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ESTABLISHMENT OF THE KAROSHOEK GRID  
INTEGRATION INFRASTRUCTURE FOR SITES  
1.1; 1.2; 1.3 AND 2, AS PART OF THE  
LARGER KAROSHOEK SOLAR VALLEY  
DEVELOPMENT, ON A SITE LOCATED 30 KM  
EAST OF UPINGTON, NORTHERN CAPE  
PROVINCE

DEA ref: 14/12/16/3/3/1/554

MOTIVATION FOR AMENDMENT OF  
ENVIRONMENTAL AUTHORISATION

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APRIL 2014

Prepared for:

**FG Emvelo**

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Benmore

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Prepared by:

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**ESTABLISHMENT OF THE KAROSHOEK GRID INTEGRATION  
INFRASTRUCTURE FOR SITES 1.1; 1.2; 1.3 AND 2, AS PART OF THE LARGER  
KAROSHOEK SOLAR VALLEY DEVELOPMENT, ON A SITE LOCATED 30 KM  
EAST OF UPINGTON, NORTHERN CAPE PROVINCE**

**DEA ref: 14/12/16/3/3/1/554**

**MOTIVATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION**

**1. INTRODUCTION**

FG Emvelo submitted an application for authorisation to the National Department of Environmental Affairs for the construction of grid integration infrastructure for solar facilities within the Karoshoek Valley Solar Park (DEA Ref No. 12/12/20/1585). The Department granted FG Emvelo environmental authorisation for the project in April 2013.

In terms of the environmental authorisation, Power line Alternative 1 of option 2 is the authorised preferred alternative.

Eskom has advised that the existing power line (Gordonia-Kleinbegin) can no longer be recycled as was considered within the Basic Assessment process for the power line, as Eskom now intends upgrading this power line as part of their grid strengthening for the region. The project is now required to construct a new power line parallel to the existing line from the authorised connection point to the substation (refer to map included within Appendix A).

In this regard, FG Emvelo has requested DEA to amend the middle and end point of the power line from the connection point on the Gordonia-Kleinbegin power line to the Gordonia Substation. The following amendment is requested:

From:

	<b>Latitude (S):</b>		<b>Longitude (E):</b>	
• Starting point of the activity	28 °	30.022' S	21 °	30.199' E
• Middle/Additional point of the activity	28 °	29.759' S	21 °	25.340' E
• End point of the activity	28 °	29.468' S	21 °	19.657' E

To:

**Latitude (S):                      Longitude (E):**

• Starting point of the activity	28 °	30.022' S	21 °	30.199' E
• Middle/Additional point of the activity (Bend point)	28 °	29.468' S	21 °	19.657' E
• End point of the activity	28 °	25.509' S	21 °	17.344' E

In terms of Condition 5 of the Environmental Authorisation, it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved.

Savannah Environmental has prepared this motivation in support of this request/application on behalf of FG Emvelo, and provides detail pertaining to the significance and impacts of the proposed change to the project description in order for interested and affected parties to be informed of the potential change in the project description, and for the competent authority to be able to reach a decision in this regard. This motivation for amendment has been made available to registered interested and affected parties for a 21-day period from **22 April – 16 May 2014.**

In order to verify the potential for a change in the impacts on visual exposure, ecology and heritage sites the amendment has been presented to relevant specialists for consideration and comment. The comments and reports from the specialist consultants are attached within Appendix B - D.

## **2. MOTIVATION FOR AMENDMENT**

Project history: The proposed power line was authorised by DEA in April 2013 (DEA ref: 14/12/16/3/3/1/554). The authorised power line corridor is Alternative 1 of option 2. This corridor runs directly west from the solar sites within the Karoshoek Solar Valley Park until it connects up with the existing 132 kV line and will then follow this line servitude (i.e. using the same servitude) up to the Gordonia Sub Station. The purpose of the project is to connect authorised solar energy facilities to the Eskom grid. One of these facilities (the Ilanga CSP1 Facility) is a Round 3 Preferred Bidder selected by the Department of Energy under the Renewable Energy Independent Power Producers Procurement Programme (REIPPP).

Amendment request: The project description as described in the authorisation is requested to be amended as described above. This amendment relates to the construction of an additional power line parallel to the existing power line to Gordonia Substation. The potential impacts associated with the proposed amendment are discussed below, and compared to the extent of each impact as identified through the Environmental Impact Assessment.

Environmental sensitivity: From the specialist investigations undertaken within the EIA process for the proposed power line, no absolute environmental 'no go' areas were identified. However, areas of ecological sensitivity were identified, as well as potential impacts on heritage resources and visual quality of the area.

Understanding the nature and extent of the proposed amendment to the power line route, the potential for the change in the significance of the impact as assessed in the Basic Assessment for the following is required to be evaluated:

- » Impacts to ecology
- » Visual impacts
- » Impacts on heritage resources

The new alignment falls entirely within the study area defined for the original study and therefore the sensitivity map for the original study is applicable to the new alignment. The potential for change in the significance of impacts is discussed below.

» **Ecological impacts:**

The alignment from the on-site substation to the Gorgonia-Kleinbegin line is close to one of the options used for the original assessment as such there are no additional impacts likely to occur within this section of the line that were not associated with the original alternative. As a result, the impacts associated with this section of line would correspond to those of the original assessment.

An area of potential concern is the crossing of the Orange River and the presence of Lower Gariep Alluvial Vegetation which is classified under the National List of Threatened Ecosystems as Endangered. The affected area is however already extensively transformed and the only intact remnants of this vegetation type are immediately adjacent to the Orange River in areas that are regularly flooded. There are no pylons located within the intact areas and therefore any intact remnants of Lower Gariep Alluvial Vegetation are not likely to be affected by the development. Consequently, there are not likely to be additional impacts on vegetation beyond those which were addressed in the Basic Assessment.

The additional section of line to the Gordonia substation would also potentially increase the impact of the line on susceptible avifauna. However, this potential impact is significantly reduced as a result of the proximity of the power line to the existing Gordonia-Kleinbegin line, as well as the proximity of the additional section of line to the eastern extension of Upington. Consequently, the additional impact on avifauna is not considered significant and the original

assessed impact on avifauna is also considered applicable to the amended alignment.

In conclusion, the new alignment falls within the original study area and there are no impacts associated with the new alignment that are not comparable to those within the original study and no additional impacts or mitigation measures are identified as being necessary at this point.

» **Visual impact:**

The first approximately 20km of the power line will follow the alignment as assessed during the EIA phase of the project and is not expected to influence the outcome of the findings of the Visual Impact Assessment (VIA) undertaken during this phase. The second section, which will be an additional power line adjacent to the existing Garona-Kleinbegin 1 (132kV) power line, is generally not expected to have a large visual influence as it will be constructed along an existing linear visual disturbance, thereby not constituting a primary (or green fields) visual impact.

The last section of the power line (located between the N10 and N14 national roads) will span across the Orange River and agricultural fields before traversing the Keidebees residential area. It will still be situated adjacent to the existing power line, but may be perceived as an additional or cumulative visual impact within this area, due to the presence of potentially sensitive visual receptors.

» **Heritage impact:**

A heritage walk-through survey of the power line route was undertaken. 12 sites of heritage significance, consisting of cemeteries, Stone Age sites, historical material (porcelain etc) and two ruins younger than 60 years were recorded. Of the 12 recorded sites only two sites will be impacted on by the proposed power line. The two sites consist of a Late Stone Age (LSA) artefact scatter around depressions that contain seasonal water and a stream bed margin. Both sites relate directly to the proposed power line and some mitigation measures would be required to be implemented to reduce impacts on the heritage resources.

No cultural landscape elements were noted in the proposed corridor. Visual impacts to scenic routes and sense of place are also considered to be low as the line follows an existing power line. A visual impact assessment was also commissioned for the project, and no further mitigation is recommended for this aspect from a heritage point of view.

Due to the subsurface nature of archaeological material and unmarked graves the possibility of the occurrence of unmarked or informal graves and subsurface

finds cannot be excluded. If during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP for this project.

These findings are in line with those presented within the Heritage Impact Assessment for the project. If the recommendations made from the walk-through survey and within the HIA are adhered to and based on the approval from SAHRA the project could proceed.

### **3. CONCLUSION**

It is concluded that a amendment of the power line as described will not significantly change the impact significance ratings as assessed in the EIA. The significance of the impact assessed in the EIA therefore remains unchanged. In addition, there are no new impacts identified as a result of the proposed amendment.

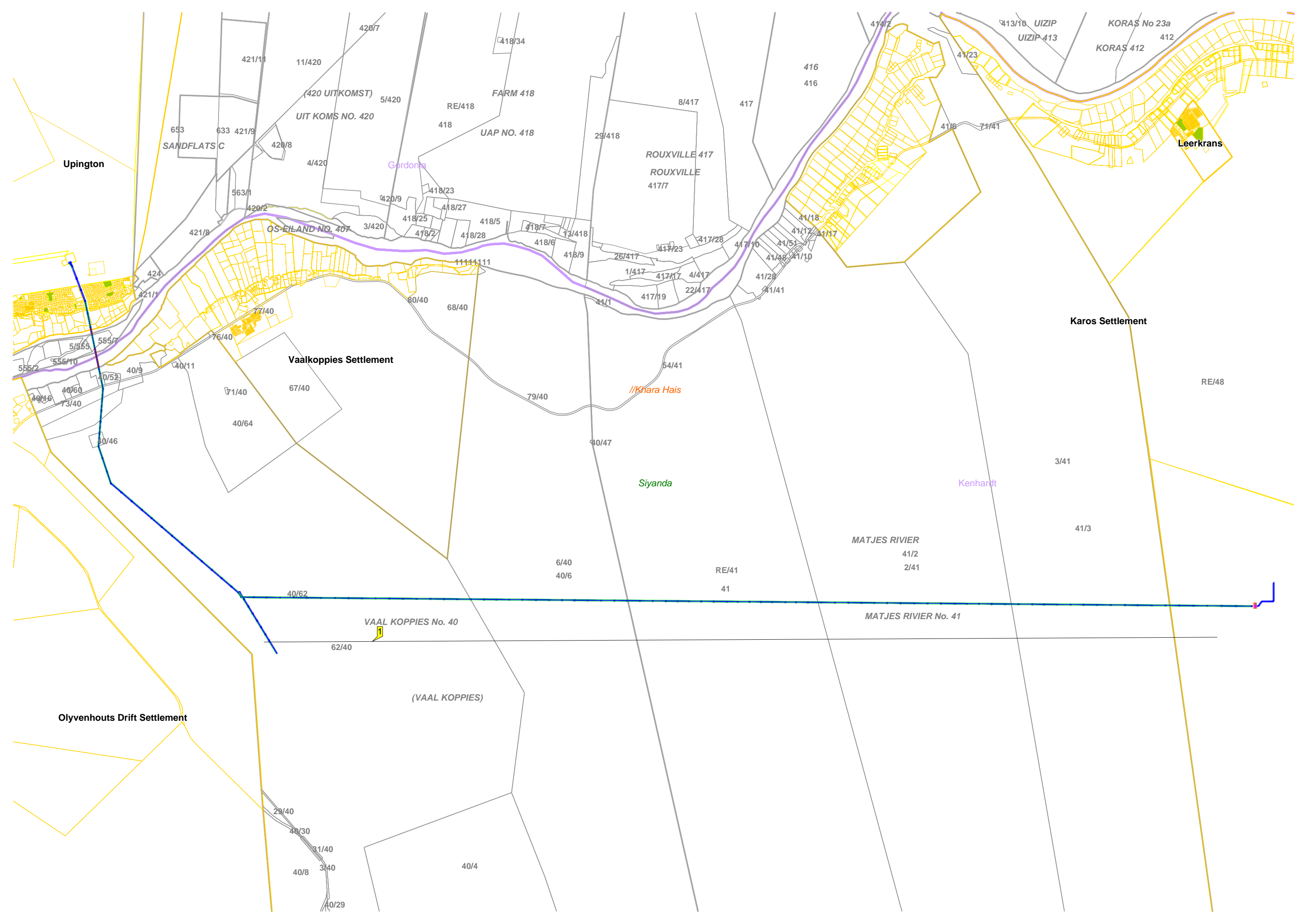
### **4. LIST OF APPENDICES**

The following Appendices are attached in support of the motivation for amendment:

- Appendix A:** Locality map
- Appendix B:** Ecology specialist input – statement from Simon Todd Consulting
- Appendix C:** Visual specialist input - statement from MetroGIS
- Appendix D:** Heritage specialist input - statement from Heritage Contracts and Archaeological Consulting CC

**APPENDIX A:  
LOCALITY MAP**





Upington

SANDFLATS C

Gordonia

ROUXVILLE 417  
ROUXVILLE  
4177

Leerkrans

Vaalkoppies Settlement

Karos Settlement

Olyvenhouts Drift Settlement

Siyanda

Kenhardt

VAAL KOPPIES No. 40

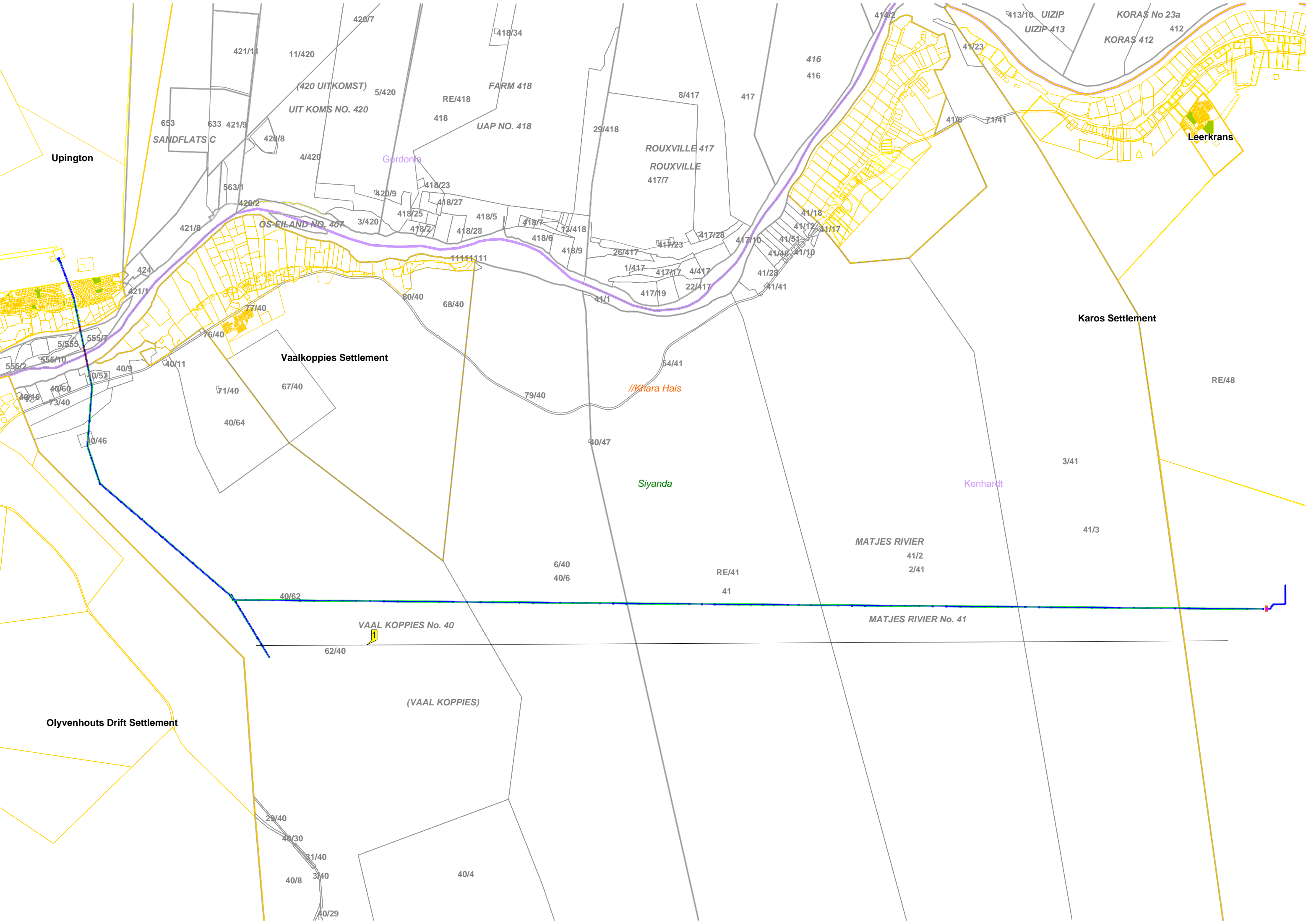
MATJES RIVIER No. 41

(VAAL KOPPIES)

MATJES RIVIER  
41/2  
2/41

OS-EILAND NO. 407

//Khaara Hais



**APPENDIX B:  
ECOLOGY SPECIALIST INPUT - STATEMENT  
FROM SIMON TODD CONSULTING**



Simon Todd Consulting  
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55 Ranger Road  
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Savannah Environmental  
P.O. Box 148  
Sunninghill  
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ATT: Jo-Anne Thomas

25 March 2014

**RE: Amendment to the Ilanga 1 – Gordonia 132kV Basic Assessment**

This letter is in reference to the proposed amendment to the Basic Assessment for the proposed 132kV power line from the Karoshoek solar development area to the Gordonia substation located outside Upington in the Northern Cape. The amendment is required as the original intention for the line to connect to the Gordonia-Kleinbegin line is no longer possible and it will now need to connect directly to the Gordonia substation. Given the change in the power line alignment and additional length required to connect to the Gordonia substation, Savannah Environmental have requested comment on the proposed changes to the layout and in particular whether or not this might affect the significance of the assessed impacts associated with the development. In this regard the following conclusions and observations are made:

- The new alignment falls entirely within the study area defined for the original study and therefore the sensitivity map for the original study is applicable to the new alignment as well.
- The new alignment from the on-site substation to the Gordonia-Kleinbegin line is close to one of the options used for the original assessment as such there are no additional impacts likely to occur within this section of the line that were not associated with the original alternative. As a result, the impacts associated with this section of line would correspond to those of the original assessment.
- An area of potential concern is the crossing of the Orange River and the presence of Lower Gariep Alluvial Vegetation which is classified under the National List of Threatened Ecosystems as Endangered. The affected area is however already extensively transformed and the only intact remnants of this vegetation type are immediately adjacent to the Orange River in areas that are regularly flooded. There are no pylons located within the intact areas and therefore any intact remnants of Lower Gariep Alluvial Vegetation are not likely to be affected by the development. Consequently, there are not likely to be additional impacts on vegetation beyond those which were addressed in the Basic Assessment.

- The additional section of line to the Gordonia substation would also potentially increase the impact of the line on susceptible avifauna. However, this potential impact is significantly reduced as a result of the proximity of the line to the existing Gordonia-Kleinbegin line, as well as the proximity of the additional section of line to the eastern extension of Upington. Consequently, the additional impact on avifauna is not considered significant and the original assessed impact on avifauna is considered applicable to the amended alignment as well.
- In conclusion, the new alignment falls within the original study area and there are no impacts associated with the new alignment that are not comparable to those within the original study and no additional impacts or mitigation measures are identified as being necessary at this point.



Prepared by Simon Todd Pr.Sci.Nat  
SACNASP 400425/11.

25 March 2014

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**APPENDIX C:  
VISUAL SPECIALIST INPUT - STATEMENT  
FROM METROGIS**



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30 March 2014

## FG EMVELO (PTY) LTD

### PROPOSED KAROSHOEK SOLAR ENERGY FACILITY POWER LINE: NORTHERN CAPE PROVINCE

#### AMENDMENT

Dear Sir/Madam

FG Emvelo (Pty) Ltd wishes to amend the alignment of their overhead power line for the Karoshoek Solar Valley Development, located near Upington in the Northern Cape Province.

The intended amendment includes:

- The extension of the power line alignment to the Gordonia substation by means of the construction of a power line traversing adjacent to the existing *Gordonia-Kleinbegin 1 (132kV)* power line.

The proposed power line from the Karoshoek SEF was intended to connect with the above power line in order to evacuate electricity generated at the facility into the national grid. This option is no longer available to the developers and an additional section of power line will need to be constructed in order to connect with the Gordonia substation, located approximately 8km north of the original intended connection point.

The first approximately 20km of the power line will follow the alignment as assessed during the EIA phase of the project and is not expected to influence the outcome of the findings of the Visual Impact Assessment (VIA) undertaken during this phase. The second section, which will be an additional power line adjacent to the existing *Garona-Kleinbegin 1 (132kV)* power line, is generally not expected to have a large visual influence as it will be constructed along an existing linear visual disturbance, thereby not constituting a primary (or *green fields*) visual impact.

The last section of the power line (located between the N10 and N14 national roads) will span across the Orange River and agricultural fields before traversing the Keidebees residential area. It will still be situated adjacent to the existing power line, but may be perceived as an additional or cumulative visual impact within this area, due to the presence of potentially sensitive visual receptors.

Although we generally support the amendment of the Karoshoek SEF power line alignment, we are of the opinion that this last section of the alignment may warrant additional inspection/assessment, or at the very least, proper consultation with land owners and residents located within this area.

Kind regards.

LM du Plessis (PrGISc)

Director: MetroGIS (Pty) Ltd.

**APPENDIX D:  
HERITAGE SPECIALIST INPUT - STATEMENT  
FROM HERITAGE CONTRACTS AND  
ARCHAEOLOGICAL CONSULTING CC**



# HERITAGE

Contracts and Archaeological Consulting

Email: [jaco.heritage@gmail.com](mailto:jaco.heritage@gmail.com) Cell: 082 373 8491

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**Ref:** Karoshoek Power Line

11 April, 2014

Savannah Environmental (Pty) Ltd

Attention: Ms Jo-Anne Thomas

**RE: Heritage Walkthrough for the Proposed 132Kv power line of the approved Karoshoek Valley solar plant, Upington, Northern Cape Province**

## **Introduction**

Heritage Contracts and Archaeological Consulting CC has been contracted by Savannah Environmental (Pty) Ltd to conduct a heritage walkthrough for the proposed power line for the approved Karoshoek Valley Solar Park, 30 km east of Upington.

## **Methodology**

The methodology used for walk through of linear developments is different to the methodology for projects where AIA's or HIA's are needed. A Phase 1 HIA (Van Schalkwyk 2011) was conducted for the Karoshoek Solar Park where a large part of the power line is situated and another HIA for the power line connection into the grid by Gaigher (2012). Since the initial HIA for the project dealt with obtaining desktop information to contextualise the study area, this is not repeated during the walk through phase. However to understand the heritage context of the study area the following phased approach was utilised for this project.

## **Phase 1**

Phase 1 included a study of the existing HIA's for the project. This was complimented by consulting previous CRM reports (SAHRIS) conducted in the area additional to the report by Van Schalkwyk (2011) and Gaigher (2012). The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area. Several unpublished CRM projects were conducted in the general study area (.Beaumont 2005 & 2008, Van Ryneveld 2007a & 2007b, Dreyer, 2006). These studies identified Early and Middle Stone Age assemblages as well as historical structures

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Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

## **Phase 2 - Physical Surveying**

A field survey of the power line was conducted by a professional archaeologist. The proposed tower positions were surveyed on foot and by vehicle during the week of 28 March 2014. Sites recorded were plotted on 1:50 000 maps and their GPS co-ordinates noted. Digital photographs were taken at all the sites.

## **Restrictions**

Due to the fact that most cultural remains may occur below surface, the possibility exists that some features or artefacts may not have been discovered/ recorded during the survey. Small pieces of land with different land owners restricted accessibility to the tower positions around the Orange River. These areas are already very disturbed and the impact on archaeological resources is assumed to be low. Sand cover, cultivated and disturbed areas reduced archaeological visibility. The survey was impeded by thick red Kalahari sand cover as well as access restrictions.

The description of the proposed project, provided by the client, is assumed to be accurate as well as the results of the 2011 and 2012 HIA's.

Although Heritage Contracts and Archaeological Consulting CC surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.

Any changes or deviations of the power line will have to be assessed separately.

**Postnet Suite# 426, Private Bag X4, Wierda Park,0149**

## **Results**

Previous work was done on the project consisting of:

- » A Phase 1 HIA (Van Schalkwyk 2011) was conducted for the approved Karoshoek Solar Park where a large part of the power line are situated
- » A separate HIA was conducted for the power line from the solar facility for connection into the grid (Gaigher 2012).

The studies recorded 12 sites of heritage significance, consisting of cemeteries, Stone Age sites, historical material (porcelain etc) and two ruins younger than 60 years. Of the 12 recorded sites only two sites will be impacted on by the proposed power line. The two sites consist of a LSA artefact scatter around depressions that contain seasonal water and a stream bed margin. Both sites relate directly to the proposed power line and some recommendations are put forth to mitigate impacts on the heritage resources.

No cultural landscape elements were noted in the proposed corridor. Visual impacts to scenic routes and sense of place are also considered to be low as the line follows an existing power line. A visual impact assessment was also commissioned for the project, facilitated by the client and no further mitigation is recommended for this aspect from a heritage point of view.

Due to the subsurface nature of archaeological material and unmarked graves the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded. If during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP for this project.

If the recommendations made below are adhered to and based on the approval from SAHRA the project should go ahead.

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## Recommendations

**Site 1** and **JvS 4** demonstrate a low density of stone tools that is characteristic of Later Stone Age artefact types (microlithic). Artefacts are scattered over (and possibly more) approximately 3ha. Due to the low artefact density and the large area the site covers with the very small physical footprint (relative to the extent of the site), and therefore adverse effects the 132 kV power line would have on the occurrence as a whole, the site is given a medium heritage significance rating, as sites like these might contain evidence of ephemeral camps. Therefore it is recommended that micro adjustments to the location of tower 104 are made to avoid this area of seasonal water holes. Alternatively an archaeologist must monitor the earth works during construction of tower 103 - 106. The exposed stratigraphic profiles that will be produced by the excavations will permit the examination and recording of the vertical extent of the site as well as its stratigraphic nature if it extends this far. Based on the tower positions no direct impact is foreseen on JvS 4 and no further action is needed.

## Chance finds procedure

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on mine operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

Any further queries can be forwarded to Jaco van der Walt on Cell: +27 82 373 8491 or to [jaco.heritage@gmail.com](mailto:jaco.heritage@gmail.com)



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