



## **DRAFT BASIC ASSESSMENT**

Proposed 132 kV Overhead  
Transmission Line Option 2 (Kronos) for  
the Kronos Photovoltaic Development  
near Copperton, Northern Cape. DEA  
Ref No.: 14/12/16/3/3/1/1343

**Prepared for Juwi**

5 November 2015

Revision: 1

Reference: 111285

# Document control record

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1977/003711/07

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<b>Report title</b>		Proposed 132 kV Overhead Transmission Line Option 2 (Kronos) for the Kronos Photovoltaic Development near Copperton, Northern Cape.				
<b>Document ID</b>		<b>Project number</b>		111285		
<b>File path</b>		\\zacptdc01\Shares\ZACPT\Projects\Projects\111285_4EIAs & BAs Kronos PV Dev Copperton\03 PRJ Del\3 REPORTS\3 - Draft BARs\BAR - TX Option 2 (Kronos)\Option 2_DBAR.docx				
<b>Client</b>		Prepared for Juwi		<b>Client contact</b>		
<b>Rev</b>	<b>Date</b>	<b>Revision details/status</b>	<b>Prepared by</b>	<b>Author</b>	<b>Verifier</b>	<b>Approver</b>
0	Select Date	1 <sup>st</sup> Draft	Corlie Steyn	Corlie Steyn	Patrick Killick	Diane Erasmus
<b>Current revision</b>		1				

Approval			
<b>Author signature</b>		<b>Approver signature</b>	
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## Abbreviations

<b>BAR</b>	Basic Assessment Report
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>DEA</b>	Department of Environmental Affairs (previously Department of Environmental Affairs and Tourism)
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning

<b>DEANC</b>	Department of Environmental Affairs and Nature Conservation
<b>DoE</b>	Department of Energy
<b>EAP</b>	Environmental Assessment Practitioner
<b>EMPr</b>	Environmental Management Programme
<b>EIA</b>	Environmental Impact Assessment
<b>ERA</b>	Electricity Regulation Act (No. 4 of 2006)
<b>GN</b>	Government Notice
<b>G:S:B-</b>	General: Small: negative water balance
<b>GWh</b>	Gigawatt hours
<b>ha</b>	Hectares
<b>HIA</b>	Heritage Impact Assessment
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IEP</b>	Integrated Energy Plan
<b>IPP</b>	Independent Power Producer
<b>IRP</b>	Integrated Resource Plan
<b>kV</b>	Kilovolt
<b>LILO</b>	Loop in loop out
<b>MW</b>	Megawatts
<b>MWh</b>	Megawatt hours
<b>NEMA</b>	National Environmental Management Act (No. 107 of 1998) (as amended)
<b>NHRA</b>	National Heritage Resources Act (No. 25 of 1999)
<b>NWA</b>	National Water Act (No 36 of 1998)
<b>PV</b>	Photovoltaic
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SACNASP</b>	South African Council for Natural Scientific Professions
<b>SDF</b>	Spatial Development Framework
<b>SO<sup>2</sup></b>	Sulphur Dioxide
<b>UNCBD</b>	United Nations Convention on Biological Diversity
<b>UNFCC</b>	United Nations Framework Convention on Climate Change



**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, 2010, 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, 2010 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 **1 September 2012**. 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 on the electronic copy of the report submitted to the competent authority.

**1. 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.

All specialist reports contain the signed form entitled "Details of specialist and declaration of interest" (Please refer to Appendix I).

**1.1. Project description****1.1.1. Describe the project associated with the listed activities applied for****PROJECT DESCRIPTION**

juwi Renewable Energies (Pty) Ltd (juwi) wish to develop up to two ±11km, double circuit 132 kilovolt (kV) overhead transmission lines inside a 200m wide assessed corridor between the proposed Kronos Solar Park central substation (29°58'52.00"S by 22°25'1.65"E) and Eskom's Kronos substation (30°1'25.93"S by 22°20' 20.63"E). The project would include the following:

- Self-supporting or suspension pole pylons (≤50 pylons @ 250m intervals) to support each 132 kV line; and
- Access and maintenance tracks (gravel) along the transmission line route.

**PROJECT BACKGROUND**

The proposed Kronos Solar Park will consist of up to three 100 MWac PV facilities. Each of the proposed PV facilities i.e. Kronos PV1 (DEA Ref No.: 14/12/16/3/3/2/768), Kronos PV2 (DEA Ref No.: 14/12/16/3/3/2/769) and Kronos PV3 (DEA Ref No.: 14/12/16/3/3/2/770) are assessed under separate Environmental Impact Assessment (EIA) Processes together with a default Loop In Loop Out (LILO) transmission line option (Option 1 (LILO)). Option 1 (LILO) would connect to an existing Eskom transmission line traversing the Kronos Solar Park site. The other two transmission line options are assessed under separate Basic Assessment Processes (Transmission Line Option 2 (Kronos) connecting to the existing Eskom Kronos substation (DEA Ref No.: 14/12/16/3/3/1/1343) and Transmission Line Option 3 (Cuprum) connecting with the existing Eskom Cuprum substation (DEA Ref No.: 14/12/16/3/3/1/1344)) in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) 2010 EIA Regulations (Government Notice No. 543 of 2010).

The full project thus consists of 5 separate environmental authorisation processes. The 3 PV facilities are assessed individually in order to comply with the Department of Energy's (DOE's) renewable energy facility capacity limits. The transmission line options are assessed separately in order to allow Eskom to select the technically feasible option at the time of construction. All options require approval since it cannot at this time be foreseen by Eskom which option would be required at the time of construction.

**Project location**

The site for Kronos Solar Park development is Portion 6 of Farm No. 103 (locally known as Nelspoortjie) near Copperton, Northern Cape. Copperton is located approximately 50 km southwest of Prieska and within the Pixley ka Seme District Municipality in the Northern Cape Province as indicated in

Figure 1. The proposed site is 1,440 ha in size and zoned for Agriculture. The farm is currently used for small stock grazing. The proposed transmission line from the solar facility to the Eskom Kronos substation will start on and cross the following properties:

- Nelspoortje, Farm 103, Portion 6
- Klipgats Pan, Farm 117, Portion 4
- Hoekplaas, Farm 146, Portion 0
- Humansrus, Farm 147, Portion 0

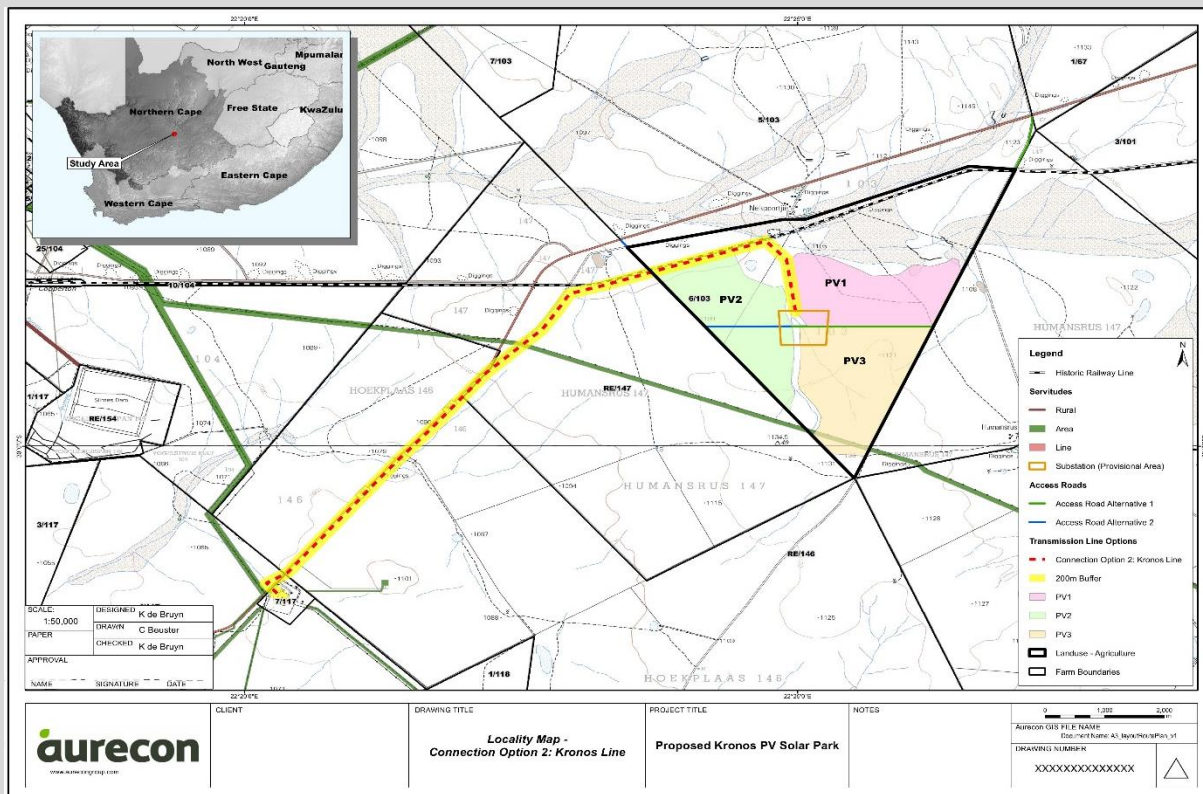


Figure 1: Location of the proposed 132 kilovolt overhead transmission line Option 2 (Kronos) for the Kronos Photovoltaic Development near Copperton, Northern Cape



1.1.2. Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN R.544, 545 and 546	Listed activity as described in in GN R. 983,984,985 (2014)	Description of project activity
<p><b>GN R. 544 No. 10</b> The construction of facilities or infrastructure for the transmission and distribution of electricity: (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts</p>	<p><b>GN R. 983 No. 11</b> The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;</p>	<p>The construction of up to two 132 kV transmission lines from the proposed Kronos Photovoltaic development to the Kronos Substation which are located outside of the urban edge. The 132 kV transmission lines will be approximately 11 km in length.</p>
<p><b>GN R. 544 No. 11</b> The construction of: (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p><b>GN R. 983 No. 12</b> The development of- (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (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>Wetlands and drainage lines are scattered across the proposed transmission line route and one or more structures or associated infrastructure would need to cross these areas.</p>
<p><b>GN R. 544 No. 18</b> 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 or more than 5 cubic metres from: (i) a watercourse but excluding where such infilling, depositing, dredging, excavation, removal or moving; (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (b) occurs behind the development setback line.</p>	<p><b>GN R. 983 No. 19</b> 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- (i) a watercourse; excluding where such infilling, depositing, dredging, excavation, removal or moving-</p>	<p>It is possible that one or more of the transmission line pylon bases and/or access roads will be located in a watercourse and or drainage line where cumulatively more than 5 cubic meters would be deposited or removed. Therefore this activity will be applied for.</p>
<p><b>GN R. 544 No 22</b> The construction of a road, outside urban areas, (ii) where no reserve exists where the road is wider than 8 metres.</p>	<p><b>GN R. 983 No. 24</b> The development of- (ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</p>	<p>The transmission line will be ceded to Eskom who may require the access roads wider than 8 metres to construct and maintain the line.</p>

**1.2. 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 Regulation 22(2)(h) of GN R.543. 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.

**1.2.1. Site alternatives**

Since transmission lines have a fixed starting and ending point and serve to connect the generating facility to the national grid, no alternative site would allow the required connection from the development to Kronos substation. In terms of GN. R.543 (EIA Regulations, 2010) Section 22(4) it is thus motivated that there are no feasible and reasonable site alternatives.

As mentioned under the project description there are connection options to other substations or lines that are being assessed separately in order to allow for Eskom to connect the proposed development to the connection point that is technically feasible at the time of construction. These options are, however, not alternatives to achieve the connection to Kronos substation<sup>1</sup>.

In the case of linear activities:

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred)

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

29°58'52.00"S	22°25'1.65"E
29°59'17.24"S	22°22'11.44"E
30° 1'25.93"S	22°20'20.63"E

<sup>1</sup> Awaiting response from DEA

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.

Please refer to Appendix A for the Map indicating centre line points of route corridor and corresponding co-ordinate table for the Preferred Alternative [Referred to in specialist reports as Option 2 (Kronos)].

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

**1.2.2. Lay-out alternatives**

The area has several proposed developments which limits the potential routing options to those currently under assessment. A 200m wide corridor has been assessed and within each 200m corridor are numerous potential alternative layouts or routes for the transmission line. The final route will be adjusted to follow the shortest route whilst avoiding any identified sensitive environmental or development features and no go areas identified by the specialists or during the pre-construction walkthrough. Given that there are no additional available routes (apart from those being applied for separately), and a corridor is being assessed as opposed to a single route, in terms of GN. R.543 (EIA Regulations, 2010) Section 22(4) it is thus motivated that no further feasible and reasonable routing alternatives exist.

The Occupational Health and Safety Act No. 85 of 1993 (the OHS Act), provides for statutory clearances to ensure minimum safety standards. In order to comply with these statutory clearances, Eskom and a number of other authorities (Roads Department, Transnet and Telkom, etc.) have laid down minimum clearances to their works. The minimum clearances will thus be prescribed by Eskom, taking into account those required by the OHS Act.

Alternative A1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

**1.2.3. Technology alternatives**

There are possible alternatives regarding transmission pole types that could be used. However, since it is not possible to at this time determine Eskom’s technical requirements, it is not possible to assess alternative transmission pole varieties, as they may prove to be technically unfeasible according to Eskom. Therefore in terms of GN. R.543 (EIA Regulations, 2010) Section 22(4) it is thus motivated that no feasible and reasonable technical alternatives can be assessed.

Alternative A1
Alternative B1
Alternative 3

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

Transmission lines will undergo micro-siting during the pre-construction phase to optimise the routing and avoid sensitive environmental features and other developments / infrastructure. These micro-siting alternatives are not known at this time, and if they were, may be subject to change later and thus assessing them as part of this application would not be of any use.

Alternative A1 (preferred alternative)
Alternative 2
Alternative 3

**1.2.5. No-go alternative**

The No-Go alternative implies that the construction of this transmission line would not go ahead and the *status quo* would be maintained. This would potentially prevent up to 300MW of renewable energy being added to the national grid.

Paragraphs below should be completed for each alternative.

**1.3. Physical size of the activity**

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

Footprint per Type 261 pylon (0.6 m <sup>2</sup> ) or Footprint per Type 277 pylon (1.5 m <sup>2</sup> )	1.5m <sup>2</sup> area x 11 km length / 250 m span	<b>Size of the activity:</b>
Pylon footings		Up to 75 m <sup>2</sup>
Service track / road	4m x 11km	Up to 4.4ha

**Alternative:**

- Alternative A1 (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

**Length of the activity:**

Approximately 11km
m
m

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

**Alternative:**

- Alternative A1 (preferred activity alternative)

**Size of the site/servitude:**

Servitude width approximately 52m
--------------------------------------

Alternative A2 (if any)

	m <sup>2</sup>
--	----------------

Alternative A3 (if any)

	m <sup>2</sup>
--	----------------

**1.4. Site access**

**Does ready access to the site exist?**

<b>YES</b> √	<b>NO</b>
--------------	-----------

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

	m
--	---

**Describe the type of access road planned:**

Access to the transmission line route already exists. The transmission line service road will take the form of a cross-country track, approximately 4m (and perhaps wider than 8m for short distances) wide and used only by off-road vehicles and equipment during construction and maintenance. Obstacles and vegetation may be removed and depressions filled where needed to allow cross country travel.

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.

Refer to Appendix A for the site access layout plan. The service road will follow the same route as the transmission line.

**1.5. 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).

The A3 Locality Map is included in Appendix A.1:

**1.6. 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.

A detailed Layout/Route Plan is included in Appendix A.2:

### 1.7. 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 DWA);
- 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 100m of the site and must be attached in Appendix A.

The Sensitivity Map is included in Appendix A.3:

### 1.8. 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.

Site Photographs are included in Appendix B.

### 1.9. 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.

Refer to Appendix C: for an illustration of the transmission poles types that may be used by Eskom.

### 1.10. Activity motivation

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	YES√	NO	Please explain
The proposed servitudes would be situated on private property which is currently zoned as Agriculture I. A formal agreement will be entered into between the landowner and Juwi. It is envisaged that the servitudes would then be transferred to Eskom once the transmission lines are operational. The transmission line servitude would remain available to the existing landowner for his use.			
<b>2. Will the activity be in line with the following?</b>			
(a) Provincial Spatial Development Framework (PSDF)	YES√	NO	Please explain
The Northern Cape Provincial Spatial Development Framework (PSDF) 2011 promotes the provision of electricity to all and supports economic development through sustainable green energy initiatives on a national scale. The proposed construction of the 132 kV transmission line will allow electricity, generated through renewable technology, to be evacuated from the PV to the national grid. Electrification of			

households is speeding up in the Northern Cape. A good deal of progress has been made in bringing services to the citizens of the province in South Africa with the most remote communities.			
(b) Urban edge / Edge of Built environment for the area	YES	<b>NO</b> √	Please explain
The proposed transmission lines fall outside of the urban edge.			
(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?).	<b>YES</b> √	NO	Please explain
<p>The proposed project comprises the provision of infrastructure for the transmission of electricity into the national grid, which is compatible with the IDP and SDF of the Siya Themba Municipality. Within the Strategies and Priorities of the Siya Themba SDF the following aspects of land use needs for the residents were identified:</p> <ul style="list-style-type: none"> <li>• Creation of a sustainable environment in Siya Themba; and</li> <li>• Economic Development.</li> </ul> <p>The construction of the transmission line will result in direct and indirect employment opportunities. The establishment of the PVs are a longer-term (minimum of 20 years) investment into the community of Copperton and will promote local economic development and associated opportunities.</p>			
(d) Approved Structure Plan of the Municipality	<b>YES</b> √	NO	Please explain
The proposed project entails transmission infrastructure, which is compatible with the Local Economic Development (LED) objectives of the Siya Themba Municipality.			
(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	<b>NO</b> √	Please explain
There is no approved EMF for the study area. An Integrated Environmental Management Plan (IEMP) has been adopted but the Municipality does not have an environmental specialist and relies on the District Municipality where environmental issues are handled per project requirement.			
(f) Any other Plans (e.g. Guide Plan)	YES	<b>NO</b> √	Please explain
No other plans are applicable to this application.			
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	<b>NO</b> √	Please explain
The SDF does not provide a timeframe associated with the activity being applied for. However the National Development Plan identifies access to electricity to all South Africans as the tenth Strategic Integrated Project, specifically to expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. The IDP makes provision for infrastructure reticulation and bulk infrastructure for electricity, (Presidential Infrastructure Coordinating Commission, Strategic Integrated Planning Projects, 2012).			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic	<b>YES</b> √	NO	Please explain

<p>as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>			
<p><b>Strategic level</b></p> <p>The construction of the transmission lines would facilitate the connection of the PV to the national grid. The need for renewable energy is well documented and reasons for the desirability of renewable energy include:</p> <ol style="list-style-type: none"> <li><b>1. Utilisation of resources available to South Africa</b> - South Africa currently generates most of its required electricity from coal of which there is a ready supply at the local level. However, national government is on the verge of augmenting the existing generation capacity of thermal and nuclear power plants with renewable energy power generation, thus creating the framework that will lead to an increase in the supply of clean energy for the nation.</li> <li><b>2. Meeting nationally appropriate emission targets in line with global climate change commitments</b> - As can be seen by the numerous policies and legislation described in Section 10 the need for renewable energy is well documented. Due to concerns such as climate change, and the on-going exploitation of non-renewable, resources, there is increasing international pressure on countries to increase their share of renewable energy generation. The Copperton PV projects together with the associated transmission lines are expected to contribute positively towards climate change mitigation.</li> <li><b>3. Job opportunities and contribution to social upliftment</b> - Local investment would take the form of social upliftment opportunities. The sites are relatively near Copperton, where high levels of unemployment are experienced; hence the proposed PV and associated transmission line projects would uplift the local community through job creation and training.</li> </ol> <p>Should the development of the proposed 132 kV transmission line be acceptable, it is considered viable that long term benefits for the community in Copperton and society at large would be realised as highlighted above. The proposed projects would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to.</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><b>YES</b>√</p>	<p>NO</p>	<p>Please explain</p>
<p>No provision for additional services is required. Minimal municipal services maybe required during the construction and maintenance activates. Both solid waste and sewage would be delivered into the respective licenced municipal streams. Potable water will be obtained from either the (i) municipality or (ii) existing borehole and from the (iii) Alkantpan pipeline. The demands are expended to be negligible.</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>	<p>YES</p>	<p><b>NO</b>√</p>	<p>Please explain</p>
<p>No additional services are required once the transmission line is operational – there will thus be no impact on infrastructure planning.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p><b>YES</b>√</p>	<p>NO</p>	<p>Please explain</p>
<p>This project would form part of the National Grid under Eskom’s administration.</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>	<p><b>YES</b>√</p>	<p>NO</p>	<p>Please explain</p>
<p>The proposed transmission line provides the critical link from the PV facility to the national grid. The location factors apply to the PV facility and as such dictate the location of the transmission lines. The Copperton region has a favourable solar resource, large areas of unutilised (little intensive agricultural, industrial or urban development) land is available and good access to the national electricity grid due to its central location and established transmission network.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p><b>YES</b>√</p>	<p>NO</p>	<p>Please explain</p>
<p>The proposed transmission line transverses mostly farmland which is predominantly for grazing. Once the transmission line is constructed, the land can continue to be used for grazing and, due to the relatively small footprint of the towers, the grazing capacity of the land will not be reduced significantly. Given that Copperton has a well-established and extensive transmission network already in place, the current proposal would not be out of place in the existing landscape.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<p><b>YES</b>√</p>	<p>NO</p>	<p>Please explain</p>
<p>The negative impacts for the proposed development are of very low to medium magnitude, local extent and long term and moderate negative to negligible negative (-) significance with mitigation. Therefore, the proposed development’s impacts with mitigation measures are reduced and are considered to be acceptable. Furthermore it should be noted that three potential positive impacts associated with the facilitation on energy production and local economy (employment), climate change and social conditions would result and these would be of minor to low (+) significance, with and without mitigation measures.</p>			
<p>The no-go alternative, which represents the status quo, would have a high impact, of national extent and would therefore have a medium negative (-) significance. No mitigation would be possible as the no-go alternative would have a significant impact on the viability of the Kronos Solar Park. Should the transmission lines not be authorised, it would not be possible to evacuate the electricity generated at the renewable energy facility to the national grid. The no-go would thus have a negative impact on the viability of the PV sites.</p>			

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES√	NO	Please explain
The Copperton area has been identified as a renewable hub for both wind and solar energy projects. The project would not set a precedent as others have gone before, but would continue the precedent.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO√	Please explain
No juristic or natural person's right will be adversely affected as land use agreements have been negotiated with the relevant landowners. Furthermore, the location of the poles, access roads, and security measures will all be negotiated with the farmer and agreed upon before construction commences.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO√	Please explain
The proposed transmission line will be located within the rural farmlands and won't compromise the urban edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO√	Please explain
The proposed transmission line will not contribute to any of the 17 SIPS.			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The Northern Cape, and particularly the Copperton area, is an arid area where farmers do their best to earn a living from the land. The towns are generally small and many residents operate on a survival socio-economic level. The need to improve the quality of life for all, and especially for the poor, is critical in these towns. It is expected that the proposed project together with the PV site will contribute directly to the upliftment of individuals through direct and indirect employment opportunities and the societies in which they live.</p>			
<p>The Siya Themba local municipality has a total population of 21,591 and a high unemployment of 24,3%. Through interviews with landowners, where the proposed transmission line will cross, various issues were mentioned which occur in the area. They are as follows:</p>			
<ul style="list-style-type: none"> <li>• Poor roads;</li> <li>• Poor communication; and</li> <li>• Crime.</li> </ul>			
<p>Economically, the construction of the 132 kV transmission line will create employment opportunities during the construction period, as well as generating new business sales which in turn will result in an increase in the gross value added in the country (Refer to the Social Assessment). The impact of the transmission lines on GDP would be two-fold namely impacts during construction and impacts during operation. The impacts on GDP during construction would only be temporary whereas the impacts during operation would be long-term. Once the construction of the proposed transmission lines is complete, it requires periodic maintenance of the servitude. This maintenance can be done by the contractors employed by Eskom or could be performed by the owners of the farm themselves, if they desire to do so. In both cases, people engaged in maintenance will be appropriately reimbursed for the work performed. It is unfortunately not known how much will be spent on maintenance of the transmission line per annum. It is not expected to be a considerable amount as it will involve the use of small teams of unskilled labour engaged in clearing of the servitude of inappropriate vegetation and contaminants that carry a fire hazard (if required).</p>			

<p>However, this activity is sustainable as maintenance needs to be performed annually throughout the lifespan of the transmission lines; although it will not provide employment for the whole year but rather be short-term employment every year. The socio-economic impact analysis in the Social Assessment (refer to Appendix D) indicates that the construction of the proposed PV facilities and associated transmission lines would have an overall positive impact.</p>	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
<p>The proposed PV site is approximately 50 km from Copperton, where high levels of unemployment are experienced; hence the proposed PV and associated transmission line projects would provide an opportunity to uplift the local community through job creation and skills development. Juwi is also committed to social development and will establish a community trust to benefit the local community.</p>	
17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan for 2030 aims to create jobs, develop and expand infrastructure, transition to a low-carbon economy and unify South Africa. This project, along with the construction of the PV facility, will fit into the National Development Plan as follows:</p> <p>Create jobs:</p> <ul style="list-style-type: none"> <li>• The transmission lines are unlikely to result in any new employment by itself but will enable the Kronos solar Park, which will result in approximately 553 jobs (200 direct jobs, 146 indirect jobs and 207 induced jobs).</li> <li>• Indirect opportunities for small businesses would be generated such as accommodation, food and service industries through the increased number of people travelling to and residing in Copperton.</li> </ul> <p>Transition to a low-carbon economy:</p> <ul style="list-style-type: none"> <li>• This project, together with the PV facility, is a renewable energy project and will result in the expansion of South Africa's renewable generation capacity.</li> <li>• The construction of the PV facility together with the associated transmission lines will assist in diversifying South Africa's energy portfolio.</li> <li>• Solar power is a proven source of renewable energy and does not rely on carbon fuels.</li> </ul> <p>Transformation and unity:</p> <ul style="list-style-type: none"> <li>• Employment equity<sup>2</sup>.</li> </ul> <p>Helping facilitate access to electricity for all through creating additional generation capacity as well as further diversifying generation and helping stabilise the grid.</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>The purpose of section 23 of NEMA is to promote the application of appropriate management tools in order to ensure the integrated environmental management of activities. The table below lists the general objectives of integrated management and provides a motivation as to how the proposed development has taken the objectives into account.</p>	
<u>Section 23(2) of NEMA: The general objective of integrated environmental management is to:</u>	<u>Description as to how the proposed development has taken these general objectives into account.</u>
(a) promote the integration of the principles of environmental management set out in section 2 of	The underlying principle of this Basic Assessment process is to ensure that the development is socially, environmentally, and economically sustainable. This

<sup>2</sup> Employment equity will be met through the Operation and Maintenance Project Company and the contractors responsible for the construction of the transmission lines, as set out in the requirements of the DOE REIPP Tender Process.

<p>NEMA into the making of all decisions which may have a significant effect on the environment;</p>	<p>has guided the assessment of impacts of the project by Specialists to ensure that the project will be undertaken in an environmentally responsible manner in which 9 Specialists have been appointed for the assessment of the impacts of the proposed transmission line and PV facilities. In recognition that social responsibility is something which needs to be actively developed, a public participation programme will be undertaken. This process will be undertaken in such a manner to promote active participation and foster a clear understanding of the project and transparent sharing of information.</p>
<p>(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;</p>	<p>Section D of this Basic Assessment Report (BAR) includes the list of potential impacts associated with this project. Each impact was evaluated to determine the significance of the impact and mitigation measures have been proposed to reduce negative impacts and to enhance positive impacts.</p>
<p>(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;</p>	<p>Specialist studies were commissioned to ensure that specific impacts are adequately assessed and appropriate mitigation measures are proposed.</p>
<p>(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;</p>	<p>The public participation process is described in section C. In accordance with regulation 54(2)(e) and 54(7) of GN R.543., the following activities have been undertaken:</p> <ul style="list-style-type: none"> <li>• Advertisement</li> <li>• Site notice</li> <li>• Letters to neighbouring property owners</li> <li>• Letters to commenting authorities</li> </ul>
<p>(e) ensure the consideration of environmental attributes in management and decision making which may have a significant effect on the environment; and</p>	<p>An Environmental Management Program (EMPr) has been drafted to include the recommendations from the respective specialists to guide the construction phase in an environmentally and socially sound manner.</p>
<p>(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.</p>	<p>Recommendations and mitigations presented in the EMPr will minimise the disturbance to both the biophysical and socio-economic environments. Where negative impacts are unavoidable, strict management and rehabilitation is recommended to minimise the potential negative impacts.</p>

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

The philosophy of Sustainable Development underpins the requirements of NEMA and the consideration of environmental impact. To achieve Sustainable Development it is important to find the balance between the competing demands for resources from the Economic system, the Social system, and the Ecological system.

Chapter 1 of NEMA outlines principles of Sustainable Development which it states are applicable to the “actions of all organs of states that may significantly affect the environment”. These principles are seen as governing the intent and underlying philosophy of the Act and therefore must be considered in the decision regarding whether or not to authorise an activity which has triggered an EIA process.

Table 1 below considers each principle listed in Section 1 of NEMA and its consideration within this process.

Table 1: The applicability of NEMA Sustainability Principles to the proposed project

<b>NEMA Sustainability Principle</b>	<b>Consideration for this proposed activity and BA Process</b>
<p>(1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and –</p> <ul style="list-style-type: none"> <li>a. Shall apply alongside all other appropriate and relevant considerations, including the State’s responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discriminations;</li> <li>b. Serve as the general framework within which environmental management and implementation plans must be formulated;</li> <li>c. Serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act; or any statute provision concerning the protection of the environment;</li> <li>d. Serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and</li> <li>e. Guide the interpretation, administration and implementation of this Act, and any other law</li> </ul>	<p>All principles must be considered in the application and consideration for authorisation.</p> <p>The underlying principle of this Basic Assessment process is to ensure that the development is socially, environmentally, and economically sustainable. This has guided the assessment of impacts of the project to ensure that the project will be undertaken in an environmentally responsible manner. In recognition that social responsibility is something that needs to be actively developed, a public participation programme will be undertaken. This process will be undertaken in such a manner to promote active participation and foster a clear understanding of the project and transparent sharing of information.</p>

concerned with the protection of management of the environment.	
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.	This BA process has considered both the natural and socio-economic environment and mitigation measures provided respond to this principle.
(3) Development must be socially, environmental and economically sustainable.	The proposed project would facilitate environmental sustainability through the employment of renewable technologies which in turn would assist Government in reaching its emissions target. The proposed project would be economically sustainable as it would encourage long term investment in Copperton (minimum of 20 year investment). Social investment would also be encouraged through job creation, skills training and the establishment of the trust.
(4) (a) Sustainable development requires the consideration of all relevant factors including the following:	
i. That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied;	Disturbance of the ecosystem and loss of biological diversity has been minimised through design measures, route determination and future micro-siting, and proposed mitigations.
ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	Pollution associated with the construction phase will be limited by strict adherence to the EMPr. The operational phase will include limited maintenance to the transmission lines and will be managed by the Eskom Standard Practices and their Health and Safety policy.
iii. That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where is cannot be altogether avoided, is minimised and remedied;	The impact on the heritage resources was investigated and not considered to be unreasonable. Impacts on the 'sense of place' in particular have been highlighted in the Basic Assessment process as being of concern and efforts to minimise and remedy this has been recommended.
iv. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;	A minimal amount of construction waste would be generated during the construction phase. Waste would be disposed of by the contractor into a licenced municipal waste stream. No waste is foreseen during the operational life.

<p>v. That the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;</p>	<p>The project would facilitate the utilisation of a renewable natural resource (solar) and in so doing reduce the demand on non-renewable resources.</p>
<p>vi. That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised. and equitable, and takes into account the consequences of the depletion of the resource;</p>	<p>The project would facilitate the exploitation of a renewable natural resource, solar power, which does not have an exceedance level.</p>
<p>vii. That a risk-averse and cautious approach is applied which takes into account the limits of current knowledge about the consequences of decisions and actions; and</p>	<p>Limitations and gaps in knowledge have been highlighted and taken into account in the Basic Assessment process. The information provided in this BAR is considered to be sufficient for decision-making purposes, and where there is uncertainty with predictions, monitoring has been recommended.</p>
<p>viii. That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.</p>	<p>The Basic Assessment process has assessed impacts associated with this proposed project. Appropriate mitigation measures have been proposed for impacts which are deemed to have negative impacts.</p>
<p>(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</p>	<p>The Basic Assessment process has been undertaken in accordance with the legal requirements as a fundamental guiding principle. The selection of the preferred transmission line route will be determined by this impact assessment process to ensure that the preferred alternative is indeed the best environmental option.</p>
<p>(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.</p>	<p>The Basic Assessment process, including the public participation process, has been undertaken in a manner to ensure that impacts are assessed fairly using scientifically acceptable methodology. This project, together with the PV facilities, is a long-term investment in the community of Copperton, as such there is a commitment from Juwi to create opportunities for the local community. These opportunities include employment, either direct or indirect employment opportunities, and social upliftment programmes. The proposed project will address aspects of social upliftment, which will have</p>

	a positive economic impact at local and regional scales.
(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination	Environmental resources such as air, water, soil and vegetation have been considered and avoidance or mitigation measures provided to ensure that none of these resources are compromised and thereby limiting access thereto.
(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.	The Basic Assessment process has considered the environmental, health and safety consequences of the development through the construction and operational life of the project. Aspects of the decommissioning of the proposed transmission line have been touched on in the EMPr and would need to be subject to further investigation via an environmental authorisation process after the operational lifespan.
(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation by vulnerable and disadvantaged persons must be ensured.	Public participation by all I&APs has been promoted and opportunities for engagement provided during the Basic Assessment process.
(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.	The Basic Assessment process has taken cognisance of all interests, needs and values espoused by all I&APs. Specialist studies have included field work where the specialists would have the opportunity to engage with landowners and locals to gain a better insight of the land and concerns which people may have.
(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	Public participation by all I&APs has been promoted during the Basic Assessment process.
(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.	This Basic Assessment process has considered both the natural and socio-economic environment and mitigation measures provided, respond to impacts, fulfil this principle.
(j) The right of workers to refuse work that is harmful to human health or the environment and	The project area is subject to both the health and safety requirements of the OHS Act.



<p>to be informed of dangers must be respected and protected.</p>	
<p>(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.</p>	<p>The Basic Assessment process has been thoroughly documented and all relevant information known to the Environmental Assessment Practitioner (EAP), as well as written comments received, are included in the reporting for consideration by the authorities.</p>
<p>(l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.</p>	<p>The relevant authorities have been notified of the project and provided opportunity to comment. This authority process has been documented in the BAR.</p>
<p>(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.</p>	<p>The relevant authorities have been notified of the project and provided opportunity to comment.</p>
<p>(n) Global and international responsibilities relating to the environment must be discharged in the national interest.</p>	<p>The establishment of the proposed PV facilities and the associated transmission lines will contribute positively towards meeting the national energy target as set by the DoE, of a 30 % share of all new power generation being derived from IPPs. Renewable energy is recognized internationally as a major contributor in protecting the climate, nature and the environment, as well as providing a wide range of environmental, economic and social benefits that can contribute towards long-term global sustainability.</p> <p>Should the development of the proposed 132 kV transmission line be acceptable, long term benefits for the community and society in Copperton would be realised as highlighted above. The proposed project would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to.</p>
<p>(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.</p>	<p>The impacts are documented in the Basic Assessment process to inform decision-makers regarding the potential ramifications of the proposed project, so that an informed decision can be taken in this regard.</p>
<p>(p) The costs of remedying pollution, environmental degradation and consequent</p>	<p>The mitigation measures recommended to minimise negative impacts and enhance positive ones are for</p>

adverse health effects and of preventing, controlling or minimising further pollution, environmental damage, or adverse health effects must be paid for those responsible for harming the environment.	implementation and therefore for the cost of the proponent.
(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	Public participation by all I&APs has been promoted and provided opportunities for engagement during the Basic Assessment process.
(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems required specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	The proposed activity does not occur within a sensitive, vulnerable, highly dynamic or stressed ecosystem. Furthermore specialists have provided a sensitivity map to help identify and avoid various sensitive features and areas in order to minimise all the anticipated impacts.

**1.11. 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:

<b>Title of legislation, policy or guideline</b>	<b>Applicability to the project</b>	<b>Administering authority</b>	<b>Date</b>
National Environmental Management Act (No. 107 of 1998) (NEMA), as amended	The proposed servitudes will trigger listed activities GN R.544 item 10, 11, 18 & GN R546 item 14, thus requiring a Basic Assessment Process.	DEA	1998
National Environmental: Biodiversity Act (No. 10 of 2004) (NEMBA)	The objective of the NEMBA is to manage and conserve biological diversity and resources in a sustainable manner. The vegetation type found within the proposed servitudes has been determined through an ecological impact assessment.	DEA	2004
National Water Act (No. 36 of 1998)	The proposed transmission line may trigger a section 21(C and/or i) water use, as the pylons may be within 32m of a water resource. In order to minimise the impact of towers and to avoid sensitive environments, tower positions would be planned where possible to avoid water resources.	Department of Water Affairs (DWA)	1998
National Heritage Resources Act (No. 25 of 1999)	As the transmission line exceeds 300 m in length a full Heritage Impact Assessment (HIA) has	South African Heritage Resources Agency (SAHRA)	1999

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	been undertaken and submitted to the South African Heritage Resources Agency (SAHRA).		
Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)	The EMP describes mitigation measures to ensure the control of any undesired aliens, declared weeds, and plant invaders listed in the regulation that may pose as a problem as a result of the proposed transmission line and access road. An agricultural potential impact assessment has been undertaken to determine the impact of the proposed transmission lines on the agricultural potential of the affected farms.	Department of Agriculture	1983
Kyoto Protocol	In Africa, the CO <sub>2</sub> emissions are primarily the result of fossil fuel burning and industrial processes, such as coal fired power stations. The International Energy Agency (2008) <i>“Renewables in global energy supply: An IEA facts sheet”</i> estimates that nearly 50% of global electricity supplies will need to come from renewable energy sources in order to halve carbon dioxide emissions by 2050 and minimise significant, irreversible climate change impacts. The servitudes would facilitate the evacuation of renewable energy generated at wind energy facilities to the national grid thus helping to reach these targets.	UNFCCC	1997
White Paper on Energy Policy of the Republic of South Africa	This project together with the PV would integrate environmental costs into economic analysis which will help promote a sustainable option as part of South Africa’s energy policy towards energy diversification.	Department of Energy (DoE)	1998
White Paper on Renewable Energy	Addressing environmental impacts and the overarching threats and commitments to climate change, the White Paper provides the platform for further policy and strategy development in terms of renewable energy in the South African energy environment.	Department of Minerals and Energy (DME)	2003
National Energy Act (No. 34 of 2008)	This project together with the PV facilities will facilitate new generation capacity through renewable technologies, namely wind, as listed in the IRP and all IPP procurement programmes which will be undertaken in accordance with the	Department of Energy (DoE)	2008
Electricity Regulation Act (No. 4 of 2006) (ERA)		Department of Energy (DoE)	2006

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	specified capacities and technologies as listed in the IRP <sup>3</sup> .		
IPP Procurement Process	The projects will assist in facilitating South Africa's aim to procure 3,725 MW capacity of renewable energy by 2016. This 3,725 MW is broadly in accordance with the capacity allocated to renewable energy generation in IRP2010.	Department of Energy (DoE) 2006	2011
Integrated Energy Plan (IEP) for the Republic of South Africa	This project together with the PV facilities would assist in facilitating in the provision of low cost electricity for social and economic developments, ensuring security of supply, and minimising the associated environmental impacts.	DME	2003
Integrated Resource Plan (IRP)	The IRP is a National Electricity Plan which determines the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing, and cost. As such the proposed projects would form part of South Africa's energy mix set out in the balanced revised scenario within the target for total system capacity.	DME	2003
NEMA Environmental Impact Assessment Regulations Guidelines and Information Document Series	The NEMA Environmental Impact Assessment Regulations Guidelines and Information Document Series were consulted to ensure that the BA process complies with the legislated process.	DEA&DP	2010 & 2011
National Environmental Guidelines: <ul style="list-style-type: none"> <li>• Integrated Environmental Management (IEIM), Information Series (DEAT, 2002, 2005 &amp; 2007).</li> </ul>	The National Environmental Guidelines were consulted to ensure that the BA process complies with the legislated process.	DEAT	2002 – 2007

<sup>3</sup><http://www.eskom.co.za/c/73/lipp-processes/> (accessed 29/10/11)

**1.12. Waste, effluent, emission and noise management**

**1.12.1. Solid waste management**

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

<b>YES</b> √	NO
-----------------	----

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

20m<sup>3</sup>

Low quantities of solid waste would be created during the construction period. Excavated soil will be reused as backfill and no spoil is expected. There are no components that would require continuous recycling and there are no processes that would generate a significant amount of waste. The quantities of waste produced would vary significantly from month to month and therefore a quantity cannot be accurately estimated at this stage. However, measures have been included in the EMPr to ensure efficient management of solid waste.

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

Construction solid waste will be dealt with in the Environmental Management Programme (EMPr) which will incorporate waste minimisation strategies including reduction, recycling, and re-use principles where viable. As mentioned above, there are no components that would require continuous recycling and there are no processes that would generate a significant amount of waste.

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

It is envisaged that the construction waste will be transported to and disposed of at a local licensed landfill by the EPC contractor, as stated in the EPC contract. The contractor shall ensure that waste generated at working areas are collected and disposed at a licensed facility at least once a week. Items such a cable spools and excess cable will be returned to the suppliers.

Will the activity produce solid waste during its operational phase?

YES	√ <b>NO</b>
-----	----------------

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

No waste will be generated

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

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

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

*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.*

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

YES	NO
-----	----

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.

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

YES	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.

**1.12.2. Liquid effluent**

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

YES	NO√
-----	-----

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

0m <sup>3</sup>	
-----------------	--

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

YES	√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? 

YES√	NO
------	----

If YES, provide the particulars of the facility:

<b>Facility name:</b>	Temporary chemical toilets will be installed during the construction phase. These toilets will be serviced regularly and waste will be disposed of at the Siya Themba Wastewater Treatment Works. Confirmation from Siya Themba Municipality will be obtained prior to the commencement of the construction phase.		
<b>Contact person:</b>	The Municipal Manager: Siya Themba Local Municipality: Mr JRM Alexander		
<b>Postal address:</b>	PO Box 16, Victoria Street, Prieska		
<b>Postal code:</b>	8940		
<b>Telephone:</b>	053 353 5300	<b>Cell:</b>	-
<b>E-mail:</b>	mm@siyathemba.gov.za	<b>Fax:</b>	053 353 1386

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

Minimal water would be required only for the construction phase. The re-use and recycling would not be viable due to the small quantities of water required and the nature of its use.

**1.12.3. Emissions into the atmosphere**

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

YES	NO√
-----	-----

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

YES	NO
-----	----

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:

No emissions would be generated during the operational phase. The proposed transmission line, which provide the link between a PV site and the national grid, would facilitate in reducing South Africa's carbon emissions in the long term by contributing positively to the Government's renewable energy target through creation of the connection to route renewable energy to the national grid.

**1.12.4. Waste permit**

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

YES	NO <input checked="" type="checkbox"/>
-----	--

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

**1.12.5. Generation of noise**

Will the activity generate noise?

YES	NO <input checked="" type="checkbox"/>
YES	NO <input checked="" type="checkbox"/>

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

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.

If NO, describe the noise in terms of type and level:

Minor and temporary noise generation by construction vehicles, operation of machinery and site staff would be limited to the construction phase. Mitigation measures will be discussed in the EMPr and in Section D below to limit the noise generated during the construction phase.

**1.13. Water use**

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

<input checked="" type="checkbox"/> Municipal	<input type="checkbox"/> Water board	<input type="checkbox"/> Groundwater	<input type="checkbox"/> River, stream, dam or lake	<input type="checkbox"/> Other	<input type="checkbox"/> The activity will not use water
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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:

- litres	
YES	NO <input checked="" type="checkbox"/>

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

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

**1.14. Energy efficiency**

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

Not applicable due to the nature of the project, which is facilitating the evacuation of electricity generated at a renewable energy site. The facility will not use electricity.

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

The project serves to supply renewable or alternative energy to the national grid

**2. SECTION B: SITE/AREA/PROPERTY DESCRIPTION**

**Important notes:**

1. 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):

A

The proposed PV facilities will be located on a terrain unit of plains with some relief at an altitude of 1,100 meters. Slopes will be below 2% across the entire development area. From a topographical point of view there is very little change in landscape through which the transmission line passes. Refer to Figure 2.



Figure 2: Typical landscape and veld conditions on the proposed site (Lanz 2015)

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

No feasible or reasonable alternatives could be identified. Refer to Appendix J for the motivation.

3. 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 each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.



Property description/physical address:

<b>Province</b>	Northern Cape also refer to Appendix J
<b>District Municipality</b>	Pixley ka Seme District Municipality
<b>Local Municipality</b>	Siya Themba Municipality
<b>Ward Number(s)</b>	Ward 3
<b>Farm name and number</b>	Nelspoortjie, Farm 103 Klipgats Pan. Farm 117 Hoekplaas, Farm 146 Humanrus, Farm 147
<b>Portion number</b>	Nelspoortjie, Portion6 Klipgats Pan, Portion 4 Hoekplaas, Portion 0 Humansrus, Portion 0
<b>SG Code</b>	See below

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.

C	0	6	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	6
C	0	6	0	0	0	0	0	0	0	0	0	0	1	1	7	0	0	0	0	4
C	0	6	0	0	0	0	0	0	0	0	0	0	1	4	6	0	0	0	0	0
C	0	6	0	0	0	0	0	0	0	0	0	0	1	4	7	0	0	0	0	0
<b>1</b>	<b>2</b>			<b>3</b>			<b>4</b>					<b>5</b>								

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

Current land use zoning is Agriculture I.

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	<b>NO</b> ✓
-----	-------------

**2.1. Gradient of the site**

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

**2.2. Location in landscape**

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

**2.3. 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)	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO
An area sensitive to erosion	YES	NO <input checked="" type="checkbox"/>	YES	NO	YES	NO

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.

**2.4. 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 <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	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.

The transmission lines traverse both Bushmanland Arid Grassland and Bushmanland Basin Shrubland. Both these vegetation types are found within the Bushmanland Bioregion of the Nama Karoo Biome and both are regarded as Least Threatened on a national conservation scale (MacDonald, 2015). The Bushmanland Arid Grassland found at Portion 6, Nelspoortjie 103, and more specifically in the area proposed for the PV facility, occurs over extensive areas. Although there are few statutory conservation areas in this vegetation type, it is used as agricultural rangelands and is conserved for its grazing potential. This is true for Bushmanland Basin Shrubland as well, in this case occurring along the transmission line route. According to the National Biodiversity Assessment (Driver *et al.* 2012) these vegetation types are classified as LEAST THREATENED. They are not listed in the gazetted National List of Threatened Terrestrial Ecosystems (Government Gazette No. 34809. 2011). Scattered alien *Prosopis glandulosa* var. *torreyana* (mesquite) shrubs were noted here.

**Vegetation of the transmission-line route (Option 2 (Kronos))**

The Option 2 (Kronos) connection transmission route would extend from the ‘central hub’ sub-station that would service the PV infrastructure eastwards to the R357 road, the proposed transmission lines would follow a route that would first traverse Bushmanland Arid Grassland on Portion 6, Nelspoortjie 103 and Humansrus 147 and then further westwards, parallel to the R357, it would traverse Bushmanland Basin Shrubland (**Figure 3**).



Figure 3: *Psilocalon junceum* – *Lycium* spp. Shrubland at waypoint NJK33 (MacDonald, 2015)

The vegetation along the transmission line route is mostly the same or similar to that of the PV infrastructure areas, however, on Remainder Hoekplaas 146, the plant community described by McDonald (2013a) as *Psilocalon junceum* – *Lycium* spp. shrubland was found. It is characteristic of disturbed areas and it is notable that this plant community is absent at Portion 6 of 103. It appears to be more prevalent on land-type Ah93. Approaching the Kronos Substation from the east (along the transmission line route) the vegetation becomes denser but the plant communities remain the same. The density of the vegetation is ascribed to lower grazing pressure in this area. No sensitive vegetation was found anywhere along the transmission-line route.

## 2.5. Surface water

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

Perennial River	YES	<b>NO</b> √	UNSURE
Non-Perennial River	YES	<b>NO</b> √	UNSURE
Permanent Wetland	YES	<b>NO</b> √	UNSURE
Seasonal Wetland	YES	<b>NO</b> √	UNSURE
Artificial Wetland	YES	<b>NO</b> √	UNSURE
Estuarine / Lagoonal wetland	YES	<b>NO</b> √	UNSURE

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

The Option 2 (Kronos) transmission line will cross at least three ephemeral streams, none are large enough to constitute a non-perennial river.

## 2.6. 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 <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	<b>Agriculture</b>
Retail commercial & warehousing	Old age home	<b>River, stream or wetland</b>
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

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

N/A

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:

N/A

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:

N/A

**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?	YES√	NO

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

**Buffer area of the SKA (Astronomy Geographic Advantage Act, No. 21 of 2007):**

On 19 February 2010, the Minister of Science and Technology (the Minister) declared the whole of the territory of the Northern Cape province, excluding Sol Plaatje Municipality, as an astronomy advantage area for radio astronomy purposes in terms of Section 5 of the Square Kilometre Array (SKA) Act. On 20 August 2010 the Minister declared the Karoo Core Astronomy Advantage Area for the purposes of radio astronomy.

The Karoo Core Astronomy Advantage area consists of three pieces of farming land of 13,407 hectares in the Kareeberg and Karoo Hoogland Municipalities purchased by the National Research Foundation. The Karoo Core Astronomy Advantage Area will contain the MeerKAT radio telescope and the core planned SKA radio telescope that will be used for the purposes of radio astronomy and related scientific endeavours. The proposed energy facilities and associated transmission lines fall outside of the Karoo Core Astronomy Advantage Area.

The Minister may still declare that activities prescribed in Section 23(1) of the Act may be prohibited within the area, such as the construction, expansion or operation of any fixed radio frequency interference sources and the operation, construction or expansion of facilities for the generation, transmission or distribution of electricity. It is unlikely that the proposed project would affect the SKA project due to the distant location of SKA (approximately 300km). While the Minister has not yet prohibited these activities it is important that the relevant astronomical bodies are notified of the proposed projects and provided with the opportunity to comment on the proposed projects.

**2.7. 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:

YES	NO√
Uncertain	

N/A

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:

Refer to Appendix D for the Heritage Assessment Report

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

YES	NO√
-----	-----

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

YES	NO√
-----	-----

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

**2.8. Socio-economic character**

**2.8.1. Local Municipality**

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

**Level of unemployment:**

- 42.1% of the Population in the Northern Cape is employed, 17.6% is unemployed and 40.3% are non-economically active individuals.
- 38.8% of the Population in the Siyathemba Local Municipality is employed, 27.0% is unemployed and 34.3% are non-economically active individuals<sup>4</sup>.

**Economic profile of local municipality:**

**Local Economic Profile**

The Social Assessment (Appendix D) states that economic analysis is important in the interpretation of impact assessment results, as it allows for an understanding of the extent to which a proposed activity will change the outputs and trends in specific sectors. The structure of an economy is also indicative of its reliance on particular sectors and its sensitivity to fluctuations in global and regional markets.

Gross Value Added (GVA) is linked as a measurement to GDP. The relationship is defined as:  $GDP = GVA + Taxes - Subsidies$ . As the total aggregates of taxes on products and subsidies on products are only available at whole economy level, GVA is used for measuring Gross Regional Domestic Product and other measures of the output of entities smaller than a whole economy. GVA is the difference between output and intermediate consumption for any given sector/industry. That is the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used in production. Figure 4 indicates the GDP growth for the various study areas.

<sup>4</sup> Source: <http://www.statssa.gov.za/> Accessed 18/09/2015

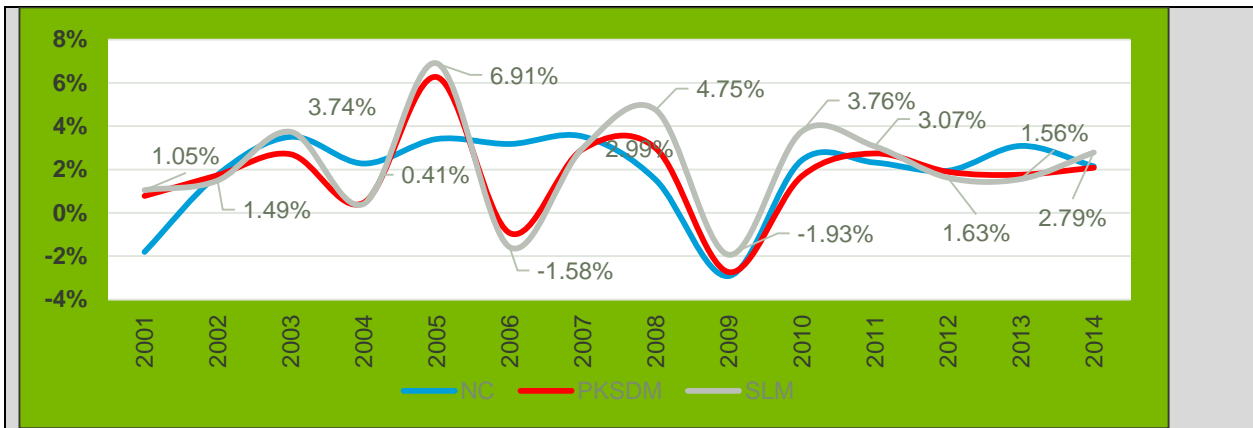


Figure 4: GDP Growth (2001 – 2014) (Urban-Econ, 2015)

The negative GDP growth from 2008 – 2009 can be attributed to the global economic recession. It should be noted that the employment recovery only commenced late in 2010 and some sectors and municipal areas continue to suffer the heavy recessionary impact. Growth in economic output and thus electricity consumption is also expected to accelerate in the coming years as the economy continues to recover.

**Level of education:**

- Youth unemployment rate 30,2%
- No schooling aged 20+ 11,5%
- Higher education aged 20+ 5,3%
- Matric aged 20+ 18%

**2.8.2. 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?

What is the expected value of the employment opportunities during the development and construction phase?

What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?

What is the expected current value of the employment opportunities during the first 10 years?

What percentage of this will accrue to previously disadvantaged individuals?

R 20 000 000 estimated for the power line	
Confidential information	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Unknown	
Unknown	
Unknown	
Unknown	
Unknown	
Unknown	

**2.9. 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](mailto: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.

**2.9.1. 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)	No CBA's or ESA's in the immediate vicinity of the project area. Refer to Appendix A for SANBI maps and Appendix D for the Botanical Report.

**2.9.2. 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%	The Bushmanland Arid Grassland found at Portion 6, Nelspoortjie 103, and more specifically in the area proposed for the PV facility, occurs over extensive areas. Although there are few statutory conservation areas in this vegetation type, it is used as agricultural rangelands and is conserved for its grazing potential. This is true for Bushmanland Basin Shrubland as well, <u>in this case occurring along the transmission line route.</u> According to the National Biodiversity Assessment (Driver <i>et al.</i> 2012) these vegetation types are classified as LEAST THREATENED. (McDonald, 2012a).
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded	%	



(includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc) √	20%	Although the majority of the area is of a natural condition the land constitutes animal husbandry (sheep farming) and as such consists of farm roads, fences, and associated agricultural infrastructure. The presence of a farm dam in the north-eastern sector of the site has a low concrete wall and is formed by soil having been bulldozed into a crescent-shaped catchment.

**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							
	<b>Least Threatened</b> √							
		<b>YES</b> √	NO	UNSURE	YES	NO	YES	NO

**2.9.3. 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)**

**Vegetation**

The Option 2 (Kronos) connection transmission route would extend from the 'central hub' sub-station that would service the PV infrastructure eastwards to the R357 road, the proposed transmission lines would follow a route that would first traverse Bushmanland Arid Grassland on Portion 6, Nelspoortjie 103 and Humansrus 147 and then further westwards, parallel to the R357, it would traverse Bushmanland Basin Shrubland (Refer to **Figure 5**).

Approaching the Kronos Substation from the east (along the transmission line route) the vegetation becomes denser but the plant communities remain the same. The density of the vegetation (**Figure 6**) is ascribed to lower grazing pressure in this area. No sensitive vegetation was found anywhere along the transmission-line route.

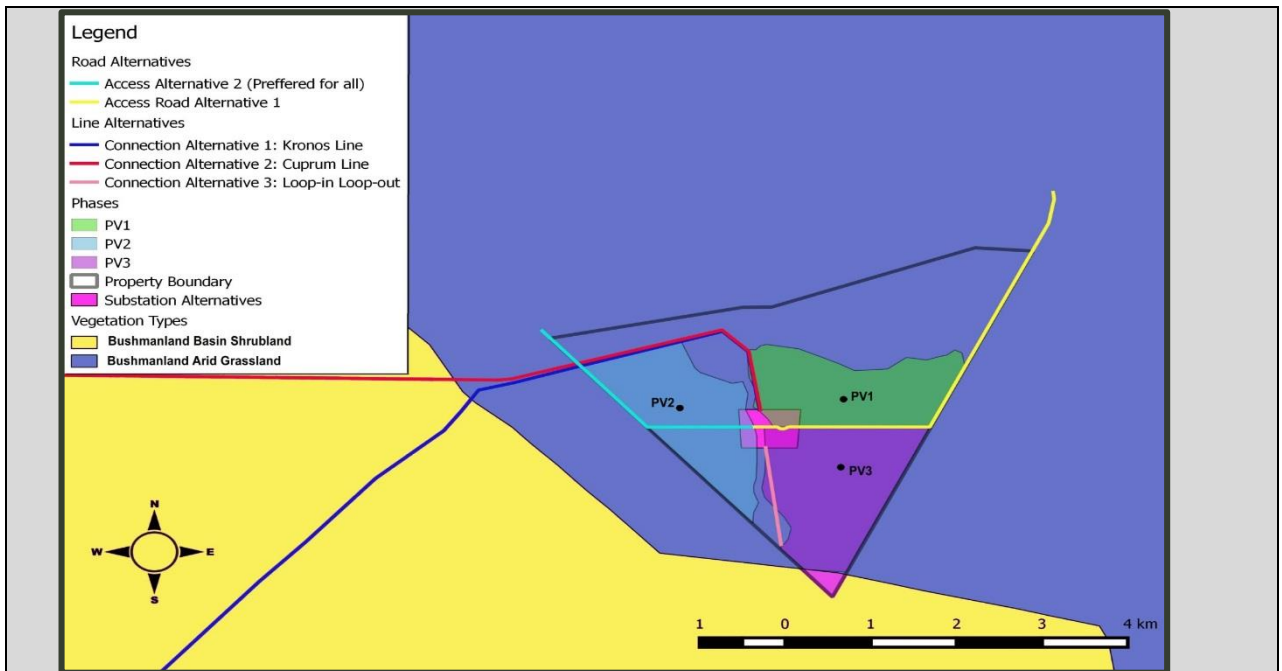


Figure 5: Portion of the map of the Vegetation of South Africa, Lesotho & Swaziland (Mucina *et al.* 2005 updated in 2009) showing the roughly triangular Portion 6, Nelspoortjie 103 study area with the proposed three phases of the Kronos PV facility and the alternative routes of the transmission lines. The PV Solar Park would be located entirely in Bushmanland Arid Grassland except for the transmission lines that would traverse Bushmanland Basin Shrubland.



Figure 6: Mid-dense to dense Bushmanland Basin Shrubland on the proposed transmission line route alongside the R357 near Kronos Substation.

**3. SECTION C: PUBLIC PARTICIPATION**

**3.1. Advertisement and notice**

<b>Publication name</b>	<i>Die Gemsbok</i>	
<b>Date published</b>	5 June 2015	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	29°57'27.94"S	22°25'4.48"E
	29°56'49.22"S	22°27'6.99"E
	30° 1'14.65"S	22°20'22.11"E
	30° 0'7.62"S	22°21'23.95"E
	29°59'14.57"S	22°22'13.49"E
<b>Date placed</b>	2 February 2015	

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

**3.2. Determination of appropriate measures**

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

**Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:**

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr Pieter Fourie	Landowner (Kronos Route)	082 8531372
Mr Deon Human	Landowner (Kronos Route)	humanwj@gmail.com
Mr Hendrik Gideon	Landowner (Kronos Route)	hgh@gwh.co.za
Mr Bernard	Landowner (Kronos Route)	053 3833051
Mr Gerhard van Wyk	Neighbour	083 6525754
Mrs Hester Meyer	Neighbour	082 3389215
Mrs Lettie de Jager	Neighbour	071 3000916
Mr HG Human	Neighbour	053 353 1151/2691
Mr Wynand Human	Neighbour	082 449 3015
Mr Mike Meyer	Neighbour	083 233 8644/082 338 3846
Mr Coenie Viljoen	Neighbour	082 932 9510 / 072 384 1226
Mr Frans Ekkerd	Neighbour	083 380 8427
Mr Mark Anderson	Birdlife South Africa	082 8531372

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2.

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.

**3.3. Issues raised by interested and affected parties**

<b>Summary of main issues raised by I&amp;APs</b>	<b>Summary of response from EAP</b>
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No comments have been received to date. All comments on the Draft BAR will be included and responded to in the Final BAR.	To be included in final BAR
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### 3.4. 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.

### 3.5. 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
The Municipal Manager: SiyaThemba Local Municipality	Mr JRM Alexander	053 353 5300	053 353 1386	mm@siyathemba.gov.za	PO Box 16 Prieska 8940
Pixley ka Seme District Municipality	Mr Ivan Ermansus	053 631 0891	-	-	Private Bag X1012 De Aar 7000
South African Heritage Resources Agency	Dr Catherine Motsisi	021 462 4502	021 462 4509	cmotsisi@sahra.org.za	111 Harrington Street Cape Town 8000
Northern Cape Provincial Heritage (Boswa ya Kapa Bokone)	Mr Andrew Timothy	053 831 2537	-	ratha.timothy@gmail.com; rtimothy@nbkb.org.za	PO Box 1930 Kimberley 8301
DWS: Deputy Director Lower Orange WMA	Mr Shaun Cloete	053 838 9165	-	CloeteS@dwa.gov.za	Private Bag X5912 Upington 8800
Department of Agriculture, Land Reform & Rural Development	Ms Lucia Manong	053 838 9165	-	lmanong@agri.ncape.gov.za	Private Bag X5018 Kimberley 8301
Department of Energy (Northern Cape): Regional Energy Director	Mrs SP Mokuele	053 807 1752	-	sebatatso.mokuele@energy.gov.za	Private Bag X6093 Kimberley 8301
Northern Cape Department of Environmental Affairs and Nature Conservation	Mr Brian Fisher	053 807 7430	083 270 8323	bfisher@ncpg.gov.za	Private Bag X6120 Kimberley 8300
Eskom (Parastatal)	Mr J Geeringh	011 516 7233	086 661 4064	GeerinJH@eskom.co.za	Megawatt Park, Maxwell Drive, Sunninghill

					Sandton 2000
SANRAL (Parastatal)	The Regional Manager	021 957 4600	021 910 1966	dekockr@nra.co.za	Private Bag X19, Belville 7535
Northern Cape Transport, Roads and Public Works	Mr K Nogwili	053 893 2100	-	ncorns@ncpg.gov.za; tmbetha@ncpg.gov.za and wpike@ncpg.gov.za	No. 9 Stockroos Road, Square Hillpark, Floors Hostel, Kimberley 8300
SKA	Mr Adrian Tiplady	011 442 2434		atiplady@ska.ac.za	Postal address: PO Box 522940, Saxonwold, 2132

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

Refer to Appendix E.4: for proof of notification to Authorities and Organs of State

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

Both Eskom and the SKA projects office have been included in the list of Organs of State (Refer to Appendix E)

### 3.6. 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.

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

Refer to Appendix E.5: for the I&AP database.

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

Based on experience, I&AP meetings in the area which have not been attended, and so it was decided that no meetings will be scheduled. However, should I&APs request a meeting or there is an observed interest, one will be scheduled.

#### 4. SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, 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.

##### 4.1. 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.

The following provides a summary of the assessment of potential impacts contained in Appendix D per phase (construction, operation and decommissioning) of the proposed developments. To assess the “worst case” scenario, the assessment is for a length of approximately 11km and 200m in width. This will allow for minor alignment deviations within the corridor to assist in avoiding sensitive features identified. The assessment methodology used in the assessment of the potential impacts is included in Appendix F.

4.1.1. Construction Phase

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
<b>Option 2 (Kronos) Construction Phase</b>				
Impacts on Botany and Ecology	<b>Direct impacts:</b> Small areas of vegetation will be cleared.	<b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>• Unnecessary impacts on surrounding natural vegetation must be avoided.</li> <li>• The construction impacts must be contained to the footprint of the tower structures and/or the servitude of the power line.</li> <li>• Existing access roads must be used, where possible.</li> <li>• Ensure minimal removal of vegetation along transmission line route.</li> <li>• Where necessary vegetation should be re-established in disturbed areas.</li> </ul>	<b>Minor negative (-)</b>
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b> Loss of a vegetation type.	<b>Low negative (-)</b>	<ul style="list-style-type: none"> <li>• Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum.</li> <li>• Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.</li> </ul>	<b>Low negative (-)</b>
Impacts on Avifauna	<b>Direct impacts:</b> Displacement of Red Data, endemic and near-endemic avifauna through disturbance during the construction and decommissioning of the 132kV transmission lines	<b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>• Construction activity should be restricted to the immediate footprint of the infrastructure.</li> <li>• Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.</li> <li>• Measures to control noise and dust should be applied according to current best practice in the industry.</li> </ul>	<b>Negligible negative (-)</b>

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p> <p><b>Cumulative impacts:</b> Cumulative avifauna impacts are discussed in the operational phase.</p>		<ul style="list-style-type: none"> <li>Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.</li> <li>Given that the Martial Eagle nest site at tower 519 has been confirmed as having been occupied and active in 2013, the recommendation made in an earlier impact study (Jenkins &amp; du Plessis 2013) that efforts should be made to encourage these eagles to move to an alternative, less disturbed and hazardous nesting site, is supported here. The extent of energy development planned for the immediate vicinity of this probably preclude a short-range relocation, and a dedicated structure, strategically situated off the power line network aggregated around the Kronos MTS, may be the best option.</li> </ul>	
Impacts on Freshwater	<p><b>Direct impacts:</b> Aquatic habitat modification</p>	<p><b>Negligible negative (-)</b></p>	<ul style="list-style-type: none"> <li>Activities should as far as possible be limited to the delineated site for the proposed development.</li> <li>Invasive alien plant growth should be monitored on an ongoing basis to ensure that these disturbed areas do not become infested with invasive alien plants.</li> </ul>	<p><b>Negligible negative (-)</b></p>



Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<ul style="list-style-type: none"> <li>Storm water run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any storm water leaving the PV facilities site.</li> </ul>	
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> Aquatic habitat modification</p>	<p><b>Minor negative (-)</b></p>	<ul style="list-style-type: none"> <li>Undertake proper stormwater management on sites.</li> <li>Minimise disturbance of aquatic features and make use of existing or share infrastructure.</li> <li>Rehabilitate disturbed aquatic habitats.</li> <li>Monitor and control invasive alien plant growth.</li> <li>Minimise flow and water quality impacts as far as possible.</li> </ul>	<p><b>Minor negative (-)</b></p>
<p>Impacts on Agricultural Potential</p>	<p><b>Direct impacts:</b> Loss of agricultural production and potential, caused by different mechanisms including loss of land, erosion, loss of topsoil, and grazing degradation.</p>	<p><b>Minor negative (-)</b></p>	<ul style="list-style-type: none"> <li>Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas to stabilise the soil against erosion.</li> <li>Strip and stockpile topsoil from all areas where soil will be disturbed below surface, for example excavations for cabling and mounting structures. It is not necessary to strip topsoil from the whole development area, if the soil below surface is not being disturbed</li> <li>After cessation of disturbance, re-spread topsoil over the surface and re-vegetate</li> <li>Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.</li> <li>Control vehicle access on designated roads only.</li> </ul>	<p><b>Minor negative (-)</b></p>
	<p><b>Indirect impacts:</b></p>			

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	No indirect impacts were identified.			
	<b>Cumulative impacts:</b> No cumulative impacts were identified.			
Impacts on Heritage and Palaeontological resources	<b>Direct impacts:</b> Loss of Archaeological sites Loss of Palaeontology finds	<b>Heritage and Palaeontology:</b>  <b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>• If it cannot be avoided, the significant archaeological resource (KGP2011/002) must be mitigated well in advance of construction with the mitigation targeting the footprint of the transmission line pylon;</li> <li>• 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;</li> <li>• The use of wooden poles would help reduce impacts but the significance of impacts is still calculated to be minor. It is noted that wooden poles may not be technically feasible and, due to the limited impacts, steel poles are still acceptable; and</li> <li>• Monitoring of all substantial bedrock excavations for fossil remains by ECO with safeguarding and reporting of substantial new palaeontological finds (notably fossil vertebrate bones&amp; teeth) to SAHARA for possible special mitigation.</li> </ul>	<b>Heritage:</b> <b>Negligible negative (-)</b>  <b>Palaeontology:</b> <b>Minor positive (+)</b>
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b>			

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	No cumulative impacts were identified.			
Impacts on Visual	<p><b>Direct impacts:</b> Visual</p>	<p><b>Negligible negative (-)</b></p>	<ul style="list-style-type: none"> <li>• It is recommended that the power line cross the route further to the north in the vicinity of where the existing Eskom power line crosses the road so as to eliminate the double crossing of the R357 in close proximity.</li> <li>• Strict access control to a single track along the route making use of existing farm tracks for access from the road where possible.</li> <li>• Soil erosion management to be implemented where required. Strict litter control.</li> <li>• Any extra soil should be shaped to appear natural and re-vegetated.</li> </ul>	<p><b>Negligible negative (-)</b></p>
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> Massing effects from numerous power lines converging on the Kronos Substation. Construction of informal settlements in the town of Copperton (and surrounds) from in-migration of persons seeking construction employment from the many different solar and wind energy projects planned for the area.</p>			

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Impacts on Socio-economic	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>• Economy</li> <li>• Production and Employment</li> <li>• Supply of Electricity</li> </ul>	<p><b>Minor positive (+)</b></p>	<ul style="list-style-type: none"> <li>• The developer should encourage the EPC contractor to increase the local procurement practices and employment of people from local communities as far as feasible to maximise the benefits to the local economies.</li> <li>• The developer shall promote procurement of construction materials, goods, and products from local suppliers where feasible, and shall keep records of local procurement by both themselves and EPC contractor.</li> <li>• Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for.</li> <li>• Establish a local skills desk (in Prieska) to determine the potential skills that could be sourced in the area (or collaborate with other renewables projects who already have a labour desk in the area).</li> <li>• Recruit local labour as far as feasible.</li> <li>• Employ labour-intensive methods in construction where feasible.</li> <li>• Sub-contract to local construction companies where possible.</li> <li>• Facilitate knowledge and skills transfer between foreign experts and South African professionals during the pre-establishment and construction phases.</li> <li>• Land owners must be fairly compensated for any unforeseen damage to property or loss of assets such as livestock.</li> </ul>	<p><b>Minor positive (+)</b></p>

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<ul style="list-style-type: none"> <li>• Ensure that maintenance workers/construction workers do not damage property or inflict other losses to the land owners and households residing on the farms</li> <li>• Negotiate terms and conditions that would guide construction activities/maintenance activities on the properties, as well as behaviour and conduct of the construction/maintenance crew</li> <li>• A pre-defined access route to the servitude should be chosen in consultation with the land owner and should be strictly adhered to by all construction/maintenance vehicles and construction/maintenance crew; the chosen route should follow the existing roads as far as feasible</li> <li>• Site clearance activities should be limited to the minimum required area to minimise potential damages to the environment and property.</li> <li>• Construction/maintenance vehicles are to follow a safe speed and should mind animals inhabiting the farms.</li> </ul>	
	<p><b>Indirect impacts:</b> Impact of the affected property owners and households</p>	<p><b>Negligible negative (-)</b></p>	No mitigation measures were identified	<p><b>Negligible negative (-)</b></p>

4.1.2. Operational Phase

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p><b>Direct impacts:</b> Impact on ecological processes</p>	<p><b>Minor negative (-)</b></p>	<ul style="list-style-type: none"> <li>• Ensure minimal removal of vegetation along transmission line route.</li> </ul>	<p><b>Minor negative (-)</b></p>

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Impacts on Botany and Ecology			<ul style="list-style-type: none"> <li>Where necessary vegetation should be re-established in disturbed areas.</li> </ul>	
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> No cumulative impacts were identified.</p>			
Impacts on Avifauna	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>Mortality of Red Data, endemic and near-endemic avifauna through collisions with the 132kV power line</li> </ul>	<b>Moderate negative (-)</b>	<ul style="list-style-type: none"> <li>The 132kV grid connection should be inspected at least once a quarter for a minimum of two years by the avifaunal specialist to establish if there is any significant collision mortality. Thereafter the frequency of inspections will be informed by the results of the first two years.</li> <li>The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection.</li> <li>The proposed transmission lines for evacuation of the electricity generated by the PVs should be marked with BFDs for their entire length on the earth wire of the line, 5m apart, and alternating black and white.</li> </ul>	<b>Minor negative (-)</b>
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> The cumulative impact of a number of renewable projects in the larger region may result in:</p> <ul style="list-style-type: none"> <li>Greater chance of collision and electrocution;</li> </ul>	<b>Minor Negative (-)</b>	<ul style="list-style-type: none"> <li>The proposed transmission lines for evacuation of the electricity generated by the PVs should be marked with BFDs for their entire length on the earth wire of the line, 5m apart, and alternating black and white.</li> </ul>	<b>Low negative (-)</b>

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<ul style="list-style-type: none"> <li>Displacement due to habitat destruction and disturbance</li> </ul>			
Impacts on Freshwater	<p><b>Direct impacts:</b> Aquatic habitat modification</p>	<b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>Disturbance of the stream channels should be limited to the designated access roads.</li> </ul>	<b>Minor negative (-)</b>
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> Aquatic habitat modification</p>	<b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>Minimise disturbance of aquatic features and make use of existing or share infrastructure.</li> <li>Rehabilitate disturbed aquatic habitats.</li> <li>Monitor and control invasive alien plant growth.</li> <li>Minimise flow and water quality impacts as far as possible.</li> </ul>	<b>Minor negative (-)</b>
Impacts on Agricultural Potential	<p><b>Direct impacts:</b> Loss of agricultural production and potential, caused by different mechanisms including loss of land, erosion, loss of topsoil, and grazing degradation.</p>	<b>Minor negative (-)</b>	<ul style="list-style-type: none"> <li>Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas to stabilise the soil against erosion.</li> <li>Strip and stockpile topsoil from all areas where soil will be disturbed below surface, for example excavations for cabling and mounting structures. It is not necessary to strip topsoil from the whole development area, if the soil below surface is not being disturbed</li> <li>After cessation of disturbance, re-spread topsoil over the surface and re-vegetate</li> <li>Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.</li> <li>Control vehicle access on designated roads only.</li> </ul>	<b>Minor negative (-)</b>

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b> No cumulative impacts were identified.			
Impacts on Visual	<b>Direct impacts:</b> Visual (Sense of place)	<b>Negligible negative (-)</b>	<ul style="list-style-type: none"> <li>It is recommended that the power line cross the route further to the north in the vicinity of where the existing Eskom power line crosses the road so as to eliminate the double-crossing of the R357 in close proximity.</li> <li>Ongoing erosion control monitoring by the ECO.</li> </ul>	<b>Negligible negative (-)</b>
	<b>Indirect impacts:</b> No cumulative impacts were identified			
	<b>Cumulative impacts:</b> Visual (Sense of place)	<b>Moderate negative (-)</b>	<ul style="list-style-type: none"> <li>Integration planning with Eskom to assess the possibility of shared power line resources.</li> </ul>	<b>Minor positive (+)</b>
Impacts on Climate change	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>Emission targets</li> <li>Reducing social costs by offsetting coal-fired energy generation.</li> </ul>	<b>Low positive (+)</b>	No mitigation measures are recommended.	<b>Low positive (+)</b>
	<b>Indirect impacts:</b> The establishment of renewable energy facilities would reduce South Africa's future reliance on energy from coal-fired power stations which could in turn reduce the future volume of greenhouse gases emitted to the atmosphere, reducing the greenhouse	<b>Low positive (+)</b>	No mitigation measures are recommended.	<b>Low positive (+)</b>



Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	effect on a regional, national and international scale.			
	<p><b>Cumulative impacts:</b>                      Many renewable energy facilities are proposed throughout the Northern Cape and South Africa. Although not all those proposed would be constructed, a large number would be operating in the next few years. Given the number of renewable energy facilities proposed across the country, the potential cumulative impacts of the proposed projects on the potential reduction in future greenhouse gas emissions is considered to be significant.</p>	<p><b>Medium positive (+)</b></p>	<p>No mitigation measures are recommended.</p>	<p><b>Medium positive (+)</b></p>

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

Please refer to Appendix F for the assessment methodology applied and Annexure D for the detailed impact assessments undertaken by the specialists.

#### 4.2. 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.

The following provides a summary of the assessment of potential impacts contained in Annexure F per phase (construction, operation and decommissioning) of the proposed developments. The significance of the potential impacts, without and with mitigation, are summarised in **Table 2** which presents the potential construction and operational impacts anticipated by the proposed projects, before and after mitigation measures have been implemented.

Table 2: Summary of construction and operational impacts.

IMPACTS	PROJECT ASPECT	Construction		Operation	
		No Mitigation	With Mitigation	No Mitigation	With Mitigation
Impact on botany and ecology	Option 2 (Kronos)	Minor negative (-)	Minor negative (-)	Minor negative (-)	Minor negative (-)
Impact on avifauna	Option 2 (Kronos)	Minor negative (-)	Negligible negative (-)	Moderate negative (-)	Minor negative (-)
Impact on freshwater	Option 2 (Kronos)	Negligible negative (-)	Negligible negative (-)	Minor negative (-)	Minor negative (-)
Impact on agriculture	Option 2 (Kronos)	Minor negative (-)	Minor negative (-)	Minor negative (-)	Minor negative (-)
Impact on Palaeontology	Option 2 (Kronos)	Minor negative (-)	Negligible negative (-)		
Impact on heritage	Option 2 (Kronos)		Minor positive (+)		
Visual impacts	Option 2 (Kronos)	Moderate negative (-)	Negligible negative (-)	Moderate negative (-)	Negligible negative (-)
Impacts on socio-economic	Option 2 (Kronos)	Minor positive (+)	Minor positive (+)		
Impact on climate change	Option 2 (Kronos)			Low positive (+)	Low positive (+)

#### Alternative 2

#### Alternative 3

#### No-go alternative (compulsory)

No potential impacts would result from the No-go alternative as this would be a continuation of the current state. However, the potential for positive impacts (such as the provision of electricity for the South African grid and investment and economic development opportunities and associated upliftment of the Copperton and Prieska communities) would not be realised.



**5. 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 ✓	NO
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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).

N/A
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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.

<p>The proposed mitigation measures listed below are recommended to manage the identified impacts associated with the proposed transmission lines during the construction and operation phases:</p> <p>Condition 1: The holder of the EA shall ensure that the final EMPr (with all mitigations and monitoring measures) is submitted for approval after the preconstruction walkthrough and micro-siting and implemented thereafter.</p> <p>Condition 2: The holder of the EA shall appoint an avifaunal specialist to undertake mortality surveys each quarter for a period of no less than two years and implement any additional reasonable mitigation measures deemed necessary by the specialist during or at the end of the monitoring period. The findings of the monitoring and any additional mitigation measures recommended by the specialist shall be reported to the DEA.</p>
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Is an EMPr attached?

YES ✓	NO
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The EMPr must be attached as Appendix G.

Refer to Appendix G for the EMPr.
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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.

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

Refer to Appendix I: for the specialist’s declaration of interest.
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Any other information relevant to this application and not previously included must be attached in Appendix J.

Refer to Appendix J: for other information namely the motivation letter (dated 16 September 2015) addressed to DEA motivating why alternatives were not assessed for this BAR.
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Patrick Killick

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NAME OF EAP

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SIGNATURE OF EAP

DATE

### **Bibliography**

Almond, J. 2015. "*Environmental Impact Assessment Process: Proposed 75 Megawatt Kronos Photovoltaic Facilities 1-3 and Associated Transmission lines 1-3 near Copperton, Northern Cape*", Palaeontological Assessment, Cape Town

Belcher, T .2015 "*Environmental Impact Assessment Process: Proposed 75 Megawatt Kronos Photovoltaic Facility 1-3 and associated Transmission Line 1 & 2 near Copperton Northern Cape*", Freshwater Assessment, Somerset Mall

Lanz, J. 2015. "*Agricultural and soils impact assessment for proposed 75 megawatt Kronos Photovoltaic Facility 1-3 and Associated Transmission Lines (Option 1 (LILO)-3) near Copperton, Norther Cape*". Agricultural Assessment, Stellenbosch

Macdonald, D. 2015. " Botanical Assessment: "*Proposed 75 Megatwatt Kronos Photovoltaic Facility 1-3 and Associated Transmission line 1 &2 near Copperton, Northern Cape Province*" Botanical Assessment, Claremont

Orton, J. 2015. "*Heritage Impact Assessment for three proposed solar energy facilities and two associated transmission lines near Copperton, Prieke Magisterial District, Northern Cape*", Heritage Assessment, Muizenberg

Stead, S. 2015. "*Environmental Impact Assessment Process: Proposed 75-Megawatt Kronos Photovoltaic Facility 1-3 and Associated Transmission line 1-3 near Copperton, Northern Cape*", Visual Impact Assessment, George

Van Rooyen, C. 2015 "*Specialist Assessment Report: Proposed 75 Megawatt Kronos Photovoltaic Facility 1-3 and associated transmission lines near Copperton, Northern Cape*", Avifauna Impact Assessment, Cape Town

SiyaTemba Integrated Development Plan 2012/13, Northern Cape

DEA. 2010. Integrated Environmental Information Management (IEIM), Information Series 5: Companion to the NEMA EIA Regulations of 2010

DEA. 2010. Implementation Guidelines: Sector Guidelines for the EIA Regulations

DEA & DP. 2006. Regional Methodology for Wind Energy Site Selection. Guideline document.

DEAT. 2002. Integrated Environmental Information Management, Information Series 2: Scoping. DEAT, Pretoria.

DEAT. 2002. Integrated Environmental Information Management, Information Series 3: Stakeholder Engagement. DEAT, Pretoria.

DEAT. 2002. Integrated Environmental Information Management, Information Series 4: Specialist Studies. DEAT, Pretoria.

DEAT. 2004. Integrated Environmental Management, Information Series 11: Criteria for determining Alternatives in EIA. DEAT, Pretoria.

DEAT. 2004. Integrated Environmental Information Management, Information Series 12: Environmental Management Plans. DEAT, Pretoria.

DEAT. 2005. Integrated Environmental Management Guideline Series, Guideline 4: Public Participation, in support of the EIA Regulations. Unpublished.

DEAT. 2007. Integrated Environmental Management Guideline Series, Guideline 7: Detailed Guide to Implementation of the Environmental Impact Assessment Regulations. Unpublished.

National Planning Commission: The Presidency. National Development Plan for 2030. South Africa.

## 6. SECTION F: APPENDICES

The following Appendices follow

APPENDIX A: Maps

APPENDIX A.1: Locality map

APPENDIX A.2: Layout/Route Plan

APPENDIX A.3: Sensitivity Map

APPENDIX B: Photographs

APPENDIX C: Facility illustration(s)

APPENDIX D: Specialist reports (including terms of reference)

APPENDIX E: Public Participation

APPENDIX E.1: Proof of advertisements and notices

APPENDIX E.2: Proof of notification receipt/dispatch

APPENDIX E.3: Comments and response report

APPENDIX E.4: Proof of notification receipt/dispatch to Authorities

APPENDIX E.5: I&AP Register

APPENDIX E.6: Minutes and correspondence received

APPENDIX F: Impact Assessment

APPENDIX F.1: Assessment methodology

APPENDIX G: Environmental Management Programme

APPENDIX H: Details of EAP and expertise

APPENDIX H.1: CV ~ Diane Erasmus

APPENDIX H.2: CV ~ Patrick Killick

APPENDIX H.3: CV ~ Corlie Steyn

APPENDIX I: Specialist's declaration of interest

APPENDIX J: Additional Information

APPENDIX J.1: Motivation for not assessing alternatives

# APPENDIX A:

## Maps



# APPENDIX A.1:

## Locality map

# **APPENDIX A.2:**

## **Layout/Route Plan**

# APPENDIX A.3:

## Sensitivity Map

# APPENDIX B:

## Photographs

# **APPENDIX C:**

## **Facility illustration(s)**

# **APPENDIX D:**

**Specialist reports  
(including terms of  
reference)**

# **APPENDIX E:**

## **Public Participation**

# APPENDIX E.1:

**Proof of advertisements and  
notices**



# APPENDIX E.2:

**Proof of notification  
receipt/dispatch**

# **APPENDIX E.3:**

## **Comments and response report**

# APPENDIX E.4:

**Proof of notification  
receipt/dispatch to  
Authorities**

# APPENDIX E.5:

## I&AP Register

# **APPENDIX E.6:**

**Minutes and correspondence  
received**

# APPENDIX F:

## Impact Assessment

# APPENDIX F.1:

## Assessment methodology

# **APPENDIX G:**

## **Environmental Management Programme**



# APPENDIX H:

**Details of EAP and  
expertise**

# APPENDIX H.1:

**CV ~ Diane Erasmus**

# APPENDIX H.2:

**CV ~ Patrick Killick**

# APPENDIX H.3:

**CV ~ Corlie Steyn**

# **APPENDIX I:**

## **Specialist's declaration of interest**

# **APPENDIX J:**

## **Additional Information**

# **APPENDIX J.1:**

## **Motivation for not assessing alternatives**