regulations). Letter 1 to I&APs included the BID and a Comment and Registration Form. The purpose of the BID was to inform the public of the proposed projects, provide information on the project description, the BA (and EIA) Processes and to provide an overview of the opportunities and mechanisms for public participation. The letter was sent to all I&APs and organs of state (where postal and physical addresses were available) on the pre-identified database via registered mail. Appendix E.2 of this BA Report contains copies of registered mailing receipts (as proof of correspondence). Letter 1 to I&APs, the BID and Comment and Registration Form were also emailed to all I&APs and organs of state (where email addresses were available) on the pre-identified database on 29 July 2015. A copy of this email and delivery thereof is included in Appendix E.2 of this BA Report. In line with the 2014 EIA Regulations, copies of this correspondence were also placed on the project website (i.e. <http://www.csir.co.za/eia/ScatecSolarPV/>).

In terms of Regulation 41(6) of GN R982 the section below outlines the PPP for this assessment in order to provide potential I&APs access to information on the project and the opportunity to comment at the various stages of the assessment process.

Project Initiation Phase - Identification and Notification to I&APs and Organs of State

The following summarises the PPP undertaken up to the release of the BA Report for I&AP Review:

- **Database Development and Maintenance:** In line with Regulation 41(2)(b) of GN R982, prior to the commencement of the BA Process and placing the newspaper advertisements noted in Section C (1) above, an initial database of potential I&APs was developed for the BA Process (as noted above). A total of 54 potential I&APs were proactively identified and included on the project database. As noted above, while not required by the regulations, all 54 I&APs (and authorities and organs of state) proactively identified prior to advertising the BA Process will remain on the database for the duration of the assessment process. As comments are received or requests to register interest are received from I&APs, the database is amended to include these I&APs as registered I&APs. At the time of release of this BA Report, **80 I&APs** were registered on the project database. A copy of the updated I&AP database is included in Appendix E.5 of this BA Report.
- **Letter 1 to I&APs:** As noted above, all 54 I&APs were notified via Letter 1 (dated 30 July 2015) of the Project Initiation Phase, which included a BID and a Comment and Registration Form. Letter 1 to I&APs, the BID and Comment and Registration Form were mailed (via registered mail) and emailed to all I&APs and organs of state on the database (where postal, physical and email addresses were available) on 29 July 2015. A copy of this correspondence and proof of delivery is included in Appendix E.2 of this BA Report.

- **Advertisements to Register Interest:** An advertisement was placed in a local newspaper (The Gemsbok) on 29 July 2015, advertising the BA commencement and opportunity to comment. A copy of this advertisement is included in Appendix E.1 of this BA Report.
- **Site Notice Board:** As noted in Section C (1) above, four notice boards were placed for the proposed projects on 3 August 2015 and 10 September 2015. A copy of the notice boards and proof of placement thereof is included in Appendix E.1 of this BA Report.
- **30 Day Comment Period:** As noted above, during the Project Initiation Phase, the potential I&APs, including authorities and organs of state, were notified via Letter 1, of the 30 day comment and registration period within which to submit comments on the proposed project and/or register on the I&AP database, which extended from 30 July 2015 to 31 August 2015.
- **Comments Received:** Copies all comments received during the Project Initiation Phase are included in Appendix E.6 of this BA Report and in the Comments and Response Report in Appendix E.3 of this BA Report.
- **Access to Information** - All project information has been made available on an easily accessible website: <http://www.csir.co.za/eia/ScatecSolarPV/>

BA Report Phase - Review of the BA Report (Current Stage)

As noted above, the BA Reports for each transmission line and electrical infrastructure project will be released to I&APs for review at the same time as the EIA Reports. The section below summarises the PPP for the review of the BA Report.

- **Database Maintenance:** As noted above, at the time of release of this BA Report, **80 I&APs** were registered on the project database. A copy of the updated I&AP database is included in Appendix E.5 of this BA Report.
- **Letter 3 to I&APs:** Written notification of the availability of the BA Report will be sent to all I&APs and organs of state registered on the project database via Letter 3, which will be sent via registered mail and email (where postal, physical and email addresses are available). The letter will include notification of the 30-day comment period for the BA (and EIA) Reports and it will include an Executive Summary of the BA (and EIA), and a Comment and Registration Form. Proof of registered mailing and a copy of the emails sent will be included Appendix E.2 of the finalised BA Report (which will be submitted to the DEA for decision-making). It is important to note that Letter 2 was sent to I&APs in September 2015 to notify I&APs of the release of the Scoping Reports for the Kenhardt PV 1, PV 2 and PV 3 projects. This correspondence is included in the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 projects.
- **30-day Comment Period:** As noted above, registered I&APs, including authorities and organs of state, will be notified via Letter 3, of the 30-day comment period for the BA Report.
- **Advertisement for the Release of the BA Reports:** An advertisement will be placed in a local newspaper (The Gemsbok), to notify potential I&APs of the availability of the BA (EIA Reports). A copy of this advertisement will be included in Appendix E.1 of the finalised BA Report (which will be submitted to the DEA for decision-making).
- **Availability of Information:** The BA Reports will be made available and distributed to ensure access to information on the project and to communicate the outcome of specialist studies. Copies of the reports will be placed at the Kenhardt and Groblershoop local libraries for I&APs to access for viewing. Key authorities will be provided with either a hard copy and/or CD of the BA Reports via courier. The BA (and EIA) Reports will be uploaded to the project website (i.e. <http://www.csir.co.za/eia/ScatecSolarPV/>) and telephonic consultations will be held with key I&AP and organs of state groups, as necessary.
- **Meetings Held:** A public meeting could possibly be held during the review of the BA (and EIA) Reports, if warranted and if there is substantial public interest during the separate Scoping and EIA Phase (for the Kenhardt PV 1, PV 2 and PV 3 projects). However, due to the limited public input and/or interest in the proposed project, this was not deemed necessary. Telephonic consultations with key I&APs will take place, upon request. Notes of these consultations will be included in Appendix E.6 of the finalised BA Report (as applicable).

- **Comments Received:** A key component of the BA Process is documenting and responding to the comments received from I&APs and the authorities. Copies of all comments received during the review of the BA Report will be included in Appendix E.6 of the finalised BA Report and in the Comments and Response Report for inclusion in the finalised BA Report that will be submitted to the DEA in terms of Regulation 19 (1) (a) for decision-making. The Comments and Responses Report will indicate the nature of the comment, as well as when and who raised the comment. The comments received will be considered by the BA team and appropriate responses provided by the relevant member of the team and/or specialist. The response provided will indicate how the comment received has been considered in the BA Reports for submission to the DEA and in the project design or EMPRs.

Compilation of finalised BA Report for Submission to the DEA

- Following the 30-day commenting period of the BA Report and incorporation of the comments received into the reports, the BA Report (i.e. hard copies and electronic copies) will be submitted to the DEA in line with Regulation 19 (1) (a) of the 2014 EIA Regulations. In line with best practice, I&APs on the project database will be notified via email (where email addresses are available) of the submission of the BA Reports to the DEA for decision-making.
- The BA Reports that are submitted for decision-making will also include proof of the PPP that was undertaken to inform organs of state and I&APs of the availability of the BA Reports for the 30 day review (as explained above). To ensure ongoing access to information, copies of the BA Reports that are submitted for decision-making and the Comments and Response Report (detailing comments received during the BA Phase and responses thereto) will be placed on the project website (i.e. <http://www.csir.co.za/eia/ScatecSolarPV/>).
- The DEA will have 107 days (from receipt of the BA Reports) to either grant or refuse EA (in line with Regulation 20 (1) of the 2014 EIA Regulations).

Environmental Decision-Making

- **Environmental Decision-Making and Appeal Period** - Subsequent to the decision-making phase, if an EA is granted by the DEA for the proposed projects, all registered I&APs and stakeholders on the project database will receive notification of the issuing of the EA and the appeal period. The 2014 EIA Regulations (i.e. Regulation 4 (1)) states that after the Competent Authority has reached a decision, it must inform the Applicant of the decision, in writing, within 5 days of such decision. Regulation 4 (2) of the 2014 EIA Regulations stipulates that I&APs need to be informed of the EA and associated appeal period within 14 days of the date of the decision. All registered I&APs will be informed of the outcome of the EA and the appeal procedure and its respective timelines. The distribution of the EA (should such authorisation be granted by the DEA) (as well as the notification of the appeal period), will include the placement of one advertisement in The Gemsbok local newspaper to notify I&APs of the EA and associated appeal process. A letter (i.e. Letter 4) will also be sent via registered mail and email to all registered I&APs and organs of state (where postal, physical and email addresses are available) on the database. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EA. A copy of the EA will be uploaded to the project website (i.e. <http://www.csir.co.za/eia/ScatecSolarPV/>). In addition, all I&APs on the project database will be notified of the outcome of the appeal period in writing.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Note from the CSIR: Issues raised by I&APs prior to the release of the BA Report are noted below. It is important to note that comments were raised by the DEA specifically in relation to the Scoping Reports (for the Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 EIA Projects) that were released for a 30-day review in September 2015. These comments are included as an appendix to the separate EIA Reports for the Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 EIA Projects. They have been included in Appendix E.3 of this BA Report for the purpose of completeness.

Summary of main issues raised by I&APs	Summary of response from EAP
<p>EIA and BA Process and PPP:</p>	<ul style="list-style-type: none"> ▪ These comments relate to the requests to register interest, submission of completed comment and registration forms, and requests for copies of reports. All these comments and the responses thereto have been provided in Appendix E.3 of this BA Report.
<p>Project Details:</p> <ul style="list-style-type: none"> ▪ Impact on existing infrastructure, such as the Transnet Freight Rail Sishen-Saldanha Railway Line and train drivers (in terms of glare), National Roads and the SKA Project. 	<ul style="list-style-type: none"> ▪ The aspect of glare from the solar panels has been addressed separately in Chapter 2 of the EIA Reports for the Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 projects. The impact of glare is not directly related to the proposed Transmission Line project. ▪ As noted in above, existing roads (such as a private Transnet Service Road or an unnamed farm road) will be used to gain access to the site. The Transnet Service Road can be accessed from the R27 and the farm road can be accessed from the R383 Regional Road also via the R27 National Road. Discussions have been initiated and held between Transnet Freight Rail and the Project Applicant to discuss the requirements for use of the Transnet Service Road. Dust may be generated during the construction phase, however it is expected to be of a short-term duration and insignificant. However, mitigation measures relating to potential dust impacts have been included in the EMPr (Appendix G of the BA Report), as applicable. ▪ As noted in Section A (1), the proposed transmission line will extend between the proposed Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. The transmission line and electrical infrastructure will be constructed within an electrical corridor. The Project Applicant has initiated discussions with Transnet Freight Rail to note their requirements for the crossing of the railway line by the proposed transmission line. These requirements will be incorporated into the detailed engineering, as required. ▪ Recommendations and mitigation measures to reduce the risk of accidents as a result of the nearby ore railway line have been generally included in the EMPr (Appendix G of the BA Report). Transnet will be provided with an opportunity to comment on the BA Reports and EMPr during the BA Phase which will be considered (as applicable) prior to submission to the Competent Authority, the DEA, for decision-making. ▪ Comment noted. Scatec Solar has complied with the requirements from the SKA Project Office. A

Summary of main issues raised by I&APs	Summary of response from EAP
	<p>technical Electro Magnetic Interference (EMI) and Radio Frequency Interference (RFI) study has been commissioned by Scatec Solar, as requested by the SKA Project Office. As noted in Section A (1) of this BA Report, Scatec Solar appointed MESA Solutions (PTY) Ltd to conduct the RFI and EMI studies to determine the level of mitigation shielding required in order to comply with the SKA Regulations. The technical report is included in Appendix D.9 of this BA Report. This technical report aims to inform the potential impact that the proposed project will have on the SKA project and to determine suitable mitigation measures to manage the risk (if any) posed to the SKA project by the development of this project.</p> <ul style="list-style-type: none"> ▪ Based on the conceptual design, it is not anticipated that any of the proposed infrastructure will be located within 60 m of the national road, or crossing the national road.
<p>Project Details:</p> <ul style="list-style-type: none"> ▪ Impact on Archaeology and Palaeontology. 	<ul style="list-style-type: none"> ▪ As noted in Section A (1) of this BA Report, a Heritage Impact Assessment (Archaeology and Cultural Landscape) has been undertaken as part of the BA Process (i.e. prior to the commencement of construction of the Kenhardt PV 1 – Transmission Line project (subject to the issuing of an EA)). This specialist assessment was conducted by Dr. Jayson Orton of ASHA Consulting (PTY) Ltd, who is a registered member of the Association of Southern African Professional Archaeologists. The Heritage Impact Assessment is included in Appendix D.3 of this BA Report, which is currently being made available to registered I&APs and the public for a 30-day comment period. <p>The Heritage Impact Assessment (Archaeology and Cultural Landscape) has identified and assessed the significance of archaeological sites that are located within the proposed project area. The specialist assessment also indicates the relevant permit requirements, including if a permit is required from the Ngwao-Boswa Jwa Kapa Bokone (i.e. the Northern Cape Provincial Heritage Resources Authority) for the potential disturbance of any heritage features on site. The specialist study provides recommendations and suggests appropriate mitigation measures (if required), for the recording, sampling and dating of any archaeological sites that could potentially be destroyed as a result of the proposed project.</p>

Summary of main issues raised by I&APs	Summary of response from EAP
	<ul style="list-style-type: none"> As further noted in Section B of this report, based on the low palaeontological sensitivity of the area, a Palaeontological Heritage Desktop Assessment has been undertaken as part of the BA Phase (i.e. prior to the commencement of construction of the Kenhardt PV 1 - Transmission Line project (subject to the issuing of an EA)). This specialist assessment was conducted by Dr. John Almond of Natura Viva cc. The Desktop Palaeontological Impact Assessment assesses the significance of potential impacts of the proposed project on palaeontological resources. The Palaeontological Heritage Desktop Assessment includes recommendations for inclusion in the EMPr (Appendix G of the BA Report). The desktop assessment is included in Appendix D.3 of this BA Report, which also is currently being made available to registered I&APs and the public for a 30-day comment period, as well as uploaded to the SAHRIS.
Impacts on Terrestrial and Aquatic Ecology	<ul style="list-style-type: none"> The comments raised regarding impacts on terrestrial and aquatic ecology, including avifauna and protected trees as a result of the proposed project have been addressed in the Impact Assessment Section (i.e. Section D) of this BA Report, as well as the Ecological Impact Assessment (in Appendix D.1 of this BA Report). In addition, recommendations to mitigate potential impacts on terrestrial and aquatic ecology have been included in the EMPr in Appendix G of the BA Report.

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

Note from the CSIR: The Comments and Response Report is attached as Appendix E.3 of this BA Report.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
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Note from the CSIR: Refer to the explanation below.

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

Note from the CSIR: The proof of registered mailing and email delivery, included in Appendix E.2 of this BA Report does not distinguish between potential I&APs, Authorities and organs of state identified as key stakeholders. However, the current database of potential I&APs, including Authorities and organs of state, is included in Appendix E.5. Authorities and organs of state received written notification of the proposed activities via registered mail together with all potential I&APs identified for this assessment. This can be cross referenced to the proof of registered mail contained in Appendix E.2 of this BA Report.

The I&AP database included in Appendix E.5 of this BA Report has been divided into Organs of State, Stakeholders (NGOs and Conservation Organisations), Landowners, Adjacent Property Owners and Additional Registered I&APs (based on requests to register). As this is a renewable energy project, Eskom and the SKA Project Office are included on the database of Organs of State.

Notification of the Project Initiation Phase:

All Authorities and organs of state were notified via Letter 1 (dated 30 July 2015) of the 30 day period within which to submit comments on the proposed project, which extended from 30 July 2015 to 31 August 2015.

Notification of the BA Report Release Phase:

All Authorities and organs of state on the project database will be notified of the 30-day comment period on the BA Reports, via Letter 3. Key authorities will be provided with either a hard copy and/or CD of the BA Reports via courier. Proof of courier waybills will be included in Appendix E.2 of the finalised BA Report.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

Note from the CSIR: No deviations from the PPP have been requested.

A list of registered I&APs must be included as appendix E5.

Note from the CSIR: Appendix E.5 includes a copy of the I&AP database for this project. At the time of release of this BA Report 80 I&APs are registered on the project database.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

Note from the CSIR: As noted above, telephonic consultations with key I&APs will take place, upon request. All correspondence and comments received from I&APs prior to the release of this BA Report are included in Appendix E.6 of this report. Comments received from I&APs during the 30-day review of the BA Report and notes of telephonic consultations will be included in Appendix E.6 of the finalised BA Report (as applicable).

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Notes from the CSIR:

- In this section, the impact status (i.e. neutral, negative or positive) is provided in brackets adjacent to the significance ratings.
- The significance ratings provided in this section (i.e. Section D (1)) are provided without the implementation of the recommended mitigation measures.
- Site, layout, technology and other alternatives for this proposed BA project are not applicable. Site alternatives are not applicable as the proposed project location is completely dependent on the location of the proposed 75 MW Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation. However, the no-go alternative has been described.

APPROACH TO THE BA

1. METHODOLOGY OF IMPACT ASSESSMENT

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed. The process of identification and assessment of impacts includes:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

The impact assessment methodology has been aligned with the requirements for BA Reports as stipulated in Appendix 1 (3) (j) of the 2014 EIA Regulations, which states the following:

“A BA Report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include an assessment of each identified potentially significant impact and risk, including –

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be mitigated”.

As per the DEAT Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the predication and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. The cumulative impacts have been assessed by identifying other solar energy project proposals and other applicable projects, such as construction and upgrade of electricity generation, and transmission or distribution facilities in the local area (i.e. within 20 km of the proposed Kenhardt PV 1 – Transmission Line project) that have been approved (i.e. positive EA has been issued) or is currently underway. The proposed and existing electrical and solar developments that have been considered as part of the BA Phase are provided in Table 7 below. The cumulative impacts will be assessed in terms of each proposed Kenhardt PV project as well. Cumulative effects associated with these similar types of projects include inter alia: traffic generation; avifaunal collisions and mortalities; habitat destruction and fragmentation; loss of agricultural land; removal of vegetation; increase in stormwater run-off and erosion; increase in water requirements; job creation; increased interference to the SKA project; social upliftment; and upgrade of infrastructure and contribution of renewable energy into the National Grid.

Table 7: Projects considered as part of the cumulative impact assessment that occur within 20 km of the site

Project Name	Applicant	DEA Reference Number	Brief project description	Phase
Nieuwehoop 400/50 kV Substation loop in and loop out lines, Northern Cape Province.	Eskom Holdings SOC Limited	DEA Reference Number: 12/12/20/1166	Construction of the 400/50kv Nieuwehoop substation between the Garona and Aries substations, and 3km Loop In and Loop Out Lines.	The project received a positive EA on 21 February 2011. Site preparation for the construction of the Nieuwehoop Substation has commenced.
EIA, WULA and EMPr for the proposed Solar CSP Integration Project: Project 1 – Solar substation, 2 X 400 kV power lines from Aries to the solar substation and 400 kV power line from Nieuwehoop to the Solar substation.	Eskom Holdings SOC Limited	DEA Reference Number: 12/12/20/2606 NEAS Reference Number: DEA/EIA/0000785/2011	The proposed Solar Park Integration Project entails the construction of a substation at the Upington Solar Park, 400 kV transmission lines to the east and south of Upington to feed the electricity into Eskom's National Grid as well as the construction of a number of 132 kV power lines inter-linking the IPP solar plants with the Eskom Grid and distributing the power generated to Upington.	The project received a positive EA on 14 February 2014.
Proposed construction of Gemsbok PV1 75 MW Solar PV facility on the remaining extent of Portion 3 of the Farm Gemsbok Bult 120, Kenhardt, Northern Cape.	Mulilo Renewable Project Developments (Pty) Ltd	DEA Reference Number: 14/12/16/3/3/2/710	Mulilo Renewable Project Developments (Pty) Ltd intends to develop a 75 MW Solar PV power generation project on the farm Gemsbok Bult (Remaining Extent of Portion 3 of Farm 120).	These projects are being undertaken in parallel (i.e. joint PPP) and are collectively referred to as the Nieuwehoop Solar Development. The Final EIA Reports have been submitted to the DEA for decision-making. The projects have received positive EA.
Proposed construction of Gemsbok PV2 75 MW Solar PV facility on the remaining extent of Portion 3 of the Farm Gemsbok Bult 120, Kenhardt, Northern Cape.	Mulilo Renewable Project Developments (Pty) Ltd	DEA Reference Number: 14/12/16/3/3/2/711	Mulilo Renewable Project Developments (Pty) Ltd intends to develop a 75 MW Solar PV power generation project on the farm Gemsbok Bult (Remaining Extent of Portion 3 of Farm 120).	
Proposed construction of Boven PV1 75 MW Solar PV facility on the remaining extent of the Farm Boven Rugzeer 169, Kenhardt, Northern Cape.	Mulilo Renewable Project Developments (Pty) Ltd	DEA Reference Number: 14/12/16/3/3/2/712	Mulilo Renewable Project Developments (Pty) Ltd intends to develop a 75 MW Solar PV power generation project on the farm Boven Rugzeer (Remaining Extent of Farm	

Project Name	Applicant	DEA Reference Number	Brief project description	Phase
			169).	
Proposed development of a 75 MW Solar PV Facility (Kenhardt PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.	Scatec Solar	DEA Reference Number: 14/12/16/3/3/2/837	Scatec Solar intends to develop a 75 MW Solar PV power generation project on the remaining extent of Onder Rugzeer Farm 168.	These projects are being undertaken in parallel (i.e. joint PPP). The Scoping Reports and addendums were released for a 30-day comment period. The finalised Scoping Reports were submitted to the DEA for decision-making in November 2015 and were accepted by the DEA in December 2015. The EIA Reports are currently being released for a 30-day comment period together with the BA Reports
Proposed development of a 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.	Scatec Solar	DEA Reference Number: 14/12/16/3/3/2/838	Scatec Solar intends to develop a 75 MW Solar PV power generation project on the remaining extent of Onder Rugzeer Farm 168.	
Proposed development of a 75 MW Solar PV Facility (Kenhardt PV 3) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.	Scatec Solar	DEA Reference Number: 14/12/16/3/3/2/836	Scatec Solar intends to develop a 75 MW Solar PV power generation project on the remaining extent of Onder Rugzeer Farm 168.	
Proposed development of a Transmission Line (i.e. Kenhardt PV 2 – Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.	Scatec Solar	To be confirmed	Scatec Solar intends to develop a 132 KV transmission line extending from the proposed 75 MW Solar PV facility (Kenhardt PV 2) to the Eskom Nieuwehoop substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.	These projects are being undertaken in parallel with Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 (i.e. joint PPP). The BA Reports are currently being released for a 30-day comment period together with the EIA Reports.
Proposed development of a Transmission Line (i.e. Kenhardt PV 3 – Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 3) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.	Scatec Solar	To be confirmed	Scatec Solar intends to develop a 132 KV transmission line extending from the proposed 75 MW Solar PV facility (Kenhardt PV 3) to the Eskom Nieuwehoop substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.	
Proposed construction of the Mulilo Solar Development consisting of seven 75 MW PV OR Concentrated PV Solar Energy	Mulilo Renewable Project Developments	DEA Reference Number: 14/12/16/3/3/2/841	Mulilo Renewable Project Developments (Pty) Ltd proposes to construct and operate seven PV or	These projects are being undertaken in parallel (i.e. joint PPP). The BID was released to I&APs and authorities for a 30-day comment period in

Project Name	Applicant	DEA Reference Number	Brief project description	Phase
Facilities and associated infrastructure near Kenhardt, Northern Cape	(Pty) Ltd	DEA Reference Number: 14/12/16/3/3/2/842 DEA Reference Number: 14/12/16/3/3/2/843 DEA Reference Number: 14/12/16/3/3/2/844 DEA Reference Number: 14/12/16/3/3/2/845 DEA Reference Number: 14/12/16/3/3/2/846 DEA Reference Number: 14/12/16/3/3/2/847	Concentrated PV Solar Facilities with a generating capacity of 75 MW each, on Portions 3 and 8 of Gembok Bult Farm 120 and the Remaining extent of Boven Rugzeer Farm 169, located 30 km north-east of Kenhardt. Two of the projects will be located on Portion 3-, two projects on Portion 8 of Gembok Bult Farm 120 and three projects on the Remaining Extent of Boven Rugzeer Farm 169. Each 75 MW Solar PV facility proposed will cover an approximate area of 200 ha with a collective footprint of approximately 1 400 ha and a combined power generation capacity of 525 MW. The proposed projects will entail the construction of the solar field, buildings, electrical infrastructure, internal access roads, and associated infrastructure and structures.	September 2015. The finalised Scoping Reports were submitted to DEA for decision-making in December 2015 and were accepted in February 2016.

In addition to the above, the impact assessment methodology includes the following aspects:

Spatial extent – The size of the area that will be affected by the impact/risk:

- Site specific;
- Local (<10 km from site);
- Regional (<100 km of site);
- National; or
- International (e.g. Greenhouse Gas emissions or migrant birds).

Consequence – The anticipated consequence of the risk/impact:

- Extreme (extreme alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they permanently cease);
- Severe (severe alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Substantial (substantial alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Moderate (notable alteration of natural systems, patterns or processes, i.e. where the environment continues to function but in a modified manner); or
- Slight (negligible alteration of natural systems, patterns or processes, i.e. where no natural systems/environmental functions, patterns, or processes are affected).

Duration – The timeframe during which the impact/risk will be experienced:

- Very short term (instantaneous);
- Short term (less than 1 year);
- Medium term (1 to 10 years);
- Long term (the impact will cease after the operational life of the activity (i.e. the impact or risk will occur for the project duration)); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).

Reversibility of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase) will be:

- Yes: High reversibility of impacts (impact is highly reversible at end of project life);
- Partially: Moderate reversibility of impacts; or
- No: Impacts are non-reversible (impact is permanent).

Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase) will be:

- High irreplaceability of resources (project will destroy unique resources that cannot be replaced);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (the affected resource is easy to replace/rehabilitate).

Using the criteria above, the impacts will further be assessed in terms of the following:

Probability – The probability of the impact/risk occurring:

- Very likely;
- Likely;
- Unlikely;
- Very unlikely; and
- Extremely unlikely.

To determine the significance of the identified impact/risk, the consequence is multiplied by probability (as shown in Figure 14). This approach incorporates internationally recognised methods from the IPCC (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity. The significance is then rated qualitatively as follows against a predefined set of criteria (i.e. probability and consequence) as indicated in Figure 14:

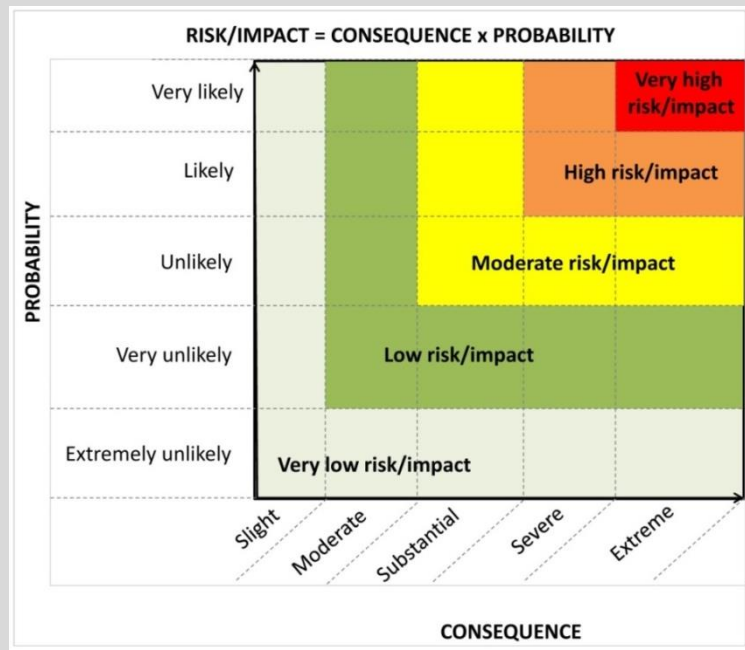


Figure 14: Guide to assessing risk/impact significance as a result of consequence and probability.

Significance – Will the impact cause a notable alteration of the environment?

- Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);
- High (the risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); and
- Very high (the risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

With the implementation of mitigation measures, the residual impacts/risks will be ranked as follows in terms of significance (based on Figure 14):

- Very low = 5;
- Low = 4;
- Moderate = 3;
- High = 2; and
- Very high = 1.

Status - Whether the impact/risk on the overall environment will be:

- Positive - environment overall will benefit from the impact/risk;
- Negative - environment overall will be adversely affected by the impact/risk; or
- Neutral - environment overall not be affected.

Confidence – The degree of confidence in predictions based on available information and specialist knowledge:

- Low;
- Medium; or
- High.

Impacts have been collated into the EMPr (Appendix G of the BA EIA Report) and these include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This includes a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this is stated.
- Positive impacts and augmentation measures have been identified to potentially enhance positive impacts where possible.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts are evaluated for the construction and operation phases of the development. The assessment of impacts for the decommissioning phase is brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts have been evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact;
- The impact evaluation has, where possible, taken into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area (as described above and in Table 7); and
- The impact assessment attempts to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

Planning and Design Phase:

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
<i>Alternative 1 (Preferred Alternative) – Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.</i>			
Planning and design of the proposed project activities.	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> Impact on existing infrastructure (roads, Transnet Service Road, Transnet Freight Rail Sishen-Saldanha Railway Line, stormwater pipelines, sewers, and electrical infrastructure and cables etc.). 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Review building and site plans of the Transnet Freight Rail Sishen-Saldanha Railway Line and associated gravel road, in order to ensure the location of existing underground structures (such as electricity cables, stormwater pipelines etc.) are determined to make provision for safe excavation. Ensure that discussions are held with Transnet Freight Rail during the design phase in order to assist with location of existing underground service infrastructure. Ensure that discussions are held with Transnet Freight Rail during the design phase in order to determine requirements for potential use of the Transnet Service Road (as main access to the proposed project site), as well as to discuss the requirements for crossing of the railway line by the proposed transmission line. Consultation should be undertaken with the relevant municipal departments during the detailed engineering phase to discuss the impact of the proposed project on existing infrastructure. Scatec Solar should ensure that all relevant approvals have been obtained from the municipality (with regards to Building Plans etc.) prior to construction. The design of the facility should incorporate Stormwater Management. The design should also ensure the free flow of runoff and prevent ponding of water once construction is complete.
	<ul style="list-style-type: none"> Impact on the nearest and surrounding SKA telescopes and the overall SKA project. 	<ul style="list-style-type: none"> High (Negative) 	<ul style="list-style-type: none"> Ensure that the following is taken implemented and considered in the design <u>where applicable to the proposed transmission line and electrical infrastructure:</u> <ul style="list-style-type: none"> The inverter units, transformers, communication and control units for an array of panels should all be housed in a single shielded environment. For

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			shielding of such an environment it must be ensured that: <ul style="list-style-type: none"> ▪ RFI gasketting is placed on all the seams and doors. ▪ RFI Honeycomb filtering should be placed on all ventilation openings. ▪ It is important to ensure that the cables are laid directly in the soil or properly grounded cable trays (not plastic sleeves). ▪ The use of bare copper directly in the soil for earthing is recommended to shunt Common Mode (CM) interference currents to ground. ▪ In the case of a tracking PV plant design, care will need to be taken to shield the noise associated with the relays, contactors and hydraulic pumps/motors of the tracking units. ▪ Data communications to and from the plants should be via fibre optic.
	<ul style="list-style-type: none"> • Impact on the existing users of the Transnet Service Road and the unnamed Farm Road leading to the site. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Potential access routes to the project site must be selected during the planning phase in order to prevent traffic impacts. • Relevant stakeholders (such as users of the roads) must be contacted in order to inform them of the proposed project and to avoid potential traffic impacts. This will also ensure that current operations associated with the farms and the Transnet Freight Rail Sishen-Saldanha Railway Line are not hindered in any way.
	Indirect impacts:		
	No indirect impacts have been identified for the planning and design phase.		
	Cumulative impacts:		
No cumulative impacts have been identified for the planning and design phase.			
Alternative 2 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
Alternative 3 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
NO-GO OPTION			
Planning and design of the proposed project activities.	Direct Impacts:		
	If this proposed project does not proceed: <ul style="list-style-type: none"> • None of the impacts mentioned above will occur. • Only the current agricultural (grazing) land use will remain. • The landowners of the remaining extent of the Onder Rugzeer Farm 168, Portion 3 of Gemsbok Bult Farm 120, remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168 will not be able to derive benefits from the implementation of an additional land-use. • New employment opportunities will not be created, which may lead to negative local socio-economic implications. • No additional power will be generated or supplied through means of renewable energy resources by this project at this location. • There will be no contributions and assistance to the government in achieving 	Not applicable.	Not applicable.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<p>its proposed renewable energy target of 17 800 MW by 2030.</p> <ul style="list-style-type: none"> • Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified. • Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital. • There will be lost opportunity for skills transfer and education/training of local communities. • The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised. • The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised. • There will be further implications for the proposed Kenhardt PV 2 and PV 3 facilities, as these plants will share the same corridor (and potentially the same on-site substation) with that of Kenhardt PV 1. 		
	Indirect Impacts:		
	No indirect impacts have been identified for the planning and design phase for the No-go Option.		
	Cumulative Impacts:		
No cumulative impacts have been identified for			

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	the planning and design phase for the No-go Option.		

Construction Phase:

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
Alternative 1 (Preferred Alternative) – Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
Direct Impacts:			
ECOLOGICAL IMPACT ASSESSMENT			
<ul style="list-style-type: none"> ▪ Removal of vegetation; ▪ Excavations; ▪ Establishment of a laydown area for equipment; ▪ Stockpiling of topsoil and cleared vegetation; ▪ Transportation of material and equipment to site; and ▪ Construction of the transmission lines and additional infrastructure. 	<ul style="list-style-type: none"> • Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The detailed design should consider and incorporate habitat and features into the routing of the proposed transmission line. • The detailed design and confirmation of the proposed tower positions along the proposed transmission line route should assist with the avoidance of specific vegetation associates and forms (where applicable). Identify and avoid the two Aloe consocieties (<i>Aloe dichotoma</i> and <i>A claviflora</i>) identified within the electrical infrastructure corridor as part of the Ecological Impact Assessment (Appendix D.1 of this BA Report). • Avoidance, where possible of the minor drainage lines and any additional significant plant species that may be identified and incorporate other features along the route into the design. • A second assessment of the route should be undertaken in or around February to March (subsequent to the issuing of an EA and the completion of the detailed engineering) in order to identify any additional plant specimens of significance that may be evident along the route. Undertake plant rescue operations, where such specimens may be relocated/removed (i.e. search and rescue) or avoided (with the relevant permits and approvals in place) prior to the commencement of construction. • Appoint a suitable Specialist/Contractor to undertake Search and Rescue operations as required, prior to the

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>commencement of the construction phase.</p> <ul style="list-style-type: none"> Implement exotic weed control during the construction phase. An initial pre-construction clearance of all exotic vegetation on route should be undertaken to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented during the construction phase that aligns with an exotic vegetation management plan or an alien eradication plan.
	<ul style="list-style-type: none"> Changes in the geomorphological state of drainage lines. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> The detailed design should consider the location of the major drainage lines (with a 32 m buffer) and exclude them from the tower footprints and development footprint. Undertake and complete earthworks and construction activities outside of the high rainfall period (if possible). Ensure that there is maintenance of a high level of housekeeping along the route of the proposed transmission line during the construction phase. Monitor and implement the management of changes in the drainage features within the study area. Such actions can include undertaking an inspection of drainage features immediately outside of the footprint of the proposed transmission line and removal of solid waste and litter on a regular basis, as well as the redress of excessive erosion attributable to construction activities.
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> The detailed design should consider the location of the major drainage lines (with a 32 m buffer) and exclude them from the development footprint. Undertake regular monitoring through visual inspection and redress of exotic weeds in and around site, particularly during construction. Avoidance of excessive earthworks and sculpting of land and maintenance of the general topography of the proposed transmission line route. Erosion control measures to be implemented to stabilize the soil as required. Ensure the placement of energy dissipaters if required

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>around tower footings within the minor drainage lines in order to reduce velocity of flow through such features and consequential disturbance.</p>
	VISUAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> • Potential visual intrusion of construction activities on existing views of sensitive visual receptors 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Implement mitigation measures associated with construction activities to ensure that they are managed and performed in such a way as to minimise its impact on the receiving environment, as well as minimising visual impact during the construction phase. These can include: <ul style="list-style-type: none"> ▪ The contractor must maintain good housekeeping on site to avoid litter and minimise waste; ▪ The Project Developer must demarcate construction boundaries and minimise areas of surface disturbance; ▪ Vegetation and ground disturbance should be minimised and existing clearings should be taken advantage of; ▪ Construction of new roads should be minimised and existing roads will be used where possible; ▪ Topsoil from the site should be stripped, stockpiled, and stabilised before excavating earth for the construction of the proposed transmission line; ▪ Vegetation material from vegetation removal should be mulched and spread over fresh soil disturbances to aid in the rehabilitation process; ▪ Plans should be in place to control and minimise erosion risks; ▪ Plans should be in place to minimise fire hazards and dust generation; and ▪ Plans should be in place to rehabilitate cleared areas as soon as possible. • Night time construction should be avoided where possible. • Night lighting of the construction sites should be minimised within requirements of safety and efficiency.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	HERITAGE IMPACT ASSESSMENT (ARCHAEOLOGY AND CULTURAL LANDSCAPE)		
	<ul style="list-style-type: none"> Damage to and destruction of archaeological resources during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> All activities and vehicles should be confined to the approved footprint or construction corridor so as to minimise impacts to heritage resources in surrounding areas.
	<ul style="list-style-type: none"> Damage to and destruction of graves during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> All activities and vehicles should be confined to the approved footprint or construction corridor so as to minimise impacts to heritage resources in surrounding areas.
	<ul style="list-style-type: none"> Impacts to the natural and cultural landscape during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	PALAEONTOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Impact on Palaeontology: Loss of fossil heritage at or beneath the ground surface as a result of surface clearance and excavations into superficial sediments. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Undertake monitoring of all substantial excavations into sedimentary rocks for fossil remains and safeguard any finds in situ. Appoint a professional palaeontologist to record and sample any chance fossil finds.
	GEOHYDROLOGICAL ASSESSMENT		
	<ul style="list-style-type: none"> Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> During the construction phase, all reasonable measures must be taken to prevent soil and groundwater contamination. The main source of contamination will be from construction vehicles leaking oil or fuel, fuel storage and spillages may occur whilst refuelling vehicles and machinery. During the construction phase, vehicles must be regularly serviced and maintained to check and ensure there are no leakages.
<ul style="list-style-type: none"> Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> A precautionary approach should be taken and reasonable measures should be undertaken to prevent oil spillages and fuel leakages from occurring. Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<ul style="list-style-type: none"> Any engines that stand in one place for a significant length of time must have drip trays. Fuel storage tanks should be above ground on an impermeable surface and within a bunded area. Construction vehicles and equipment should also be refuelled on an impermeable surface. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal practices of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.
	SOILS AND AGRICULTURAL POTENTIAL ASSESSMENT		
	<ul style="list-style-type: none"> Degradation of veld vegetation beyond the direct footprint of the proposed transmission line due to construction disturbance and potential trampling by vehicles (including dust generation). 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Minimize the footprint of disturbance during construction activities. Confine vehicle access to roads only. Control dust generation during construction activities by implementing standard construction site dust control measures (dampening with water) where required. Because of water scarcity, this should only be done where and when dust generation is a significant problem.
	<ul style="list-style-type: none"> Loss of topsoil due to poor topsoil management and constructional activities that disturb the soil profile. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Strip and stockpile topsoil from all areas where soil will be disturbed. There are no particular requirements for stockpile management and it can therefore be done in the way that is most practical for the operation. After cessation of disturbance, re-spread topsoil over the surface. Dispose of any sub-surface spoil material, generated from excavations, where they will not impact on land that supports vegetation, or where they can be effectively covered with topsoil.
	<ul style="list-style-type: none"> Loss of agricultural land use as a result of the occupation of the land by the project infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
<ul style="list-style-type: none"> Soil erosion due to the alteration of the land surface characteristics and surface cover. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			from all hardened surfaces and prevents potential down slope erosion.
	SOCIAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Influx of job seekers into the Kenhardt area resulting in disruption of existing social structures. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Develop and implement a Workforce Recruitment Plan during the construction phase. Reserve employment, where practical, for local residents during the construction phase. It is strongly recommended that the Workforce Recruitment Policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding. Local in this regard is defined as firstly, the residents of Kenhardt (given its close proximity); followed by the residents of the other urban nodes in the immediate area (i.e. Grobelaarshoop, Marydale and Keimoos). Position should only be filled with outsiders should the requisite skills not be available in the study area. Clearly define and agree upon the Project Affected People (PAP) (i.e. define who is considered to be local (Kenhardt) residents; known as the PAP). This should ideally be conducted in collaboration with the local community and local government structures. The purpose of demarcating the PAP is to develop a criterion of characteristics considered to identify a given job seeker as a PAP. Once this criterion is known; all subsequent job seekers can be screened against it in order to determine whether they qualify for employment. The criterion for a PAP should be incorporated into the Workforce Recruitment Policy. Develop a database of PAP and their relevant skills and experience well in advance of the construction phase of the project. This will assist in the early identification of a suitable workforce. Should a similar database already be available in the study area; it can be used by the proponent to achieve the same purpose. However, such an existing database must be regarded as legitimate by the local community in

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>order for it to be used as a substitute by the proponent.</p> <ul style="list-style-type: none"> Develop and implement a Stakeholder Engagement Plan which sets-out the communication strategy to be followed with regards to the proposed project. This should be done well in advance of the construction phase of the project. The intention of the plan should be to ensure that all project related information (including those related employment) is communicated: (i) accurately; (ii) timeously; (iii) to the appropriate constituency; (iv) in an appropriate format; and is aimed towards fostering realistic expectations.
	<ul style="list-style-type: none"> Increases in social deviance as a result of outsiders moving into the Kenhardt area. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Develop and implement a Workforce Recruitment Plan during the construction phase. Reserve employment, where practical, for local residents during the construction phase. It is strongly recommended that the Workforce Recruitment Policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding. Local in this regard is defined as firstly, the residents of Kenhardt (given its close proximity); followed by the residents of the other urban nodes in the immediate area (I.e. Grobelaarshoop, Marydale and Keimoes). Position should only be filled with outsiders should the requisite skills not be available in the study area. Clearly define and agree upon the PAP (i.e. define who is considered to be local (Kenhardt) residents; known as the PAP). This should ideally be conducted in collaboration with the local community and local government structures. The purpose of demarcating the PAP is to develop a criterion of characteristics considered to identify a given job seeker as a PAP. Once this criterion is known; all subsequent job seekers can be screened against it in order to determine whether they qualify for employment. The criterion for a PAP should be incorporated into the Workforce Recruitment Policy.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<ul style="list-style-type: none"> • Develop a database of PAP and their relevant skills and experience well in advance of the construction phase of the project. This will assist in the early identification of a suitable workforce. Should a similar database already be available in the study area; it can be used by the proponent to achieve the same purpose. However, such an existing database must be regarded as legitimate by the local community in order for it to be used as a substitute by the proponent. • Develop and implement a Stakeholder Engagement Plan which sets-out the communication strategy to be followed with regards to the proposed project. This should be done well in advance of the construction phase of the project. The intention of the plan should be to ensure that all project related information (including those related employment) is communicated: (i) accurately; (ii) timeously; (iii) to the appropriate constituency; (iv) in an appropriate format; and is aimed towards fostering realistic expectations. • Delivery on the Economic Development Plan for the area (once the proposed project is successfully awarded preferred bidder status) must be contractually binding on the proponent (i.e. Scatec Solar).
	<ul style="list-style-type: none"> • Expectations created regarding possible employment resulting in increased frustration in the local community. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • It should be recognised that expectations of employment are probably unavoidable in totality. However, proper implementation of the Stakeholder Engagement Plan should lead to realistic expectation of employment for most of the local community. It is important to note that communication should not only elaborate on what kind of employment is on offer and to whom it is offered; but also the worst-case timeframe for such employment to commence. Forewarned community members are better equipped to adjust livelihood strategies to the variability of the project timeframe.
	<ul style="list-style-type: none"> • Local spending resulting in socio-economic benefits as a result of the multiplier effect. <p><i>Note that since this is a positive impact,</i></p>	<ul style="list-style-type: none"> • Low (Positive) 	<ul style="list-style-type: none"> • The Project Applicant must procure goods and services, as far as practically possible, from within the project area (with a focus on Kenhardt). • Obtain regularly required goods and services (e.g. food and

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION	
	<p><u>enhancement (not mitigation) measures have been provided.</u></p>		<p>accommodation) from as large a selection of local service providers as possible to ensure distribution of project benefits.</p> <ul style="list-style-type: none"> Only if required goods and services are not available in the study area should the proponent seek to obtain it elsewhere. 	
	<ul style="list-style-type: none"> Local employment resulting in socio-economic benefits. <p><u>Note that since this is a positive impact, enhancement (not mitigation) measures have been provided.</u></p>	<ul style="list-style-type: none"> Moderate (Positive) 	<ul style="list-style-type: none"> Develop a Workforce Recruitment Policy. This policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding on the proponent. 	
	<ul style="list-style-type: none"> Economic Development Plan contributing to local employment, local spending and human capacity development. <p><u>Note that since this is a positive impact, enhancement (not mitigation) measures have been provided.</u></p>	<ul style="list-style-type: none"> Moderate (Positive) 	<ul style="list-style-type: none"> The Economic Development Plan, once fully developed, must be implemented. The proponent should engage with local NGOs, CBOs and local government structures to identify and agree upon relevant skills and competencies required in the Kenhardt community. Such skills and competencies should then be included in the Economic Development Plan. Where possible, align Economic Development Plan and skills development initiatives with the Kai !Garib Local Municipality's IDP objectives. 	
	TRAFFIC IMPACT STATEMENT			
	<ul style="list-style-type: none"> Increased traffic generation during the construction phase. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Should abnormal loads need to be transported by road to the site, a permit needs to be obtained from the Provincial Government Northern Cape (PGNC) Department of Public Works, Roads and Transport. Compile and provide a Transport Traffic Plan to SANRAL. Ensure that roadworthy and safety standards are implemented at all times for all construction vehicles. Plan trips so that it occurs during the day but avoid construction vehicle movement on the regional road during peak time (06:00-10:00 and 16:00-20:00). 	
<ul style="list-style-type: none"> Accidents with pedestrians, animals and 	<ul style="list-style-type: none"> High (Negative) 	<ul style="list-style-type: none"> Road mortality monitoring programme (inclusive of 		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<p>other drivers on the surrounding tarred/gravel roads.</p>		<p>recording keeping for wildlife collisions) should be established and fences (such as Animex fences or similar) should be installed, if needed to direct animals to safe road crossings.</p> <ul style="list-style-type: none"> • Ensure that all contractors adhere to all speed limits applicable to all roads used. • Implement clear and visible signalisation and signage indicating movement of vehicles within and around site, especially along access roads and intersections with public and private roads (such as when turning off or onto the Transnet Service Road to ensure safe entry and exit).
	<ul style="list-style-type: none"> • Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and construction equipment. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles. • Postpone or reduce dust-generating activities during periods with strong wind. • Earthworks may need to be rescheduled or the frequency of application of dust control/suppressant increased in conditions of excessively strong winds. • Ensure that all construction vehicles are roadworthy and respect the vehicle safety standards implemented by the Project Developer. • Avoid using old and noisy (i.e. unmaintained) construction equipment and ensure equipment is well maintained. • Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilisers may be utilised to limit dust generation and to minimise water consumption.
	<ul style="list-style-type: none"> • Change in the quality and surface condition of the roads leading to and surrounding the site. 	<ul style="list-style-type: none"> • Low (Positive) 	<ul style="list-style-type: none"> • Construction activities will have a higher impact than the normal road activity and therefore the road should be inspected on a weekly basis for structural damage. • Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION	
			<ul style="list-style-type: none"> • A Road Maintenance Plan should be developed for the section of the Transnet Service Road that could possibly be used. The plan should address the following: <ul style="list-style-type: none"> ▪ Grading requirements; ▪ Dust suppressant requirements; ▪ Drainage requirements; ▪ Signage; and ▪ Speed limits. 	
	ADDITIONAL IMPACTS (IN ADDITION TO THOSE IDENTIFIED IN THE SPECIALIST STUDIES AND TRAFFIC IMPACT STATEMENT)			
	<ul style="list-style-type: none"> • Impact on existing infrastructure (roads, stormwater pipelines, sewers, and electricity cables etc.). 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Ensure that the Contractor is made aware of the location of existing underground structures (such as electricity cables, stormwater pipelines etc.) to ensure safe excavation. 	
	<ul style="list-style-type: none"> • Removal of alien invasive vegetation from the proposed project area. 	<ul style="list-style-type: none"> • Moderate (Positive) 	<ul style="list-style-type: none"> • Ensure that alien invasive vegetation found on site, within the proposed project footprint, is removed promptly, in a scheduled manner throughout the construction phase. The removal of these species should be carried out in line with relevant specifications and regulations (such as the Regulations published in terms of Section 97(1) of the NEMBA, if applicable). • The removed alien invasive vegetation should be immediately disposed at a suitable waste disposal facility and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species. 	
	<ul style="list-style-type: none"> • Increased faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The construction personnel and staff should be made aware of the presence of fauna within the proposed project area. The construction personnel and staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings. This can be achieved via the Environmental Awareness Training programme. • Furthermore, in order to ensure that animals are not attracted to the site (and potentially resulting in increased road mortality), the waste collection bins and skips should be covered with suitable material, where appropriate, and the site camp must be kept clean on a daily basis. 	
<ul style="list-style-type: none"> • Impact on the regional water balance as a 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Water is required during the construction phase for various 		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<p>result of increased water usage.</p>		<p>purposes, such as earthworks, as well as to fulfil the requirements of construction personnel on-site. Where possible, water conservation should be practiced. Water conservation techniques include making construction personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the site (such as sweeping the site before it is being washed). This can be achieved through the Environmental Awareness Training programme. Scatec Solar should also ensure that the water infrastructure on site is monitored for leakages on a regular basis to prevent wastage.</p> <ul style="list-style-type: none"> • Avoid the use of potable water for dust suppression during the construction phase and consider the use of alternative approved sources, where possible.
	<ul style="list-style-type: none"> • Potential spillage of effluent (from portable sanitation facilities for construction personnel) resulting in potential impacts on soil and surface/groundwater. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is contained and transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. No waste water must be discharged to the natural environment. • As part of the Environmental Awareness Training, all construction personnel should be made aware of the sewage management practises. • The construction camp and necessary ablution facilities meant for construction workers must be located beyond 32 m of the drainage lines.
	<ul style="list-style-type: none"> • Pollution caused by spillage or discharge of construction waste water into the surrounding environment. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Ensure that adequate containment structures are provided for the storage of liquid dangerous goods and hazardous materials on site (such as chemicals, oil, fuel, hydraulic fluids, lubricating oils etc. required for the construction equipment and vehicles). Appropriate bund areas must be provided for the storage of these materials at the site camp.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>Bund areas should have a capacity of 110 % of the volume of the largest tank in the bund (tanks include storage of fuel/diesel). Bund areas should contain an impervious surface in order to prevent spillages from entering the ground.</p> <ul style="list-style-type: none"> • A Spill Response Plan must be compiled (by Scatec Solar and the Contractor) for the construction phase in order to manage potential spill events. • The Contractor should compile a Method statement for refuelling activities under normal and emergency situations. A designated (impervious) area must be established at the site camp for refuelling purposes. Drip trays or similar impervious materials must also be used during refuelling, especially during emergency procedures. Personnel should be trained to ensure proper transfer and refuelling. Any spilled fuel, oil or grease must be immediately retrieved where possible, and the contaminated material must be removed and disposed at a registered hazardous waste disposal facility. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.
	<ul style="list-style-type: none"> • Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff. • Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Monitoring programmes should be implemented to ensure that no materials enter the surface water drainage system.
	<ul style="list-style-type: none"> • Sedimentation of the surrounding drainage lines as a result of stormwater runoff and stockpiling of excavated material during the construction phase. The excavated material 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. • All material that is excavated during the construction phase

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<p>could potentially be washed into the drainage lines via stormwater. This could also impact on avifauna.</p>		<p>must be stored appropriately on site in order to minimise impacts on the on the surrounding aquatic environment.</p> <ul style="list-style-type: none"> Exposed soil surfaces should be graded to minimise runoff and increase infiltration. Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material. Undertake periodic inspections and maintenance of soil erosion measures and stormwater control structures. Stockpiles must be located at least 32 m away from the drainage lines, on flat areas where run-off will be minimised. Stockpiles should not exceed 2 m in height. During periods of strong winds and heavy rain (in line with relevant rainfall patterns), the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.).
	<ul style="list-style-type: none"> Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of general waste during the construction phase. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> General waste (i.e. construction waste, building rubble, discarded concrete, bricks, tiles, wood, glass, window panes, air conditioners, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) generated during the construction phase should be stockpiled temporarily (i.e. once-off) on site in a designated area within suitable waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Should the on-site stockpiling of general waste exceed 100 m³ and a period of 90 days, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. Ensure that the designated stockpiling area for general waste (i.e. skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events. Ensure that general waste generated during the construction phase is removed from the site on a regular basis, such as daily or weekly (whichever is practical), and

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of hazardous waste, as well as the removal of the soil contaminated with oil and diesel. 	<ul style="list-style-type: none"> Moderate (Negative) 	<p>safely disposed of at an appropriate, licenced waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file as proof of disposal. As a general principle, waste manifests must be obtained to prove legal disposal of waste.</p> <ul style="list-style-type: none"> Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management. Sufficient general waste disposal bins must also be provided for use by construction personnel throughout the site. These bins must be emptied on a regular basis. Ensure that all general waste emanating from the construction phase is removed from site prior to the commencement of the operational phase. <p>Hazardous waste (i.e. empty tins, oils, fuel spillages, spilled materials and chemicals etc.) generated during the construction phase should be stockpiled temporarily (i.e. once-off) on site in a designated area in suitable waste collection bins and leak-proof storage skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Hazardous waste must be stored separately from all other general waste. The designated stockpiling area must be labelled correctly.</p> <ul style="list-style-type: none"> Should the on-site stockpiling of hazardous waste exceed 80 m³, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. Ensure that the designated stockpiling area for hazardous waste (i.e. leak proof skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events. Ensure that all hazardous waste is removed from the site on a regular basis and safely disposed at an appropriate, licenced hazardous waste disposal facility by an approved

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>waste management Contractor. Waste disposal slips or waybills should be kept on file as proof of disposal. As a general principle, waste manifests must be obtained to prove legal disposal of waste.</p> <ul style="list-style-type: none"> • Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management. • Ensure that all hazardous waste emanating from the construction phase is removed from site prior to the commencement of the operational phase.
	<ul style="list-style-type: none"> • Generation of noise as a result of construction activities and the use of diesel powered vehicles, equipment and machinery. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Keep all equipment and machinery in good working order and ensure that regular maintenance is undertaken. Ensure that equipment is operated within specifications and capacity (e.g. do not overload machines). Ensure that the equipment is turned off when not in use
	Indirect Impacts:		
	ECOLOGICAL IMPACT ASSESSMENT		
<ul style="list-style-type: none"> • Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The detailed design should consider and incorporate habitat and features into the routing of the proposed transmission line. • The detailed design and confirmation of the proposed tower positions along the proposed transmission line route should assist with the avoidance of specific vegetation associates and forms (where applicable). Identify and avoid the two Aloe consociates (<i>Aloe dichotoma</i> and <i>A claviflora</i>) identified within the electrical infrastructure corridor as part of the Ecological Impact Assessment (Appendix D.1 of this BA Report). • Avoidance, where possible of the minor drainage lines and any additional significant plant species that may be identified and incorporate other features along the route into the design. • A second assessment of the route should be undertaken in or around February to March (subsequent to the issuing of 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>an EA and the completion of the detailed engineering) in order to identify any additional plant specimens of significance that may be evident along the route. Undertake plant rescue operations, where such specimens may be relocated/removed (i.e. search and rescue) or avoided (with the relevant permits and approvals in place) prior to the commencement of construction.</p> <ul style="list-style-type: none"> • Appoint a suitable Specialist/Contractor to undertake Search and Rescue operations as required, prior to the commencement of the construction phase. • Implement exotic weed control during the construction phase. An initial pre-construction clearance of all exotic vegetation on route should be undertaken to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented during the construction phase that aligns with an exotic vegetation management plan or an alien eradication plan.
	<ul style="list-style-type: none"> • Changes in the geomorphological state of drainage lines. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • The detailed design should consider the location of the major drainage lines (with a 32 m buffer) and exclude them from the tower footprints and development footprint. • Undertake and complete earthworks and construction activities outside of the high rainfall period (if possible). • Ensure that there is maintenance of a high level of housekeeping along the route of the proposed transmission line during the construction phase. • Monitor and implement the management of changes in the drainage features within the study area. Such actions can include undertaking an inspection of drainage features immediately outside of the footprint of the proposed transmission line and removal of solid waste and litter on a regular basis, as well as the redress of excessive erosion attributable to construction activities.
	<ul style="list-style-type: none"> • Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • The detailed design should consider the location of the major drainage lines (with a 32 m buffer) and exclude them from the development footprint.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<ul style="list-style-type: none"> Undertake regular monitoring through visual inspection and redress of exotic weeds in and around site, particularly during construction. Avoidance of excessive earthworks and sculpting of land and maintenance of the general topography of the proposed transmission line route. Erosion control measures to be implemented to stabilize the soil as required. Ensure the placement of energy dissipaters if required around tower footings within the minor drainage lines in order to reduce velocity of flow through such features and consequential disturbance.
	GEOHYDROLOGICAL ASSESSMENT		
	<ul style="list-style-type: none"> Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> During the construction phase, all reasonable measures must be taken to prevent soil and groundwater contamination. The main source of contamination will be from construction vehicles leaking oil or fuel, fuel storage and spillages may occur whilst refuelling vehicles and machinery. During the construction phase, vehicles must be regularly serviced and maintained to check and ensure there are no leakages.
<ul style="list-style-type: none"> Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> A precautionary approach should be taken and reasonable measures should be undertaken to prevent oil spillages and fuel leakages from occurring. Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. Any engines that stand in one place for a significant length of time must have drip trays. Fuel storage tanks should be above ground on an impermeable surface and within a bunded area. Construction vehicles and equipment should also be refuelled on an impermeable surface. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal practices of the spilled material. Proof of disposal (waste disposal slips or 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			waybills) should be obtained and retained on file for auditing purposes.
	Cumulative Impacts:		
	ECOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Changes in the geomorphological state of drainage lines. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Implement broad scale management of drainage systems in the region.
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants (leading to alteration of ecological processes within the wider region) 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Undertake regular monitoring through visual inspection and redress of exotic weeds in and around site, particularly during construction.
	HERITAGE IMPACT ASSESSMENT (ARCHAEOLOGY AND CULTURAL LANDSCAPE)		
	<ul style="list-style-type: none"> Damage to and destruction of archaeological resources as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Damage to and destruction of graves as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Impacts to the natural and cultural landscape as a result of the proposed construction of the transmission line and associated infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	PALAEONTOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Impact on Palaeontology: Loss of fossil heritage at or beneath the ground surface as a result of surface clearance and excavations into superficial sediments. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Undertake monitoring of all substantial excavations into sedimentary rocks for fossil remains and safeguard any finds in situ. Appoint a professional palaeontologist to record and sample any chance fossil finds.
	TRAFFIC IMPACT STATEMENT		
<ul style="list-style-type: none"> Increased traffic generation as a result of 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> None identified. 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	many projects (as outlined in the impact methodology section above) occurring at the same time.		
Alternative 2 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
Alternative 3 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
NO-GO OPTION			
<ul style="list-style-type: none"> ▪ Maintenance of status quo. 	Direct Impacts:		
	If this proposed project does not proceed: <ul style="list-style-type: none"> None of the impacts mentioned above will occur. Only the current agricultural (grazing) land use will remain. The landowners of the remaining extent of the Onder Rugzeer Farm 168, Portion 3 of Gembok Bult Farm 120, remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168 will not be able to derive benefits from the implementation of an additional land-use. New employment opportunities will not be created, which may lead to negative local socio-economic implications. 	Not applicable.	Not applicable.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> • No additional power will be generated or supplied through means of renewable energy resources by this project at this location. • There will be no contributions and assistance to the government in achieving its proposed renewable energy target of 17 800 MW by 2030. • Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified. • Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital. • There will be lost opportunity for skills transfer and education/training of local communities. • The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised. • The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised. • There will be further implications for the proposed Kenhardt PV 2 and PV 3 facilities, as these plants will share the same corridor (and potentially the same on-site substation) 		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	with that of Kenhardt PV 1.		
	<i>Indirect Impacts:</i>		
	No indirect impacts have been identified for the construction phase for the No-go Option.		
	<i>Cumulative Impacts:</i>		
No cumulative impacts have been identified for the construction phase for the No-go Option.			

Operational Phase:

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
Alternative 1 (Preferred Alternative) – Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
<ul style="list-style-type: none"> ▪ Removal of vegetation; ▪ Operation and maintenance of the proposed transmission line and additional infrastructure. 	Direct Impacts:		
	ECOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> • Overhead transmission lines, as well as subtle changes in habitat are likely to result in the alteration of avian behaviour in and around the route. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The detailed design should consider and incorporate habitat and features into the routing of the proposed transmission line. • Implement exotic weed control during the operational phase. A clearance of all exotic vegetation on route should be undertaken at the commencement of the operational phase to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented that aligns with an exotic vegetation management plan or an alien eradication plan.
	<ul style="list-style-type: none"> • The powerlines may increase the risk of collision and electrocution in some avifauna. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Ensure that Bird Flight Diverters are placed on the proposed transmission line (along the line route). • The Delta tower configuration should not be utilised in this line route. A design that avoids any risk of electrocution to birds would be correct and better suited for this line route.
	<ul style="list-style-type: none"> • Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • Implement intermittent but regular weed control initiatives, as well as regular visual monitoring and redress of exotic weeds in and around site, particularly during the summer period.
	VISUAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> • Potential landscape impact of the proposed 132 kV powerline on a rural agricultural landscape. 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • None identified.
	<ul style="list-style-type: none"> • Potential visual intrusion of the proposed 132 kV power line on the views of sensitive visual receptors. 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • It is recommended that the type of power line towers used for the proposed power line should be similar to existing power line towers in the landscape where possible.
	HERITAGE IMPACT ASSESSMENT (ARCHAEOLOGY AND CULTURAL LANDSCAPE)		
	<ul style="list-style-type: none"> • Impacts to the natural and cultural landscape during the operational phase as a 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • None identified.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	result of the operation of the transmission line and associated infrastructure.		
	SOILS AND AGRICULTURAL POTENTIAL ASSESSMENT		
	<ul style="list-style-type: none"> Loss of agricultural land use as a result of the occupation of the land by the project infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Soil erosion due to the alteration of the land surface characteristics and surface cover. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.
	SOCIAL IMPACT ASSESSMENT		
<ul style="list-style-type: none"> Influx of job seekers into the Kenhardt area resulting in disruption of existing social structures. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Develop and implement a Workforce Recruitment Plan during the operational phase. Reserve employment, where practical, for local residents during the operational phase. It is strongly recommended that the Workforce Recruitment Policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding. Local in this regard is defined as firstly, the residents of Kenhardt (given its close proximity); followed by the residents of the other urban nodes in the immediate area (i.e. Grobelaarshoop, Marydale and Keimoes). Position should only be filled with outsiders should the requisite skills not be available in the study area. Clearly define and agree upon the PAP (i.e. define who is considered to be local (Kenhardt) residents; known as the PAP). This should ideally be conducted in collaboration with the local community and local government structures. The purpose of demarcating the PAP is to develop a criterion of characteristics considered to identify a given job seeker as a PAP. Once this criterion is known; all subsequent job seekers can be screened against it in order to determine whether they qualify for employment. The criterion for a PAP should be incorporated into the Workforce Recruitment 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>Policy.</p> <ul style="list-style-type: none"> • Develop a database of PAP and their relevant skills and experience well in advance of the operational phase of the project. This will assist in the early identification of a suitable workforce. Should a similar database already be available in the study area; it can be used by the proponent to achieve the same purpose. However, such an existing database must be regarded as legitimate by the local community in order for it to be used as a substitute by the proponent. • Develop and implement a Stakeholder Engagement Plan which sets-out the communication strategy to be followed with regards to the proposed project. This should be done well in advance of the operational phase of the project. The intention of the plan should be to ensure that all project related information (including those related employment) is communicated: (i) accurately; (ii) timeously; (iii) to the appropriate constituency; (iv) in an appropriate format; and is aimed towards fostering realistic expectations.
	<ul style="list-style-type: none"> • Increases in social deviance as a result of outsiders moving into the Kenhardt area. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • Develop and implement a Workforce Recruitment Plan during the operational phase. • Reserve employment, where practical, for local residents during the operational phase. It is strongly recommended that the Workforce Recruitment Policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding. Local in this regard is defined as firstly, the residents of Kenhardt (given its close proximity); followed by the residents of the other urban nodes in the immediate area (i.e. Grobelaarshoop, Marydale and Keimoos). Position should only be filled with outsiders should the requisite skills not be available in the study area. • Clearly define and agree upon the PAP (i.e. define who is considered to be local (Kenhardt) residents; known as the PAP). This should ideally be conducted in collaboration with

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>the local community and local government structures. The purpose of demarcating the PAP is to develop a criterion of characteristics considered to identify a given job seeker as a PAP. Once this criterion is known; all subsequent job seekers can be screened against it in order to determine whether they qualify for employment. The criterion for a PAP should be incorporated into the Workforce Recruitment Policy.</p> <ul style="list-style-type: none"> • Develop a database of PAP and their relevant skills and experience well in advance of the operational phase of the project. This will assist in the early identification of a suitable workforce. Should a similar database already be available in the study area; it can be used by the proponent to achieve the same purpose. However, such an existing database must be regarded as legitimate by the local community in order for it to be used as a substitute by the proponent. • Develop and implement a Stakeholder Engagement Plan which sets-out the communication strategy to be followed with regards to the proposed project. This should be done well in advance of the operational phase of the project. The intention of the plan should be to ensure that all project related information (including those related employment) is communicated: (i) accurately; (ii) timeously; (iii) to the appropriate constituency; (iv) in an appropriate format; and is aimed towards fostering realistic expectations. • Delivery on the Economic Development Plan for the area (once the proposed project is successfully awarded preferred bidder status) must be contractually binding on the proponent (i.e. Scatec Solar).
	<ul style="list-style-type: none"> • Expectations created regarding possible employment resulting in increased frustration in the local community. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • It should be recognised that expectations of employment are probably unavoidable in totality. However, proper implementation of the Stakeholder Engagement Plan should lead to realistic expectation of employment for most of the local community. It is important to note that communication should not only elaborate on what kind of employment is on

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Local spending resulting in socio-economic benefits as a result of the multiplier effect. <p><i><u>Note that since this is a positive impact, enhancement (not mitigation) measures have been provided.</u></i></p>	<ul style="list-style-type: none"> Low (Positive) 	<p>offer and to whom it is offered; but also the worst-case timeframe for such employment to commence. Forewarned community members are better equipped to adjust livelihood strategies to the variability of the project timeframe.</p> <ul style="list-style-type: none"> The Project Applicant must procure goods and services, as far as practically possible, from within the project area (with a focus on Kenhardt). Obtain regularly required goods and services (e.g. food and accommodation) from as large a selection of local service providers as possible to ensure distribution of project benefits. Only if required goods and services are not available in the study area should the proponent seek to obtain it elsewhere.
	<ul style="list-style-type: none"> Local employment resulting in socio-economic benefits. <p><i><u>Note that since this is a positive impact, enhancement (not mitigation) measures have been provided.</u></i></p>	<ul style="list-style-type: none"> Moderate (Positive) 	<ul style="list-style-type: none"> Develop a Workforce Recruitment Policy. This policy should reserve employment, where practically possible, for local residents (particularly for vulnerable groups such as women and previously disadvantaged individuals). This requirement should be contractually binding on the proponent.
	<ul style="list-style-type: none"> Economic Development Plan contributing to local employment, local spending and human capacity development. <p><i><u>Note that since this is a positive impact, enhancement (not mitigation) measures have been provided.</u></i></p>	<ul style="list-style-type: none"> Moderate (Positive) 	<ul style="list-style-type: none"> The Economic Development Plan, once fully developed, must be implemented. The proponent should engage with local NGOs, CBOs and local government structures to identify and agree upon relevant skills and competencies required in the Kenhardt community. Such skills and competencies should then be included in the Economic Development Plan. Where possible, align Economic Development Plan and skills development initiatives with the Kai !Garib Local Municipality's IDP objectives.
	TRAFFIC IMPACT STATEMENT		
<ul style="list-style-type: none"> Increased traffic generation during the operational phase. 	<ul style="list-style-type: none"> Very Low (Negative) 		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION	
	<ul style="list-style-type: none"> Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads. 	<ul style="list-style-type: none"> High (Negative) 	<ul style="list-style-type: none"> Ensure that where possible, staff members carpool to site. Road mortality monitoring programme (inclusive of recording keeping for wildlife collisions) should be established and fences should be installed, if needed to direct animals to safe road crossings. Ensure that all operational personnel adhere to all speed limits applicable to all roads used. Implement clear and visible signalisation and signage indicating movement of vehicles within and around site, especially along access roads and intersections with public and private roads (such as when turning off or onto the Transnet Service Road to ensure safe entry and exit). 	
	<ul style="list-style-type: none"> Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and construction equipment. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles. Avoid using old and noisy (i.e. unmaintained) operational equipment and ensure equipment is well maintained. Limit noisy maintenance/operational activities to daytime only. 	
	<ul style="list-style-type: none"> Change in the quality and surface condition of the roads leading to and surrounding the site. 	<ul style="list-style-type: none"> Low (Positive) 	<ul style="list-style-type: none"> Implement the requirements of the approved Road Maintenance Plan. 	
	ADDITIONAL IMPACTS (IN ADDITION TO THOSE IDENTIFIED IN THE SPECIALIST STUDIES AND TRAFFIC IMPACT STATEMENT)			
	<ul style="list-style-type: none"> Removal of alien invasive vegetation from the proposed project area. 	<ul style="list-style-type: none"> Moderate (Positive) 	<ul style="list-style-type: none"> Ensure that alien invasive vegetation found on site, within the proposed project footprint, is removed promptly, in a scheduled manner throughout the operational phase. The removal of these species should be carried out in line with relevant specifications and regulations (such as the Regulations published in terms of Section 97(1) of the NEMBA, if applicable). The removed alien invasive vegetation should be immediately disposed at a suitable waste disposal facility and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species. 	
	<ul style="list-style-type: none"> Increased faunal and avifaunal road 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> The operational personnel and staff should be made aware 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	mortality as a result of increased vehicles travelling to and within the site.		<p>of the presence of fauna within the proposed project area. They must also be made aware of the general speed limits on site and must be alert at all times for potential crossings. This can be achieved via the Environmental Awareness Training programme.</p> <ul style="list-style-type: none"> Furthermore, in order to ensure that animals are not attracted to the site (and potentially resulting in increased road mortality), the waste collection bins and skips should be covered with suitable material, where appropriate, and the line route must be kept clean.
	<ul style="list-style-type: none"> Generation of noise as a result of activities and the use of diesel powered vehicles, equipment and machinery when required during the maintenance phase. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Keep all equipment and machinery in good working order and ensure that regular maintenance is undertaken. Ensure that equipment is operated within specifications and capacity (e.g. do not overload machines). Ensure that the equipment is turned off when not in use
	Indirect Impacts:		
	ECOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Implement intermittent but regular broad scale weed control initiatives.
	Cumulative Impacts:		
	ECOLOGICAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Overhead transmission lines, as well as subtle changes in habitat are likely to result in the alteration of avian behaviour in and around the route. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Detailed design to consider and incorporate habitat and features into the routing of the proposed transmission line.
	<ul style="list-style-type: none"> The powerlines may increase the risk of collision and electrocution in some avifauna. An increase in towers and powerlines will result in greater mortalities in the region. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Ensure that Bird Flight Diverters are placed on the proposed transmission line (along the line route). The Delta tower configuration should not be utilised in this region. A design that avoids any risk of electrocution to birds would be correct and better suited for this line route.
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Implement intermittent but regular broad scale weed control initiatives.
VISUAL IMPACT ASSESSMENT			
<ul style="list-style-type: none"> Cumulative impact of solar energy generation projects and large scale 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified. 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	electrical infrastructure on the existing rural-agricultural landscape.		
	<ul style="list-style-type: none"> Cumulative visual impact of solar energy generation projects and large scale electrical infrastructure on existing views of sensitive visual receptors in the surrounding landscape. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	SOILS AND AGRICULTURAL POTENTIAL ASSESSMENT		
	<ul style="list-style-type: none"> Regional loss of agricultural land and resources as a result of the occupation of the land by the infrastructure of multiple projects. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	SOCIAL IMPACT ASSESSMENT		
<ul style="list-style-type: none"> Exacerbated in-migration resulting in a disruption of social structures as more solar energy facilities and associated electrical infrastructure (such as transmission lines) are developed in the study area. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Not applicable. Refer to Appendix D.7 of this BA Report for an explanation regarding cumulative social impacts. 	
Alternative 2 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
Alternative 3 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
NO-GO OPTION			
<ul style="list-style-type: none"> Maintenance of the status 	Direct Impacts:		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
quo.	<p>If this proposed project does not proceed:</p> <ul style="list-style-type: none"> • None of the impacts mentioned above will occur. • Only the current agricultural (grazing) land use will remain. • The landowners of the remaining extent of the Onder Rugzeer Farm 168, Portion 3 of Gembok Bult Farm 120, remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168 will not be able to derive benefits from the implementation of an additional land-use. • New employment opportunities will not be created, which may lead to negative local socio-economic implications. • No additional power will be generated or supplied through means of renewable energy resources by this project at this location. • There will be no contributions and assistance to the government in achieving its proposed renewable energy target of 17 800 MW by 2030. • Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified. • Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital. • There will be lost opportunity for skills 	Not applicable.	Not applicable.

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<p>transfer and education/training of local communities.</p> <ul style="list-style-type: none"> • The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised. • The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised. • There will be further implications for the proposed Kenhardt PV 2 and PV 3 facilities, as these plants will share the same corridor (and potentially the same on-site substation) with that of Kenhardt PV 1. 		
	Indirect Impacts:		
	No indirect impacts have been identified for the operational phase for the No-go Option.		
	Cumulative Impacts:		
No cumulative impacts have been identified for the operational phase for the No-go Option.			

Decommissioning Phase:

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
Alternative 1 (Preferred Alternative) – Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
Direct Impacts:			
ECOLOGICAL IMPACT ASSESSMENT			
<ul style="list-style-type: none"> ▪ Removal of vegetation; ▪ Excavations; ▪ Establishment of a laydown area for equipment; ▪ Stockpiling of topsoil and cleared vegetation; ▪ Transportation of material and equipment to site; and ▪ Removal of structures associated with the transmission line. 	<ul style="list-style-type: none"> • Removal of overhead transmission lines, as well as subtle changes in habitat, is likely to result in the alteration of avian behaviour following the loss of roosts and perches. 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • None identified.
	<ul style="list-style-type: none"> • Minor and subtle changes in the geomorphological state of drainage lines as hydraulic changes arise within the catchment. 	<ul style="list-style-type: none"> • Very Low (Undefined) 	<ul style="list-style-type: none"> • Stabilisation of disturbed grounds following the removal of infrastructure and avoidance of undue disturbance in and around watercourses.
	<ul style="list-style-type: none"> • Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> • Very Low (Negative) 	<ul style="list-style-type: none"> • Implement intermittent but regular weed control initiatives for a period that spans at least two growing seasons. • Ensure the stabilization of site is undertaken, once decommissioning and removal of infrastructure has arisen.
VISUAL IMPACT ASSESSMENT			
	<ul style="list-style-type: none"> • Potential visual intrusion of decommissioning activities on views of sensitive visual receptors. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Rehabilitation of cleared and disturbed areas. • Working at night should be avoided, where possible. • Night lighting of reclamation sites should be minimised within requirements of safety and efficiency. • Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast with the existing landscapes. • Stockpiled topsoil should be reapplied to disturbed areas and these areas should be re-vegetated using a mix of indigenous species in such a way that the areas will form as little contrast in form, line, colour and texture with the surrounding undisturbed landscape. • Edges of re-vegetated areas should be feathered to reduce form and line contrasts with surrounding undisturbed landscape.
	HERITAGE IMPACT ASSESSMENT (ARCHAEOLOGY AND CULTURAL LANDSCAPE)		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Impacts to the natural and cultural landscape during the decommissioning phase as a result of the presence of construction vehicles. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	GEOHYDROLOGICAL ASSESSMENT		
	<ul style="list-style-type: none"> Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> A precautionary approach should be taken and reasonable measures should be undertaken to prevent oil spillages and fuel leakages from occurring. Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. Any engines that stand in one place for a significant length of time must have drip trays. Fuel storage tanks should be above ground on an impermeable surface and within a bunded area. Vehicles and equipment should also be refuelled on an impermeable surface. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal practices of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.
	SOILS AND AGRICULTURAL POTENTIAL ASSESSMENT		
	<ul style="list-style-type: none"> Degradation of veld vegetation beyond the direct footprint of the proposed transmission line due to decommissioning disturbance and potential trampling by vehicles (including dust generation). 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Minimize the footprint of disturbance during decommissioning activities. Confine vehicle access to roads only. Control dust generation during decommissioning activities by implementing standard construction site dust control measures (dampening with water) where required. Because of water scarcity, this should only be done where and when dust generation is a significant problem.
<ul style="list-style-type: none"> Loss of topsoil due to poor topsoil management and decommissioning activities that disturb the soil profile. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Strip and stockpile topsoil from all areas where soil will be disturbed. There are no particular requirements for stockpile management and it can therefore be done in the way that is most practical for the operation. After cessation of disturbance, re-spread topsoil over the 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			surface. <ul style="list-style-type: none"> Dispose of any sub-surface spoil material, generated from excavations, where they will not impact on land that supports vegetation, or where they can be effectively covered with topsoil.
	<ul style="list-style-type: none"> Loss of agricultural land use as a result of the occupation of the land by the project infrastructure. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Soil erosion due to the alteration of the land surface characteristics and surface cover. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.
	SOCIAL IMPACT ASSESSMENT		
	<ul style="list-style-type: none"> Job losses as a result of the decommissioning of the proposed development. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> The proponent should comply with relevant South African labour legislation when retrenching employees. Scatec Solar should also implement appropriate succession training of locally employed staff earmarked for retrenchment during decommissioning. Such training could gradually equip workers to enter gainful employment in other locally viable sectors. All project infrastructures should be decommissioned appropriately and thoroughly to avoid misuse.
	TRAFFIC IMPACT STATEMENT		
	<ul style="list-style-type: none"> Increased traffic generation during the decommissioning phase. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Should abnormal loads need to be transported by road to the site or away from the site during the decommissioning phase, a permit needs to be obtained from the Provincial Government Northern Cape (PGNC) Department of Public Works, Roads and Transport. Compile and provide a Transport Traffic Plan to SANRAL. Ensure that roadworthy and safety standards are implemented at all times for all vehicles used during the decommissioning phase. Plan trips so that it occurs during the day but avoid vehicle movement on the regional road during peak time (06:00-10:00 and 16:00-20:00).

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads. 	<ul style="list-style-type: none"> High (Negative) 	<ul style="list-style-type: none"> Road mortality monitoring programme (inclusive of recording keeping for wildlife collisions) should be established and fences (such as Animex fences or similar) should be installed, if needed to direct animals to safe road crossings. Ensure that all contractors adhere to all speed limits applicable to all roads used. Implement clear and visible signalisation and signage indicating movement of vehicles within and around site, especially along access roads and intersections with public and private roads (such as when turning off or onto the Transnet Service Road to ensure safe entry and exit).
	<ul style="list-style-type: none"> Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and decommissioning equipment. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles. Postpone or reduce dust-generating activities during periods with strong wind. Earthworks may need to be rescheduled or the frequency of application of dust control/suppressant increased. Ensure that all vehicles are roadworthy and respect the vehicle safety standards implemented by the Project Developer. Avoid using old and noisy (i.e. unmaintained) decommissioning equipment and ensure equipment is well maintained.
	<ul style="list-style-type: none"> Change in the quality and surface condition of the roads leading to and surrounding the site. 	<ul style="list-style-type: none"> Low (Positive) 	<ul style="list-style-type: none"> Decommissioning activities will have a higher impact than the normal road activity and therefore the road should be inspected on a weekly basis for structural damage. Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles. A Road Maintenance Plan should be developed for the section of the Transnet Service Road that could possibly be used. The plan should address the following: <ul style="list-style-type: none"> Grading requirements;

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<ul style="list-style-type: none"> ▪ Dust suppressant requirements; ▪ Drainage requirements; ▪ Signage; and ▪ Speed limits.
	ADDITIONAL IMPACTS (IN ADDITION TO THOSE IDENTIFIED IN THE SPECIALIST STUDIES AND TRAFFIC IMPACT STATEMENT)		
	<ul style="list-style-type: none"> • Removal of alien invasive vegetation from the proposed project area. 	<ul style="list-style-type: none"> • Moderate (Positive) 	<ul style="list-style-type: none"> • Ensure that alien invasive vegetation found on site, within the proposed project footprint, is removed promptly, in a scheduled manner throughout the decommissioning phase. The removal of these species should be carried out in line with relevant specifications and regulations (such as the Regulations published in terms of Section 97(1) of the NEMBA, if applicable). • The removed alien invasive vegetation should be immediately disposed at a suitable waste disposal facility and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.
	<ul style="list-style-type: none"> • Increased faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The decommissioning personnel and staff should be made aware of the presence of fauna within the proposed project area. They must also be made aware of the general speed limits on site and must be alert at all times for potential crossings. This can be achieved via the Environmental Awareness Training programme. • Furthermore, in order to ensure that animals are not attracted to the site (and potentially resulting in increased road mortality), the waste collection bins and skips should be covered with suitable material, where appropriate, and the site camp must be kept clean on a daily basis.
<ul style="list-style-type: none"> • Impact on the regional water balance as a result of increased water usage. 	<ul style="list-style-type: none"> • Low (Negative) 	<ul style="list-style-type: none"> • Water is required during the decommissioning phase for various purposes, such as earthworks, as well as to fulfil the requirements of personnel on-site. Where possible, water conservation should be practiced. Water conservation techniques include making personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the site (such as sweeping the site before it is being washed). This can be achieved 	

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>through the Environmental Awareness Training programme.</p> <ul style="list-style-type: none"> Avoid the use of potable water for dust suppression during the decommissioning phase and consider the use of alternative approved sources, where possible.
	<ul style="list-style-type: none"> Potential spillage of effluent (from portable sanitation facilities for decommissioning personnel) resulting in potential impacts on soil and surface/groundwater. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is contained and transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. No waste water must be discharged to the natural environment. As part of the Environmental Awareness Training, all decommissioning personnel should be made aware of the sewage management practises. The site camp and necessary ablution facilities meant for workers must be located beyond 32 m of the drainage lines.
	<ul style="list-style-type: none"> Pollution caused by spillage or discharge of waste water into the surrounding environment. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Ensure that adequate containment structures are provided for the storage of liquid dangerous goods and hazardous materials on site (such as chemicals, oil, fuel, hydraulic fluids, lubricating oils etc. required for the equipment and vehicles). Appropriate bund areas must be provided for the storage of these materials at the site camp. Bund areas should have a capacity of 110 % of the volume of the largest tank in the bund (tanks include storage of fuel/diesel). Bund areas should contain an impervious surface in order to prevent spillages from entering the ground. A Spill Response Plan must be compiled (by Scatec Solar and the Contractor) for the decommissioning phase in order to manage potential spill events. The Contractor should compile a Method statement for refuelling activities under normal and emergency situations. A designated (impervious) area must be established at the

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
			<p>site camp for refuelling purposes. Drip trays or similar impervious materials must also be used during refuelling, especially during emergency procedures. Personnel should be trained to ensure proper transfer and refuelling. Any spilled fuel, oil or grease must be immediately retrieved where possible, and the contaminated material must be removed and disposed at a registered hazardous waste disposal facility. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</p>
	<ul style="list-style-type: none"> • Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The appointed Contractor should compile a Method Statement for Stormwater Management during the decommissioning phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff. • Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Monitoring programmes should be implemented to ensure that no materials enter the surface water drainage system.
	<ul style="list-style-type: none"> • Sedimentation of the surrounding drainage lines as a result of stormwater runoff and stockpiling of excavated material during the decommissioning phase. The excavated material could potentially be washed into the drainage lines via stormwater. This could also impact on avifauna. 	<ul style="list-style-type: none"> • Moderate (Negative) 	<ul style="list-style-type: none"> • The appointed Contractor should compile a Method Statement for Stormwater Management during the decommissioning phase. • All material that is excavated during the decommissioning phase must be stored appropriately on site in order to minimise impacts on the surrounding aquatic environment. • Exposed soil surfaces should be graded to minimise runoff and increase infiltration. • Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material. • Undertake periodic inspections and maintenance of soil erosion measures and stormwater control structures. • Stockpiles must be located at least 32 m away from the

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of general waste during the decommissioning phase. 	<ul style="list-style-type: none"> Moderate (Negative) 	<p>drainage lines, on flat areas where run-off will be minimised.</p> <ul style="list-style-type: none"> Stockpiles should not exceed 2 m in height. During periods of strong winds and heavy rain (in line with relevant rainfall patterns), the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.). <ul style="list-style-type: none"> General waste (i.e. waste, building rubble, discarded concrete, bricks, tiles, wood, glass, window panes, air conditioners, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) generated during the decommissioning phase should be stockpiled temporarily (i.e. once-off) on site in a designated area within suitable waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Should the on-site stockpiling of general waste exceed 100 m³ and a period of 90 days, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. Ensure that the designated stockpiling area for general waste (i.e. skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events. Ensure that general waste generated during the decommissioning phase is removed from the site on a regular basis, such as daily or weekly (whichever is practical), and safely disposed of at an appropriate, licenced waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file as proof of disposal. As a general principle, waste manifests must be obtained to prove legal disposal of waste. Ensure that the site is kept clean at all times and that personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management. Sufficient general waste disposal bins must also be provided

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<ul style="list-style-type: none"> Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of hazardous waste, as well as the removal of the soil contaminated with oil and diesel. 	<ul style="list-style-type: none"> Moderate (Negative) 	<p>for use by staff throughout the site. These bins must be emptied on a regular basis.</p> <ul style="list-style-type: none"> Hazardous waste (i.e. empty tins, oils, fuel spillages, spilled materials and chemicals etc.) generated during the decommissioning phase should be stockpiled temporarily (i.e. once-off) on site in a designated area in suitable waste collection bins and leak-proof storage skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Hazardous waste must be stored separately from all other general waste. The designated stockpiling area must be labelled correctly. Should the on-site stockpiling of hazardous waste exceed 80 m³, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. Ensure that the designated stockpiling area for hazardous waste (i.e. leak proof skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events. Ensure that all hazardous waste is removed from the site on a regular basis and safely disposed at an appropriate, licenced hazardous waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file as proof of disposal. As a general principle, waste manifests must be obtained to prove legal disposal of waste. Ensure that the decommissioning site is kept clean at all times and that decommissioning personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management.
	<ul style="list-style-type: none"> Generation of noise as a result of decommissioning activities and the use of diesel powered vehicles, equipment and machinery. 	<ul style="list-style-type: none"> Moderate (Negative) 	<ul style="list-style-type: none"> Keep all equipment and machinery in good working order and ensure that regular maintenance is undertaken. Ensure that equipment is operated within specifications and capacity (e.g. do not overload machines). Ensure that the equipment is turned off when not in use

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
Indirect Impacts:			
ECOLOGICAL IMPACT ASSESSMENT			
	<ul style="list-style-type: none"> Removal of overhead transmission lines, as well as subtle changes in habitat, is likely to result in the alteration of avian behaviour following the loss of roosts and perches. 	<ul style="list-style-type: none"> Very Low (Negative) 	<ul style="list-style-type: none"> None identified.
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Implement medium term exotic weed and vegetation control interventions.
GEOHYDROLOGICAL ASSESSMENT			
	<ul style="list-style-type: none"> Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> A precautionary approach should be taken and reasonable measures should be undertaken to prevent oil spillages and fuel leakages from occurring. Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. Any engines that stand in one place for a significant length of time must have drip trays. Fuel storage tanks should be above ground on an impermeable surface and within a bunded area. Vehicles and equipment should also be refuelled on an impermeable surface. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal practices of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.
Cumulative Impacts:			
ECOLOGICAL IMPACT ASSESSMENT			
	<ul style="list-style-type: none"> Increases in the prevalence of exotic and invasive plants. 	<ul style="list-style-type: none"> Low (Negative) 	<ul style="list-style-type: none"> Implement medium term exotic weed and vegetation control interventions.
Alternative 2 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
Alternative 3 - Refer to Section A (2) of this BA Report and the explanation above regarding applicable alternatives.			
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
NO-GO OPTION			
<ul style="list-style-type: none"> Maintenance of the status quo. 	Direct Impacts:		
	If this project does not go ahead there will be no need to decommission the project. Therefore direct impacts during the decommissioning phase for the No-go Option are not applicable.	Not applicable.	Not applicable.
	Indirect Impacts:		
	If this project does not go ahead there will be no need to decommission the project. Therefore indirect impacts during the decommissioning phase for the No-go Option are not applicable.		
	Cumulative Impacts:		
	If this project does not go ahead there will be no need to decommission the project. Therefore cumulative impacts during the decommissioning phase for the No-go Option are not applicable.		

A complete impact assessment in terms of Regulation 19(3) of GN 982 must be included as Appendix F.

Note from the CSIR: A complete Impact Assessment is included in Appendix F of this BA Report.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project as the proposed project location is dependent on the location of the Eskom Nieuwehoop Substation and the proposed Kenhardt PV 1 facility.

This section provides a summary of the BA and conclusions drawn from the impacts identified as a result of the proposed Kenhardt PV 1 – Transmission Line project. It is important to note that only the findings of the main specialist studies are summarised in this section. All additional impacts identified by the EAP (outside of those covered by the specialist studies) have been rated with a moderate to low significance with the implementation of mitigation measures (i.e. no impacts have been identified with a high impact significance with the implementation of mitigation measures).

▪ **Ecological Impact Assessment:**

An Ecological Impact Assessment (Appendix D.1 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the construction, operation and decommissioning of the proposed project on the terrestrial and aquatic ecology within the surrounding regions.

The following main impacts were identified in the Ecological Impact Assessment:

Construction Phase:

- Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project;
- Changes in the geomorphological state of drainage lines; and
- Exotic weed invasion.

Operational Phase:

- Changes in avian behaviour within increased perch and predation opportunities arising for raptors, which in turn have indirect impacts on prey species in the general locale;
- Bird collisions and mortalities arising from electrocution of birds perching on site and possibly direct collisions with the transmission line; and
- Exotic weed invasion as a consequence of regular and continued disturbance of route.

Decommissioning Phase:

- A reversion back to the present seral stage, where continued grazing by livestock and herbivory by game will arise.
- A reversion of present faunal population states within the subject route.
- Exotic weed invasion as a consequence of abandonment of route and cessation of weed control measures.

Cumulative Impacts:

- Extensive alteration of habitat structure and composition over an extensive and wide area where an increase in powerlines arise;
- Increased change in the geomorphological state of drainage lines on account of long term and extensive change in the nature of the catchment; and
- Exotic weed invasion as a consequence of regular and continued disturbance across an extensive area of the transmission line route.

Table 8 below illustrates a summary of the number of impacts identified in the Ecological Impact Assessment.

Table 8: Summary of the Ecological Impact Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	3	0	2	1	0	3	0	0	0
Construction Phase: Indirect Impacts	3	0	2	1	0	3	0	0	0
Construction Phase: Cumulative Impacts	3	0	2	1	0	3	0	0	0
Operational Phase: Direct Impacts	3	1	1	1	0	2	1	0	0
Operational Phase: Indirect Impacts	1	1	0	0	0	1	0	0	0
Operational Phase: Cumulative Impacts	3	1	1	1	0	2	1	0	0
Decommissioning Phase: Direct Impacts	3	3	0	0	0	3	0	0	0
Decommissioning Phase: Indirect Impacts	2	1	1	0	0	2	0	0	0
Decommissioning Phase: Cumulative Impacts	1	0	1	0	0	1	0	0	0
Total Impacts	22								

Overall, the above impacts are predicted to be of a moderate to low significance without the implementation of mitigation measures. It is clear from Table 8 that no impacts were assessed as being of high significance after the implementation of mitigation.

▪ **Visual Impact Assessment:**

A Visual Impact Assessment (Appendix D.2 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the construction, operation and decommissioning of the proposed project on the surrounding sensitive viewers and receptors.

The following main impacts were identified in the Visual Impact Assessment:

Construction Phase:

- Potential visual intrusion of construction activities on views of sensitive visual receptors.

Operational Phase:

- Potential landscape impact of the proposed 132 kV powerline on a rural agricultural landscape; and
- Potential visual intrusion of the proposed 132 kV powerline on the views of sensitive visual receptors.

Decommissioning Phase:

- Potential visual intrusion of decommissioning activities on views of sensitive visual receptors.

Cumulative Impacts:

- Cumulative impact of solar energy generation projects and large scale electrical infrastructure on the existing rural-agricultural landscape; and
- Cumulative visual impact of solar energy generation projects and large scale electrical infrastructure on existing views of sensitive visual receptors in the surrounding landscape.

Table 9 below illustrates a summary of the number of impacts identified in the Visual Impact Assessment.

Table 9: Summary of the Visual Impact Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	1	0	1	0	0	0	1	0	0
Operational Phase: Direct Impacts	2	2	0	0	0	2	0	0	0
Decommissioning Phase: Direct Impacts	1	0	1	0	0	0	1	0	0
Cumulative Impacts	2	2	0	0	0	2	0	0	0
Total Impacts	5								

No indirect impacts were identified in the Visual Impact Assessment.

Overall, the above impacts are predicted to be of a low to very low significance without the implementation of mitigation measures. It is clear from Table 9 that no impacts were assessed as being of high significance after the implementation of mitigation.

▪ **Heritage Impact Assessment (Archaeology and Palaeontology):**

A Heritage Impact Assessment (Appendix D.3 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the construction and operation of the proposed project on the archaeology and the cultural landscape.

The following main impacts were identified in the Heritage Impact Assessment:

Construction Phase:

- Damage to or destruction of archaeological resources and graves; and
- Impacts to the cultural and natural landscape.

Operational Phase:

- Impacts to the cultural and natural landscape.

Decommissioning Phase:

- Impacts to the cultural and natural landscape.

Cumulative Impacts:

- Damage to or destruction of archaeological resources and graves; and
- Impacts to the cultural and natural landscape.

Table 10 below illustrates a summary of the number of impacts identified in the Heritage Impact Assessment.

Table 10: Summary of the Heritage Impact Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	3	3	0	0	0	3	0	0	0
Operational Phase: Direct Impacts	1	1	0	0	0	1	0	0	0
Decommissioning Phase: Direct Impacts	1	1	0	0	0	1	0	0	0
Cumulative Impacts	3	3	0	0	0	3	0	0	0
Total Impacts	8								

Indirect impacts have not been assessed because the nature of the identified heritage resources is such that significant indirect impacts are highly unlikely to occur.

Overall, the above impacts are predicted to be of a low to very low significance without the implementation of mitigation measures. It is clear from Table 10 that no impacts were assessed as being of high significance with or without the implementation of mitigation.

▪ **Desktop Palaeontological Impact Assessment:**

A desktop Palaeontological Impact Assessment (Appendix D.4 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the construction of the proposed project on palaeontology.

The following main impacts were identified in the Palaeontological Impact Assessment:

Construction Phase:

- Potential loss of palaeontological heritage resources through disturbance, damage or destruction of fossils and fossil sites (including associated geological contextual data) through surface clearance and excavation activities during the construction phase.

Cumulative Impacts:

- Potential cumulative loss of palaeontological heritage resources through disturbance, damage or destruction of fossils and fossil sites (including associated geological contextual data) through surface clearance and excavation activities during the construction phase of proposed transmission line in the context of several alternative energy projects planned within the broader Kenhardt region and other key electrical infrastructure developments within a 20

km radius of the proposed project site.

Table 11 below illustrates a summary of the number of impacts identified in the Palaeontological Impact Assessment.

Table 11: Summary of the Palaeontological Impact Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	1	1	0	0	0	1	0	0	0
Cumulative Impacts	1	1	0	0	0	1	0	0	0
Total Impacts	2								

No significant impacts on palaeontological heritage are anticipated during the operational and decommissioning phases of the proposed transmission line development, therefore these have not been rated or identified.

Overall, the above impacts are predicted to be of a very low significance without and with the implementation of mitigation measures. It is clear from Table 11 that no impacts were assessed as being of high significance with or without the implementation of mitigation.

▪ **Geohydrological Assessment:**

A Geohydrological Assessment (Appendix D.5 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the construction and operation of the proposed project on the groundwater and geohydrological resources.

The following main impacts were identified in the Geohydrological Assessment:

Construction Phase:

- Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages; and
- Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps.

Decommissioning Phase:

- Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.

Table 12 below illustrates a summary of the number of impacts identified in the Geohydrological Assessment.

Table 12: Summary of the Geohydrological Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	2	0	2	0	0	0	2	0	0
Construction Phase: Indirect Impacts	2	0	2	0	0	0	2	0	0
Decommissioning Phase: Direct Impacts	1	0	1	0	0	1	0	0	0
Decommissioning Phase: Indirect Impacts	1	0	1	0	0	1	0	0	0
Total Impacts	6								

No impacts on geohydrology are anticipated during the operational phase of the proposed transmission line development, therefore these have not been rated or identified. No cumulative impacts have been identified in the specialist study.

Overall, the above impacts are predicted to be of a very low significance without and with the implementation of mitigation measures. It is clear from Table 12 that no impacts were assessed as being of high significance with or without the implementation of mitigation.

▪ **Soils and Agricultural Potential Assessment:**

A Soils and Agricultural Potential Assessment (Appendix D.6 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the proposed project on the soil and agricultural land use.

The following main impacts were identified in the Soils and Agricultural Potential Assessment:

Construction and Decommissioning Phases:

- Degradation of veld vegetation beyond the direct footprint of the proposed transmission line corridor due to construction and decommissioning phase disturbance and potential trampling by vehicles.
- Loss of topsoil due to poor topsoil management (burial, erosion, etc.) during construction and decommissioning related soil profile disturbance (levelling, excavations etc.) and resultant decrease in that soil's capability for supporting vegetation.
- Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production.
- Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project.

Operational Phase:

- Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production.
- Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project.

Cumulative Impacts:

- Cumulative impacts due to the regional loss of agricultural land resources as a result of other developments on agricultural land in the region.

Table 13 below illustrates a summary of the number of impacts identified in the Soils and Agricultural Potential Assessment.

Table 13: Summary of the Soils and Agricultural Potential Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	4	4	0	0	0	4	0	0	0
Operational Phase: Direct Impacts	4	4	0	0	0	4	0	0	0
Decommissioning Phase: Direct Impacts	4	4	0	0	0	4	0	0	0
Cumulative Impacts	1	1	0	0	0	1	0	0	0
Total Impacts	13								

No indirect cumulative impacts have been identified in the specialist study.

Overall, the above impacts are predicted to be of a very low significance without and with the implementation of mitigation measures. It is clear from Table 13 that no impacts were assessed as being of high significance with or without the implementation of mitigation.

▪ **Social Impact Assessment:**

A Social Impact Assessment (Appendix D.7 of this BA Report) was conducted as part of the BA Process in order to identify and assess impacts associated with the proposed project on the social environment.

The following main impacts were identified in the Social Impact Assessment:

Construction and Operational Phases:

- Influx of jobseekers;
- Increases in social deviance;
- Increases in incidence of HIV/AIDS infections;
- Expectations regarding jobs;
- Local spending;

- Local employment; and
- Human development resulting from the proposed Economic Development Plan.

Decommissioning Phase:

- Job losses at the end of the project life-cycle.

Cumulative Impacts:

- Cumulative impacts as a result of exacerbated in-migration.

Table 14 below illustrates a summary of the number of impacts identified in the Social Impact Assessment.

Table 14: Summary of the Social Impact Assessment

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	6	0	2	4	0	1	3	2	0
Operational Phase: Direct Impacts	6	0	2	4	0	1	3	2	0
Decommissioning Phase: Direct Impacts	1	4	0	1	0	0	1	0	0
Cumulative Impacts	1	0	0	0	0	0	1	0	0
Total Impacts	14								

No indirect cumulative impacts have been identified in the specialist study.

It is clear from Table 14 that no impacts were assessed as being of high significance with or without the implementation of mitigation. Note that positive social impacts were also assessed. The overall significance rating of the negative socio-economic impacts associated with the proposed project is low to moderate; whereas the overall significance rating of the positive socio-economic impacts associated with the proposed development is moderate.

Alternative B

As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project as the proposed project location is dependent on the location of the Eskom Nieuwehoop Substation and the proposed Kenhardt PV 1 facility.

Alternative C

As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project as the proposed project location is dependent on the location of the Eskom Nieuwehoop Substation and the proposed Kenhardt PV 1 facility.

No-go alternative (compulsory)

The following implications will occur if the “no-go” alternative is implemented (i.e. if the proposed Kenhardt PV 1 – Transmission Line project is not constructed):

- There will be negative implications for the proposed Kenhardt PV 1 facility, as there will be no dedicated, fundamental electrical infrastructure to allow the PV facility to connect to the Eskom Nieuwehoop Substation and the national grid. This could possibly result in non-realisation of the benefits, such as economic spin offs and electricity generation, associated with the proposed Kenhardt PV 1 facility. This could also result in additional costs and expenditure, as well as additional timeframes required, as a result of the potential re-design of the Kenhardt PV 1 facility to align with an alternative substation within the region. Using an alternative substation within the region (dependent on capacity requirements) could result in longer transmission lines and associated gravel roads. This could result in additional negative impacts to the surrounding environment, including avifauna. If re-design is not financially and technically feasible, then the proposed Kenhardt PV 1 facility will not be able to be constructed as it will not have fundamental infrastructure to link it to the national grid. If the proposed Kenhardt PV 1 facility cannot be constructed as a result of the no-go of the proposed Kenhardt PV 1 – Transmission Line, this could, in turn, result in the following implications:
 - The landowners of the remaining extent of the Onder Rugzeer Farm 168, Portion 3 of Gemsbok Bult Farm 120, remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168 will not be able to derive benefits from the implementation of an additional land-use;
 - No additional power will be generated or supplied through means of renewable energy resources by this project at this location. The proposed 75 MW facility is predicted to generate approximately 200 GW/h per year which could power 20 000 households;
 - There will be no contributions and assistance to the government in achieving its proposed renewable

energy target of 17 800 MW by 2030;

- No additional power to the local grid will be provided via the Eskom grid, with approximately 90% coal-based power generation with associated high levels of CO₂ emissions and water consumption;
 - Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified;
 - Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital;
 - There will be no opportunity for additional employment in an area where job creation is identified as a key priority. Between 90 and 150 skilled and 400 and 460 unskilled employment opportunities are expected to be created during the construction phase of the proposed Kenhardt PV 1 facility. Approximately 20 skilled and 40 unskilled employment opportunities will be created over the 20 year lifespan of the proposed Kenhardt PV 1 facility;
 - There will be lost opportunity for skills transfer and education/training of local communities;
 - The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised; and
 - The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised.
- In addition, the following additional implications will occur if the “no-go” alternative is implemented:
- There will be further implications for the proposed Kenhardt PV 2 and PV 3 facilities, as these plants will share the same corridor (and potentially the same on-site substation) with that of Kenhardt PV 1;
 - There will be no opportunity for additional employment in an area where job creation is identified as a key priority. Approximately 130 employment opportunities are expected to be created during the construction phase of the proposed Kenhardt PV 1 – Transmission Line project;
 - There will be lost opportunity for skills transfer and education/training of local communities; and
 - The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised.

Converse to the above, the following benefits could occur if the “no-go” alternative is implemented:

- There will be no development of electrical infrastructure and transmission lines that are associated with solar energy facilities at the proposed location;
- The agricultural land use will remain only;
- No threatened vegetation will be removed or disturbed during the development of the transmission line and electrical infrastructure;
- No change to the current landscape will occur; and
- No additional water use and waste generation during the construction phase.

It is important to take into account that the country is facing serious power and water shortages due to its heavy dependency on fossil fuels such as coal. There is therefore a need for additional electricity generation options to be developed throughout the country. The purpose of the proposed Kenhardt PV 1 – Transmission Line project is to transmit electricity generated by a renewable energy resource into the national electricity grid. Many other socio-economic and environmental benefits will result from the development of this project such as development of renewable energy resources in the country and contribution to the increase of energy security, employment creation and local economic development (as noted above).

Hence, the “no-go” alternative will result in negative environmental impacts, by not going ahead with the project it will also not result in any positive community development or socio-economic benefits and could, should an alternative connectivity option be considered to a different substation due to the rejection of the current proposal, lead to an increase in the negative impacts associated with the development of electrical infrastructure. Hence the “no-go” alternative is not a preferred alternative.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES ✓

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

This BA Report has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect and cumulative impacts associated with the proposed Kenhardt PV 1 – Transmission Line project. No negative impacts have been identified within this BA that, in the opinion of the EAPs who have conducted this BA Process, should be considered "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project.

Based on the findings of the specialist studies, the proposed project is considered to have an overall low negative environmental impact and an overall medium positive socio-economic impact.

The preferred site for the proposed project is the remaining extent of Onder Rugzeer Farm 168 and the remaining extent of Portion 3 of Gembok Bult Farm 120. The proposed transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The location of the proposed transmission line is dependent on the location of the Kenhardt PV 1 facility and the Eskom Nieuwehoop Substation.

The proposed project will be undertaken within the electrical infrastructure corridor. This corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of this BA Report, as well as the EMPr included in Appendix G of this BA Report). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the larger corridor that was assessed. Based on this map, the preferred location and routing for the Kenhardt PV 1 transmission line within the corridor avoids the sensitive features that were identified by the specialists. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, a site layout has also been preliminarily determined for this project, which is included in Appendices A and B of this BA Report, as well as the EMPr included in Appendix G of this BA Report. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout or revisions to the layout occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the EIA Phase. This is based on the understanding that the specialists have assessed the corridor area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a "box" in which the project components can be constructed at whichever location (within its boundaries) without requiring an additional assessment or change in impact significance. **Therefore, the routing indicated in Appendix A and Appendix C of this BA Report have taken into consideration the sensitivities identified within the corridor by the specialists.**

This BA considered the nature, scale and location of the proposed development as well as the wise use of land (i.e. is this the right time and place for the development of this proposed project). When considering the timing of this project, the IRP2010 proposes to secure 17 800 MW of renewable energy capacity by 2030. In August 2011, the DOE launched the REIPPPP and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of various renewable energy project (including solar and wind). In terms of the REIPPPP, the submitted proposals are then evaluated. Currently, the two main evaluation criteria for compliant proposals are price and economic development with a point allocation of 70/30 (DOE, 2013), with other selection criteria including technical feasibility and grid connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders whose responses rank the highest (according to the aforementioned criteria) will have the greatest potential to be appointed as "Preferred Bidders" by the DOE. The first

procurement phase of the DOE's REIPPPP includes five bidding windows. Scatec Solar intends to bid these projects in the 2016 bidding process (i.e. Round 5) to be potentially selected as an IPP. The proposed Kenhardt PV 1 – Transmission Line project is required as part of the bidding process to confirm that the proposed Kenhardt PV 1 facility is enabled and equipped with the necessary infrastructure to connect to the national grid.

Overall the proposed transmission line project will fundamentally support and enable the functioning proposed Kenhardt PV 1 facility and to ensure that it is allowed to contribute to the abovementioned renewable energy targets proposed by the DOE.

On a provincial level, the Northern Cape Province is currently facing considerable constraints in the availability and stability of electricity supply. This is a consequence of South Africa's electricity generation and supply system being overstretched, and the reliance of the Northern Cape, as many other South African provinces, on the import of power to service its energy needs.

The development of solar energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability. On a municipal planning level, the proposed project does not go against any of the objectives set within the IKheis Municipality Draft IDP 2012-2017. The proposed project will be in line with/supportive of the IDP's objective of creating more job opportunities and it will enable the proposed Kenhardt PV 1, 2 and 3 facilities to be constructed and to function optimally. The proposed transmission line project will assist in local job creation during the construction phase of the project (and ultimately enable job creation as a result of the proposed Kenhardt PV 1, 2 and 3 facilities), if approved by the DEA. It should however be noted that employment during construction phase will be temporary.

Taking into consideration the findings of the BA Process, it is the opinion of the EAP, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Kenhardt region. The proposed project will play a key role in enabling and facilitating the construction of the proposed 75 MW Kenhardt PV 1 project, which will add electricity to the national grid. Provided that the specified mitigation measures are applied effectively, it is recommended that the proposed project receive EA in terms of the EIA Regulations promulgated under the NEMA.

Section 24 of the Constitutional Act states that "everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Based on this, this BA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site and through appropriate monitoring and management plans to, inter alia, monitor the impacts on birds and protection of SCC potentially present within this area (refer to the EMPr in Appendix G of this BA Report).

In order to ensure the effective implementation of the mitigation and management actions, an EMPr has been compiled and is included in Appendix G of this BA Report. The mitigation measures necessary to ensure that the project is planned and carried out in an environmentally responsible manner are listed in this EMPr. The EMPr is a dynamic document that should be updated as required and provides clear and implementable measures for the proposed project.

Listed below are the main recommendations that should be considered (in addition to those in the EMPr and BA Report) for inclusion in the EA (should such authorisation be granted by the DEA):

- Prior to the commencement of the construction phase, it is recommended that a suitable specialist is appointed to identify any indigenous plant species (such as Aloes, bush clumps etc.) that could potentially be impacted by the proposed project and thus need to be rescued. If any of the plant species are identified as being protected, then it is essential that the relevant permits required to remove/disturb the protected plant species are obtained from the relevant Authorities. Once the permits are obtained, a plant search and rescue programme must be implemented to allow for the successful transplantation of these species. Where possible, all rescued plants must be retained in a suitable nursery or transplanted directly into landscaped areas.
- The footprint required for the proposed project activities must be kept at a minimum. The proposed project footprint must be demarcated to reduce unnecessary disturbance beyond the proposed project area.
- Proper stockpiling must be implemented during all phases of the proposed project in order to prevent erosion and

concomitant impacts on the surrounding drainage lines.

- All construction, operational and decommissioning personnel must be made aware of the sensitivity and importance of the surrounding environment (especially the major and minor drainage lines, Aloe consocias and the dolerite koppie). The construction, operational and decommissioning personnel should be made aware and educated of the presence of fauna and bird species and their reliance on the aforementioned features, in order to avoid disrupting activities and collisions.
- Buffers of 75 m radius from the centre of the pan (in the vicinity of the Nieuwehoop Substation) and 120 m radius from the summit of the koppie must be implemented as a precautionary measure. These features should be demarcated as no-go areas.
- The routing of the transmission line must avoid the Aloe consocias identified. This may be achieved, preferably by locating the final route proximal to the existing railway line/roadway, or less favourably by spanning over the associates. Mitigation and management measures proposed are that the actual powerline lie either to the south or north of the identified associates and where applicable, towers be suitably positioned at points distal from these communities. The relocation of these specimens is possible; however this method should be avoided. Towers should be spaced adequately to avoid the necessity for relocation. A 60 m buffer should be implemented around the Aloe consocias and it must be considered as a no-go area during construction.
- Environmental Awareness Training should be carried out at least once-off during the construction and decommissioning phases to ensure that staff are aware of environmental concerns and proper house-keeping recommendations.
- Archaeological and palaeontological mitigation measures stipulated within this BA Report must be implemented during the construction phase. The contact details for SAHRA should be included in relevant documents/specifications provided to the Contractor, to ensure that these authorities are contacted timeously in the event of archaeological material and/or fossils being discovered during construction.
- Waste management must be undertaken rigorously during all phases of the proposed project and any non-compliance must be recorded by the ECO. The designated waste stockpiling areas must be inspected frequently to ensure that the integrity is intact and the condition is not compromised. Waste disposal slips and waybills must be kept for all waste disposed at a registered waste disposal facility. As a general principle, waste manifests must be obtained to prove legal disposal of waste. A detailed record must be kept to track the amount of hazardous and general waste being temporarily stockpiled on site. Should the on-site stockpiling of general waste and hazardous waste respectively exceed 100 m³ and 80 m³, and a period exceeding 90 days, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to.

Is an EMPr attached?

YES ✓

The EMPr must be attached as Appendix G.

Note from the CSIR: The EMPr is included in Appendix G of this BA Report.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

Note from the CSIR: The details and expertise of the EAP are included in Appendix H of this BA Report.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Note from the CSIR: The declarations of interest of the specialists are included in Appendix I of this BA Report.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Note from the CSIR: The references used in this BA Report and the notes of the pre-application meeting with the DEA are included in Appendix J of this BA Report.

Surina Laurie

NAME OF EAP



SIGNATURE OF EAP

3 March 2016

DATE

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A	Maps
Appendix B	Photographs
Appendix C	Facility illustration(s)
Appendix D	Specialist reports (including terms of reference)
Appendix E	Public Participation
Appendix F	Impact Assessment
Appendix G	Environmental Management Programme (EMPr)
Appendix H	Details of EAP and expertise
Appendix I	Specialist's declaration of interest
Appendix J	Additional Information