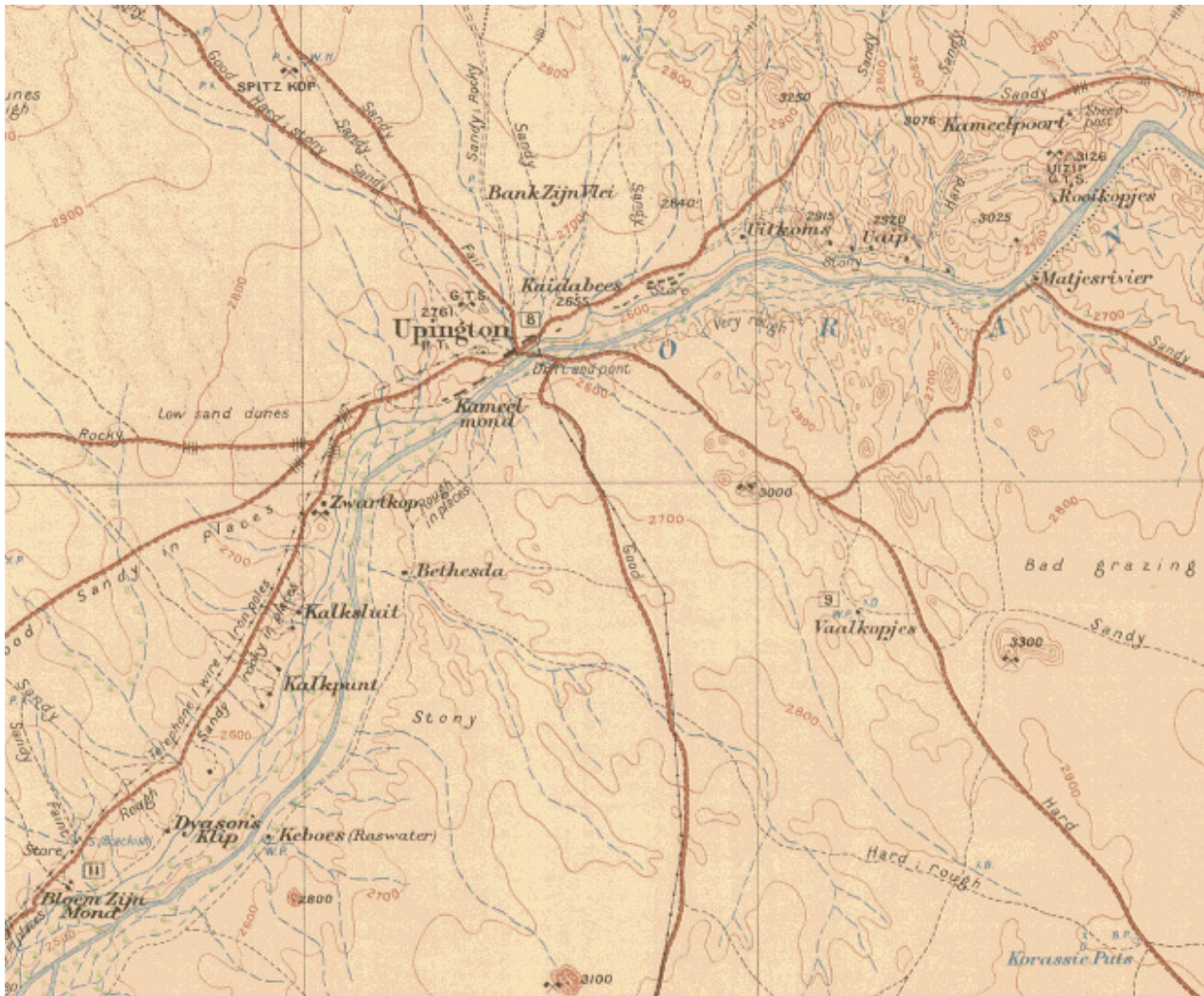


**INTEGRATED HERITAGE IMPACT ASSESSMENT IN TERMS OF SECTION 38(8)
OF THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT 25 OF 1999)**

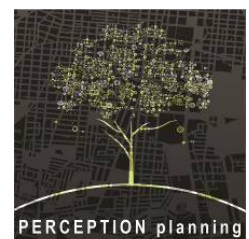
**PROPOSED DEVELOPMENT OF JORAM PHOTOVOLTAIC FACILITY ON A PORTION
OF THE FARM VAAL KOPPIES 40/ REMAINDER PORTION 60, INCLUDING
POTENTIAL GRID CONNECTIONS ACROSS PORTIONS OF THE FARM VAAL
KOPPIES 40/3, 9, 52 & 66; FARM 555/7; AND ERVEN 73 & 19951, KENHARDT
DISTRICT, NORTHERN CAPE**



ON BEHALF OF: Joram Solar (Pty) Ltd

November 2014

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REFERENCES and ACKNOWLEDGEMENTS:

1. Cape Town Archives
2. Chief Directorate: Surveys & Mapping
3. Surveyor General Office

ABBREVIATIONS:

1. CDSM – Chief Directorate Surveys & Mapping
2. DEA – National Department of Environmental Affairs
3. HIA – Integrated Heritage Impact Assessment
4. NHRA - National Heritage Resources Act, 1999 (Act 25 of 1999)
5. PHRA – Provincial Heritage Resources Agency
6. PHS – Provincial Heritage Site

COVER: *Compilation of early (1906-1914) mapping for the Upington area (Source: Reconnaissance Series No 16, CDSM)*

1. INTRODUCTION

PERCEPTION Planning was appointed by *Joram Solar (Pty) Ltd* to compile and submit to the *South African Heritage Resource Agency (SAHRA)* and *Ngwao Boswa Kapa Bokoni* an Integrated Heritage Impact Assessment (HIA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999) with relation to proposed development of the property listed below (hereafter referred to as, "the site"). Sanction for submission of this HIA was provided by Mr. Craig Stanley (*on behalf of registered owner*), and is attached as part of Annexure 1.

The cadastral land units subject to this application are as follows:

- Vaal koppies 40/ Remainder of Portion 60, Kenhardt District and //Khara Hais Municipality, Northern Cape, measuring 4,695.8487ha, registered to New Haven Trust and held under T2311/2005;
- Vaal koppies 40/ 3, 9, 52 & 66, Kenhardt District and //Khara Hais Municipality, Northern Cape (Grid connection);
- Farm 555/7, Kenhardt District and //Khara Hais Municipality, Northern Cape (Grid connection);
- Erven 73 & 19951, Kenhardt District and //Khara Hais Municipality, Northern Cape (Grid connection);

This report serves as an ***Integrated Heritage Impact Assessment (HIA)*** and includes inputs from the following specialist reports sanctioned as part of the HIA:

- Basic archival background research (*Perception Planning, S. de Kock*);
- Archaeological Impact Assessment (*Dr Peter Nilssen*);
- Desktop Palaeontological Impact Assessment (*Natura Viva, Dr. J. Almond*).

2. INDEPENDENCE OF ASSESSOR

With relation to the author's appointment to compile an Integrated Heritage Impact Assessment in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999), it is hereby declared:

- This consultancy (including the author) is not a subsidiary, legally or financially, of the proponents;
- Remuneration for professional services by the proponent in relation to this proposal is not linked to approval by any decision-making authority responsible for permitting this proposal;
- Nor this consultancy, nor the author has any interests in secondary or downstream activities as a result of the authorisation of this project.

It is further hereby certified that the author has 17 years professional experience as urban planner (3 years of which were abroad) and 8 years professional experience as heritage practitioner. The author holds the following qualifications:

- Urban and Regional Planning (B-Tech, CPUT, 1997)
- Environmental Impact Assessment Management – Heritage, Environmental (Diploma, Dublin University, 2002)
- Architectural & Urban Conservation (CDP, UCT, 2007)
- Urban Design (CPD, UCT, 2009)

The author is professionally registered as follows:

- Professional Heritage Practitioner (Association for Professional Heritage Practitioners)
- Professional Planner (South African Council for Planners)

3. METHODOLOGY

As part of the compilation of this Integrated HIA report the site and its environs was studied, visited, photographed and assessed, which more specifically involved the following (for broad overview of HIA process refer to explanatory flow diagram below):

- Field work carried out by *Dr. Peter Nilssen* on 27th August and 1st September 2014;
- Liaising with project manager, environmental consultant and various specialist consultants;
- Assimilating findings and recommendations emanating from specialist inputs into HIA;
- Identification of heritage-related issues and concerns;
- Analysis of development site and its environs;
- Identification of contextual spatial informants;

- Establishing cultural significance, based on criteria set out in NHRA;
- Identification of heritage-related design informants based on the above;
- Focused public participation process to be coordinated as part of Environmental Impact Assessment facilitated by *Cape Environmental Impact Assessment Practitioners (Pty) Ltd*;
- Assess conformity of final proposed site layout to design informants identified;
- Submission to competent authorities (*SAHRA* and *Ngwao Boswa Kapa Bokoni*) via SAHRIS.

4. DESCRIPTION OF STUDY AREA¹

The proposed development site is ±13km southeast of Upington and south of the Orange River as illustrated (Figure 1). Vehicular access is via a gravel road leading south from the N10 National Road.

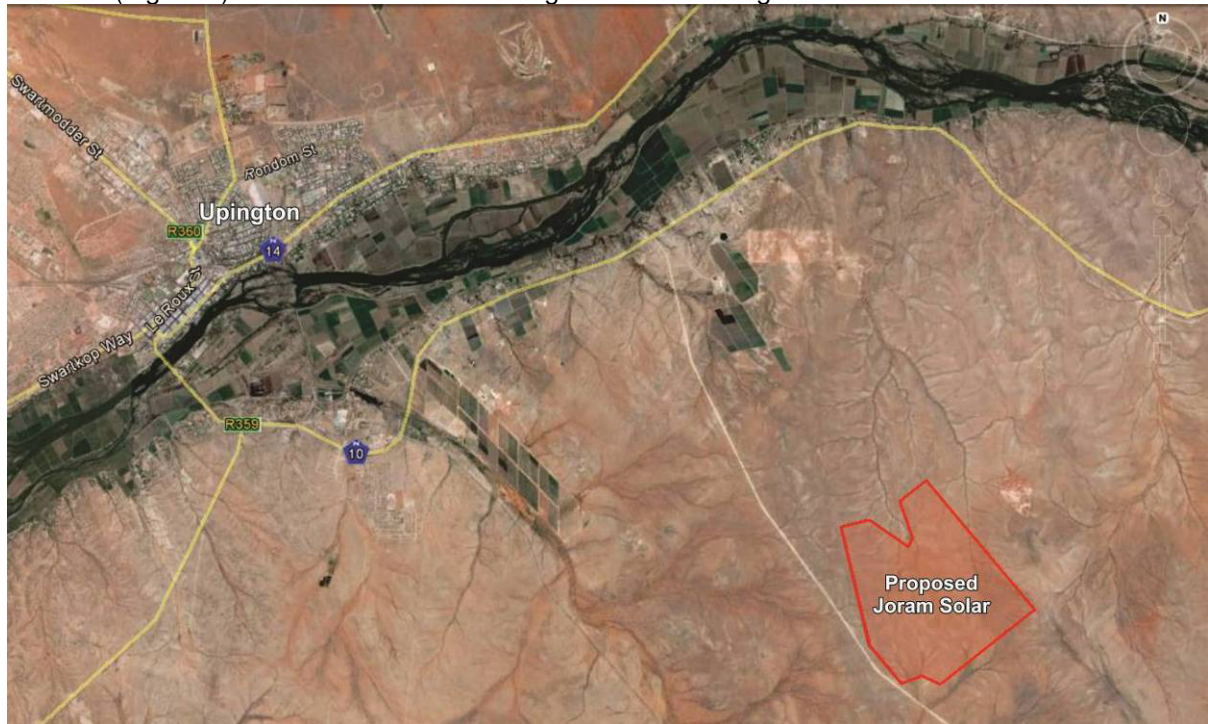


Figure 1: Location of proposed development site in relation to Upington and Orange River (Source: GoogleEarth)

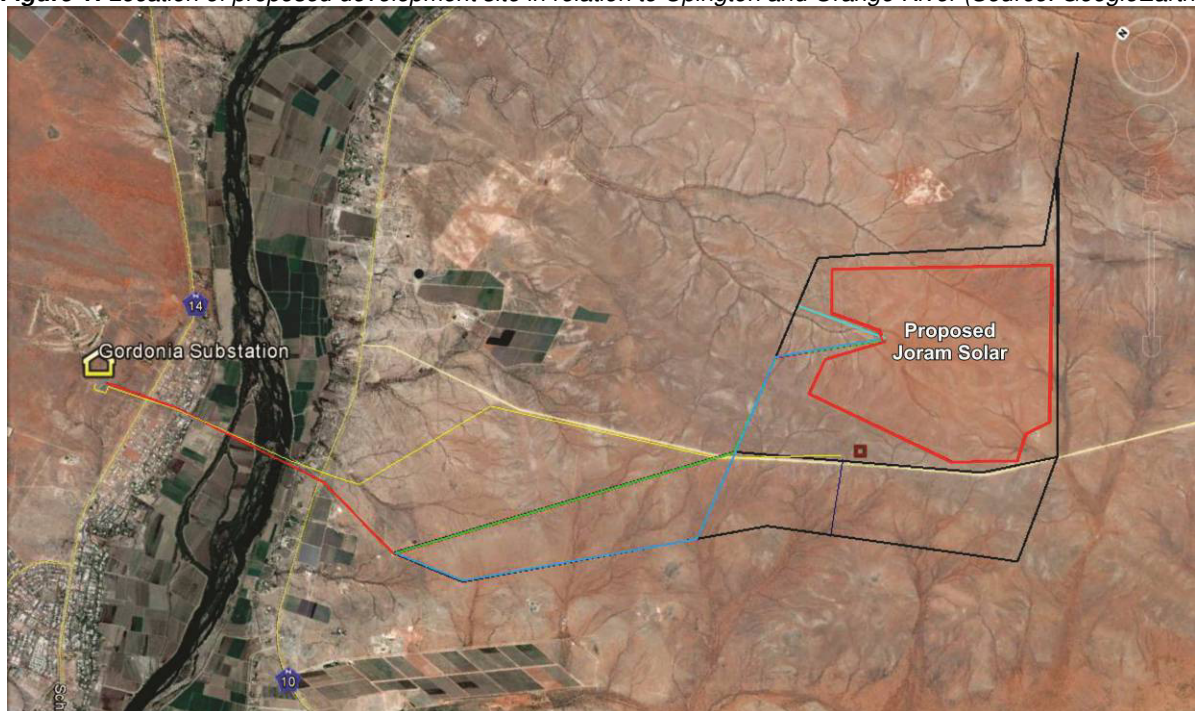


Figure 2: Proposed site and possible grid connection alignments (Source: GoogleEarth)

¹ Partly transposed from AIA, Dr. Peter Nilssen, 2014

The study area is essentially flat and is situated in a slight depression with low ridges to the west and koppies or hills to the east and with small intervening drainage lines with a mainly northerly orientation, sloping down gently towards the Orange River in the north. Vegetation is open and sparse, and dominated by Karoo shrubs, some grasses and a few small/short trees of mostly *Acacia* species that occur along the main drainage line running through the study area. Consequently, there are large expanses of exposed ground surfaces and archaeological visibility is excellent. Surface sediments are mostly stony with quartz dominating over most of the affected area and these lie in and atop beige to brown to reddish sands that are variable in coarseness. These geological deposits appear to be alluvial gravels that are also exposed in stream cuttings. A few rocky outcrops of quartz, quartzite and calcrete also occur in the area.

Relatively recent human-related disturbances to the environment include single vehicle gravel tracks, a windmill with above surface concrete dam, feeding and watering troughs for cattle, cattle grazing, fencing, and a small quarry or borrow pit is situated immediately outside the south west corner of the 450 ha area. Apart from sheet wash as well as shallow erosion gullies associated with the drainage lines, there is considerable burrowing by smaller and larger mammals.

5. PROPOSED DEVELOPMENT

5.1 Description of activity

The proposed facility has a planned peak capacity of be 75 MW_p, with an estimated development footprint of 200ha to 220ha. The estimated portion of land each component of the facility will typically occupy is summarised in the table below (with average area taken as 200ha):

Table 1: Component sizes of the proposed Joram Solar Development (Solek, 2014)

Component	Estimated extent of each 75 MW plant	Percentage of selected area (+ 200 ha)	Percentage of whole farm (±4,695 ha)
PV modules	180 ha (1.8 km ²)	90%	3.8%
Internal roads	18 ha (0.18 km ²)	9%	0.38%
Auxiliary buildings	2 ha (0.02 km ²)	1%	less than 0.1%

The proposed infrastructure that is planned to be constructed includes CPV modules, or a series of solar PV arrays, inverters, internal electrical reticulation, and an internal road network. It will also be necessary to construct an onsite substation which would typically include a transformer to allow the generated power to be connected to Eskom’s electricity grid. Auxiliary buildings, including ablution, workshops, storage areas and fencing are planned to be erected. A distribution line will also be required to distribute the generated electricity from the site to the Eskom substation and grid.



Figure 3: Typical layout of the components of a Solar PV facility (Source: Solek, 2014)

Various layout alternatives for the abovementioned components are under consideration. The preferred alternative (to avoid constraints defined by the specialists) will be determined during the EIR phase of the project. Details regarding the consideration of alternatives are included in the section below.

5.2 Facility layout alternatives

A number of layout alternatives have been considered for the proposed Joram Solar Development. As part of this scoping report, different spatial locations for the proposed facility were investigated. A preliminary study site of 450 ha was identified as part of this scoping phase of the project. The 450 ha area was identified because of its level surface, road access alternatives, and distance to the Gordonia Eskom substation. The identified 450 ha study area been selected will be referred to as Preliminary Study Site.



Figure 4: Footprint of initial study site (Solek, 2014)

5.2.1 Layout Alternative 1

The following key points were used to determine the footprint of Layout Alternative 1, within the preliminary Study Site:

- Area of approximately 220 ha , to ensure the project would be economically viable, allowing for exclusions of environmental sensitive areas;
- Minimal disturbance to water washes and highly sensitive areas.
- Road access to the site with regard to distance and minimal disturbance to sensitive areas
- Grid connection taking into consideration distance and minimal disturbance to sensitive areas.

The factor having the single biggest influence on the second point is the mounting technology. The preferred technology should allow arrays to be constructed over the wash lines and high sensitivity areas while having a minimal effect on the vegetation, mitigating the chances of erosion. Should the specialist findings highlight any additional sensitive areas, these will be considered and additional layouts alternatives developed.

5.2.2 Layout Alternative 2

The following key points were used to determine the footprint of Layout Alternative 2, within the preliminary Study Site:

- Area of approximately 220 ha, to ensure the project would be economically viable, allowing for exclusions of environmental sensitive areas;
- Minimal disturbance to water washes and highly sensitive areas.
- Road access to the site with regard to distance and minimal disturbance to sensitive areas
- Grid connection taking into consideration distance and minimal disturbance to sensitive areas.

The factor having the single biggest influence on the second point is the mounting technology. The preferred technology should allow arrays to be constructed over the wash lines and high sensitivity areas while having a minimal effect on the vegetation, mitigating the chances of erosion. Should the specialist findings highlight any additional sensitive areas, these will be considered and additional layouts alternatives developed.

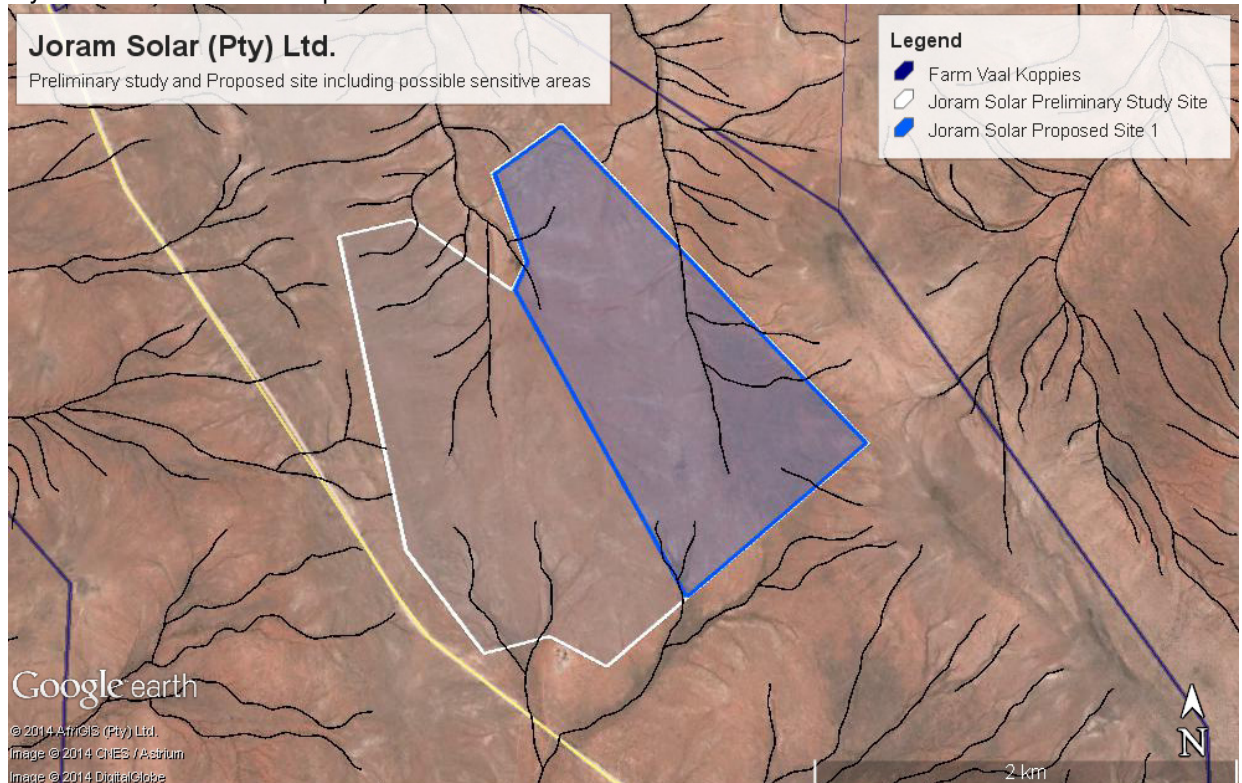


Figure 5: Layout Alternative 1 (Solek, 2014)

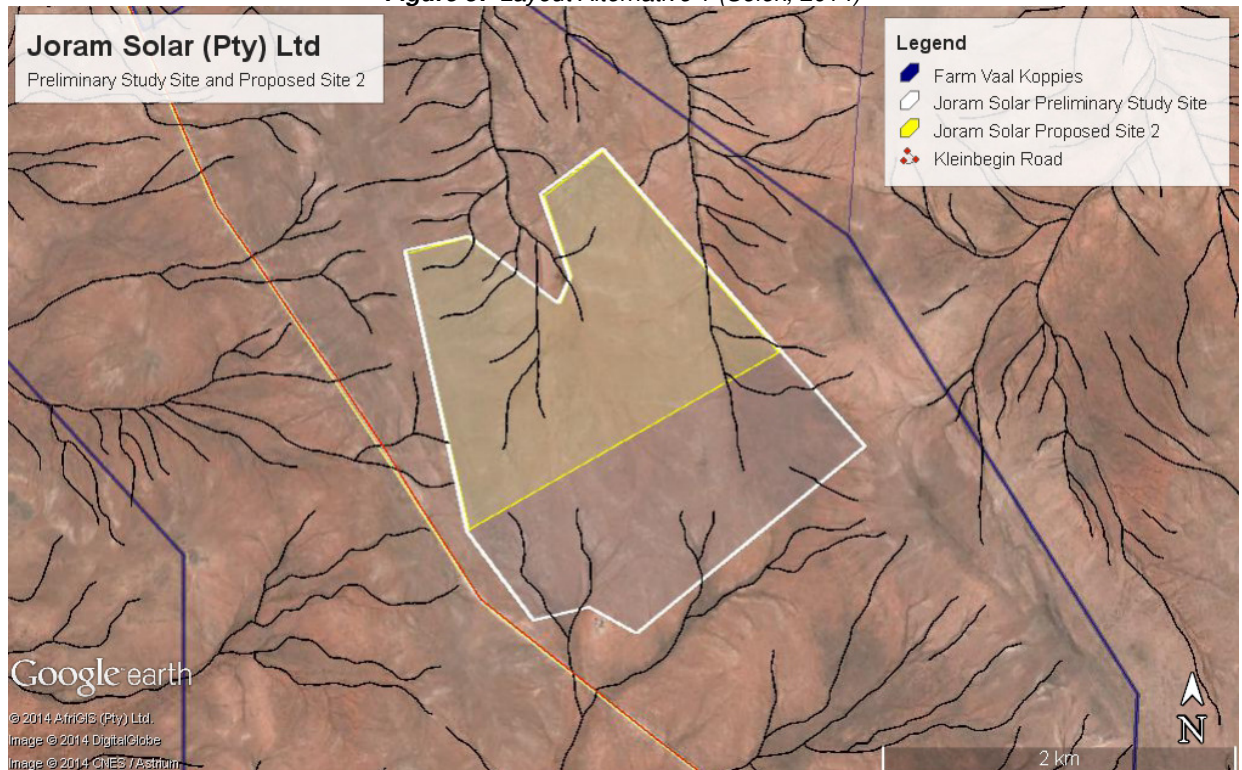


Figure 6: Layout Alternative 2 (Solek, 2014)

5.2.3 *Alternative 3 (Preferred Alternative)*

The preferred layout will be developed to be responsive to the constraints defined by the participating specialists, while at the same time achieving technical feasibility. This preferred layout will be developed in the EIR phase of the Environmental Process and will become the layout that is proposed for

authorisation.

5.3 Access Road and Entrance Alternatives

Access to the site will be along appropriate provincial and local roads. The proposed access roads to the site are from the Kleinbegin district road. The Kleinbegin road intersects the N10, 10km east of Upington. Three access road alternatives, with three possible entrances are being investigated to determine which one will have the least environmental impact and would be more viable (including in terms of SANRAL’s and the provincial roads authority requirements).

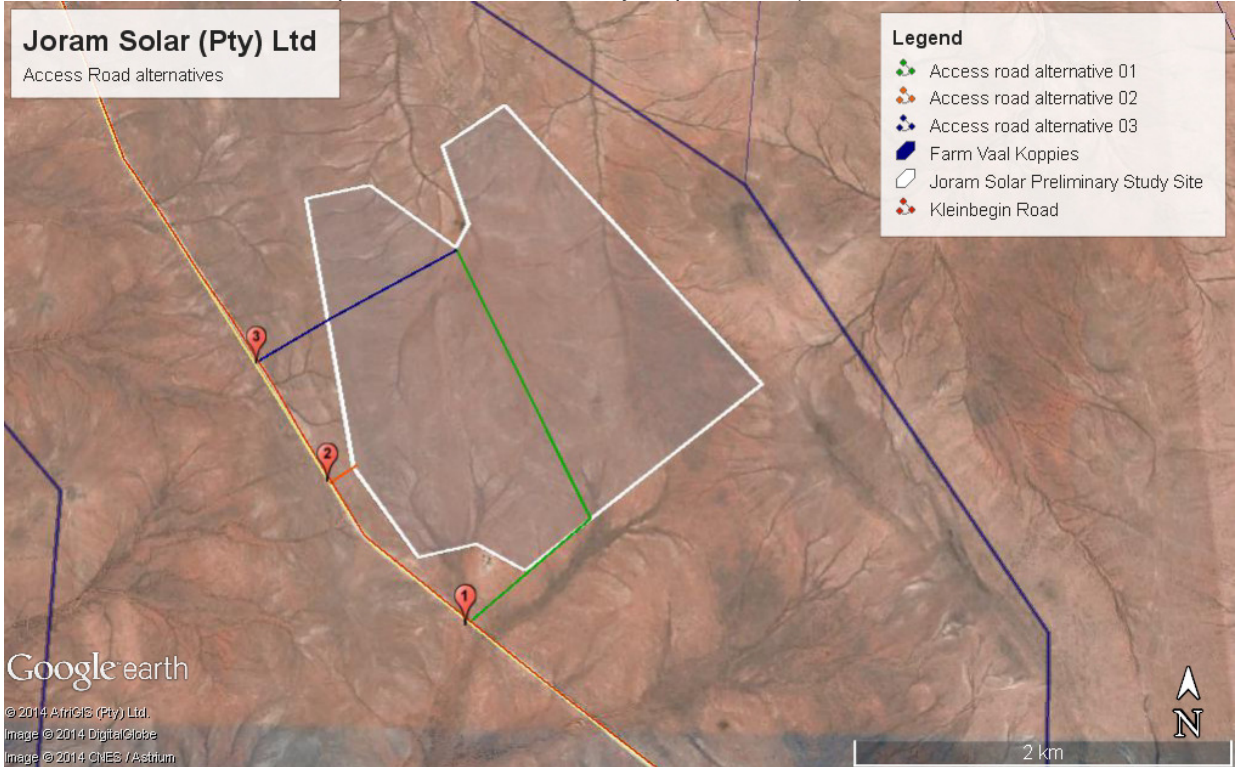


Figure 7: Access road alternatives currently under investigation for Joram Solar (Solek, 2014)

5.4 Grid Connection Alternatives

In the scoping phase several self-build power line route alternatives are under investigation, including the loop-in loop-out route options. The distances of self-build power lines, upgrading of infrastructure (Keidebees Eskom substation) and servitude alternatives have been taken into consideration. The summarised grid connection alternatives and their distances from the onsite substation to the Gordonia Eskom substation or existing Gordonia-Kleinbegin 132kV line is illustrated in the table below.

Table 2: Distances of various grid connection alternatives under investigation (Solek, 2014)

Grid Connection Alternatives	Distance (km)
Loop in Loop out Alternatives	
Joram Solar PLine Loop in Loop out sub3_01	2.3 km
Joram Solar PLine Loop in Loop out sub1_02	1 km
Joram Solar PLine Loop in Loop out sub2_01	200 m
Joram Solar PLine Loop in Loop out sub2_02	2.2 km
Joram Solar PLine Loop in Loop out sub3_01	1 km
Self-build Alternatives	
Joram Solar PLineSelfbuild sub1_01	10.8 km
Joram Solar PLineSelfbuild sub1_02	10.1 km
Joram Solar PLineSelfbuild sub1_03	10.6 km
Joram Solar PLineSelfbuild sub3_01	10.3 km

5.4.1 Loop in Loop out Alternatives

The option to loop into the existing GordoniaKleinbegin132 kV line is investigated as connection alternative from onsite substations 1, 2 and 3 (see Figure 8). The other Loop in Loop out alternatives will be from onsite substations 1, 2 and 3 to Karoshoekllanga CSP proposed 132 kV lines. The Ilanga (Karoshoek) CSP project power line servitude alternatives are still to be finalised.

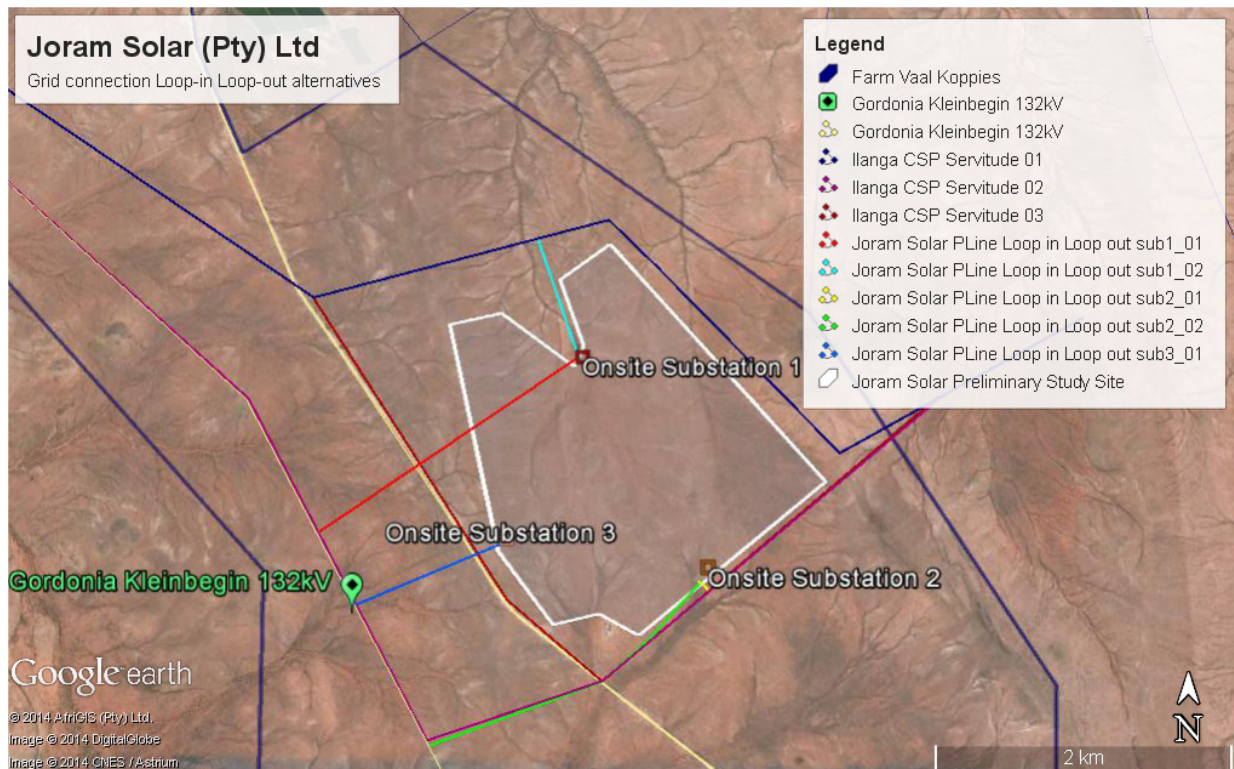


Figure 8: Powerline loop in Loop out alternatives for Joram Solar (Solek, 2014)

5.4.2 Self-build Alternatives

All the self-build power line alternatives will follow their different routes up to location of the decommissioned Keidebees substation and will then run parallel to the Gordonia-Kleinbegin 132kV line connecting to Gordonia Eskom Substation (Figure 9). The routes were all chosen along existing fences or power lines, in order to minimise the additional environmental impact.

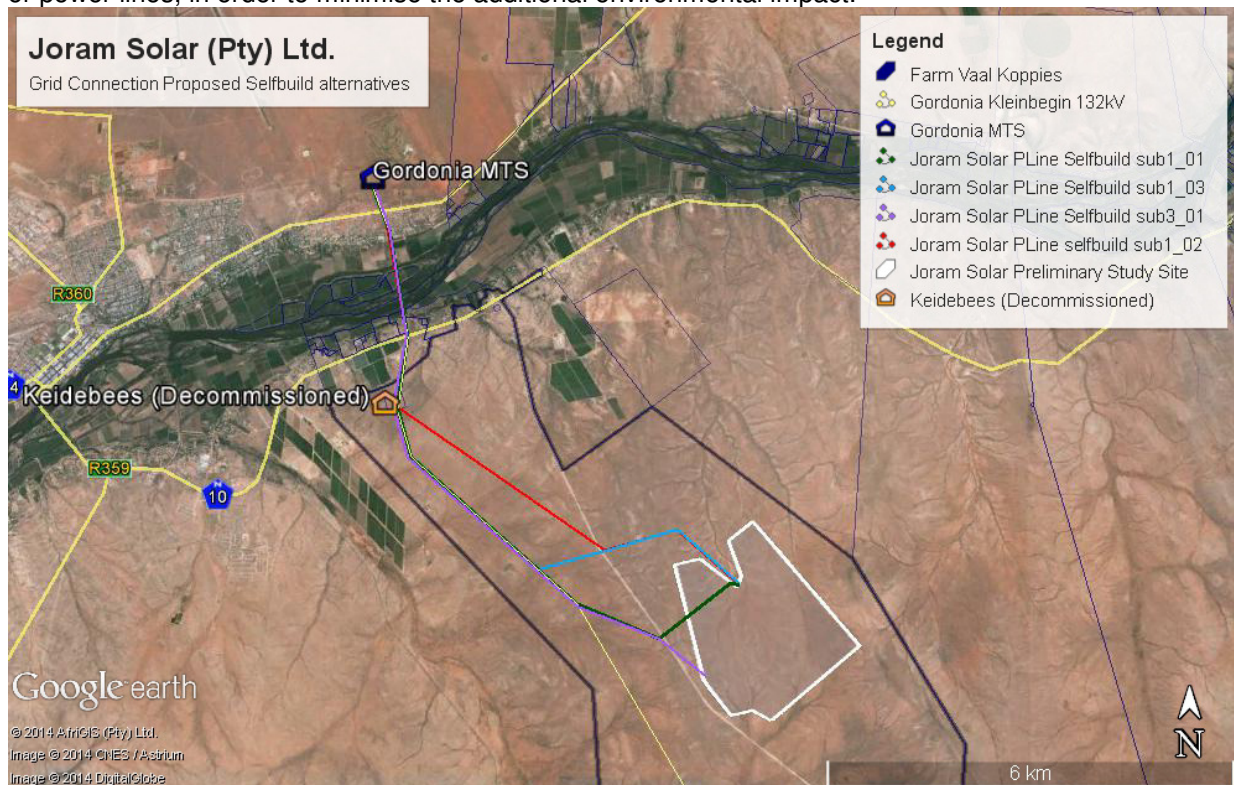


Figure 9: Showing the self-build grid connection alternatives for the Joram Solar Project (Solek, 2014).

Self-build Alternative 1 - The proposed power line alternative option 1 "Joram Solar PLine Selfbuild sub1_01" runs along a east west border fence within the preliminary study site crossing the Kleinbegin road and runs north parallel the existing Gordonia-Kleinbegin 132kV power line connecting to Gordonia

Eskom Substation. The indicated self-build line connecting Keidebees will be investigated due to possible upgrading of infrastructure as part of Eskom planning specifically on the southern side of the Orange River.

Self-build Alternative 2 - The proposed power line alternative option 2 "Joram Solar PLineSelfbuild sub1_02" runs north to the proposed Ilanga CSP power line servitude 1 alternative and the follows this proposed line connecting to Gordonia Eskom Substation.

Self-build Alternative 3 - The proposed power line alternative option 3 "Joram Solar PLineSelfbuild sub1_03" follows the same route of option 2, with the only difference of continuing up to the existing Gordonia Kleinbegin 132kV line and runs parallel this power line connecting to Gordonia Eskom Substation.

Self-build Alternative 4 - The proposed power line alternative option 4 "Joram Solar PLineSelfbuild sub3_01" runs north from onsite substation 3 following the same route as self-build alternative 1 running parallel to the Gordonia-Kleinbegin 132kV power line connecting to Gordonia Eskom Substation.

5.5 **No Go Alternative**

The Status Quo Alternative proposes that the Joram Solar Development not go ahead and that the area in proximity to the Gordonia substation remain undeveloped as it is currently. The no-go alternative is thus not considered a favorable option in light of the benefits associated with the proposed solar facility development, however it will be used as a baseline from which to determine the level and significance of potential impacts associated with the proposed solar development during the Impact Assessment phase of the on-going environmental process.

6. **PLANNING CONTEXT**

A Planning specialist will be appointed in order to consider the planning implications of the proposed facility. The results of the findings of the planning specialist will be presented in the Draft EIR. The following key components will likely take place from a planning perspective.

- A land use change application for the rezoning of 220ha, from Agricultural Zone I to Special Zone, will be lodged at the KharaHais Local Municipality, in accordance with the Northern Cape Planning and Development Act (Act 7 of 1998);
- If there are restrictive Title Deed conditions burdening the proposed development, an application for the removal thereof will be lodged at the Government of the Northern Cape Province, Department: Corporate Governance and Traditional Affairs, in accordance with the Removal of Title Deed Restriction Act (Act 84 of 1967);
- Parallel to the rezoning application, a long term lease application will be lodged at the National Department of Agriculture, in accordance with the Subdivision of Agricultural Land Act (Act 70 of 1970);
- Relevant planning documents, on all spheres of Government, will be evaluated before any land use change application is launched. These documents include, but are not limited to the following: NSDP (National Spatial Development Perspective); PGDS NC (Provincial Growth and Development Strategy), Northern Cape Province; IDP (Integrated Development Plan); SDF (Spatial Development Framework).

The planning specialist will furthermore engage with the following authorities as part of the planning process. Where relevant, these authorities will also be engaged with as part of the Environmental Process and will be given an opportunity to provide input and comment on this.

- Upington Municipality for approval in terms of the relevant Zoning Scheme;
- Northern Cape Department of Agriculture as well as the National Department of Agriculture, Forestry & Fisheries (DAFF) for approval in terms of Act 70 of 70 (SALA) and Act 43 of 83 (CARA);
- District Roads Engineer for comment on the land use application;
- Department of Water Affairs (DWA) for comment in terms of the National Water Act and the land use application;
- Department of Mineral Resources for approval in terms of Section 53 of Act 28 of 2002;
- Department of Transport & Public Works for comment on the land use application;
- South African Heritage Resource (SAHRA) Agency for comment on the land use application;
- Civil Aviation Authority for comment on the land use application;
- Eskom Northern Cape for comment on the land use application; and
- Northern Cape Nature Conservation for comment on the land use application.

7. HISTORICAL BACKGROUND²

Early travellers such as Wikar and Gordon travelled along the Orange River in the 1770's and described various communities living along the river (Penn 1995). By the mid-19th century the stretch of the Orange River to the west of Upington was settled by the Korana, a Khoekhoen group whose origins are still unclear (Strauss 1979). With increasing Trekboer encroachment from the south, the Korana became involved in a struggle to maintain an independent existence. The attempt by the Korana to resist resulted in two wars, that of 1868-9 and 1878-9.

Formally founded in 1884, the town of Upington was named after Sir Thomas Upington. Sir Thomas Upington (1844–1898), was born in Cork, Ireland, and was an administrator and politician of the Cape Colony. He was briefly Prime Minister of the Cape Colony, between 1884 and 1886, during a period of extreme turbulence in the Cape's history³. However the town's origins date back to 1875, when a mission station was established and run by Reverend Schröder. The mission station now houses the town museum, known as the Kalahari Orange Museum.

The farm Vaal Koppies was first surveyed in 1883⁴ and included a surface area of 20,586 morgen and 593 square roods (±17,696 ha). The original farm boundaries included the farms Vryheid, Gifkloof and Strausville.

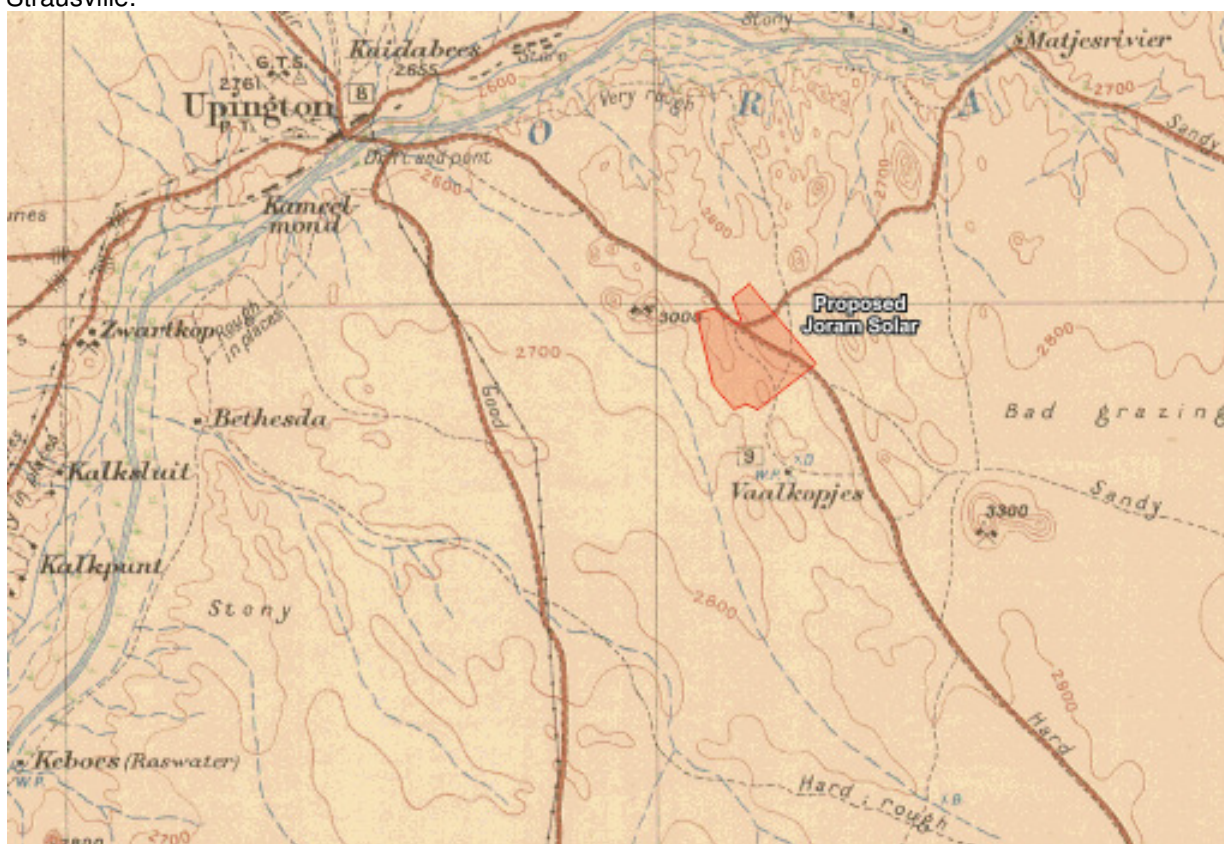


Figure 10: Approximate location of proposed development site transposed onto extract from early (1906-1914) mapping for the area southeast of Upington (Source: CDSM)

Early mapping (1906-1914) shows the location of an early farmstead at Vaalkoppies, south of the proposed development site boundary. Further structures recorded during the compilation of this mapping include a single well with wind pump, tank and trough as well as a small dam. Availability of water and grazing are described as fair during wet months and bad during dry months. The mapping furthermore highlights the alignment of several historic tracks through the area, which are no longer evident within the landscape.

Basic historic background research did not identify or highlight any significant historic or other heritage-related themes, which may be negatively impacted through the proposed development.

² Transposed from AIA, ACO Associates, November 2014

³ www.sahistory.org.za

⁴ SG Diagram 2624/1883

8. HERITAGE RESOURCES AND ISSUES

8.1 Landscape Character

8.1.1 Cultural landscape context

The term “cultural landscape” refers to the imprint created on a natural landscape through human habitation and cultivation over an extended period of time. While the Cape has been inhabited for many hundreds of thousands of years (pre-colonial history) prior to Western settlement (colonial history), the nomadic lifestyles of early inhabitants are not always as evident within the landscape as the significant imprints made by humans during the last two – three hundred years and more. Unlike ancient landscapes in parts of the world where environmental conditions allowed more intensive cultivation over periods much longer than locally have allowed natural and cultural components of the landscape to become interwoven, landscape components Northern Cape have not yet developed in such a manner. The fact that natural and cultural landscape components in the region is therefore more distinguished means that the cultural landscape is likely to be very vulnerable to the cumulative impact of inappropriate large-scale development.

Ultimately, definition of a cultural landscape can be informed by the following elements, weighed through professional opinion, public values and statutory (legal) framework:

- Natural Landscape
- Public Memory
- Social History
- Historical Architecture
- Palaeontology
- Archaeology

The site may be described as forming part of a typical Kalahari landscape and defined by flat and wide open spaces overgrown by sparse, low-growing vegetation. From a Pre-Modern perspective, the site formed part of an area mostly used for small stock farming and so, modern man-made features noted on the site include single vehicle gravel tracks, a windmill with above surface concrete dam, feeding and watering troughs for cattle, cattle grazing, fencing, and a small quarry or borrow pit is situated immediately outside the south west corner of the 450 ha area. No structures or ruins were noted within the proposed site boundaries or its direct vicinity. From a cultural landscape perspective, the site is considered to be of no local cultural significance.

8.2 Archaeology

A copy of the Archaeological Impact Assessment (AIA), compiled by *Dr. Peter Nilssen*, is attached as Annexure 2/ Figures 11, 12 and 13, the findings of which are summarised below with permission from authors. Kindly refer to specialist’s full report and findings.

“Previous archaeological studies in the area showed that the immediate surroundings do not contain significant archaeological sites. Although numerous Stone Age stone artefacts were recorded in the studied areas covered by this assessment, they occur as isolated finds or in very low density scatters that are temporally mixed, in derived and unstratified contexts and that lack organic remains and other cultural materials. No other tangible heritage resources were identified. Consequently, the archaeological record in the studied areas is considered to be of low significance, and therefore, it is recommended that no further archaeological studies are required prior to the development. Nevertheless, there are areas within the 450 ha study area that contain fewer stone artefacts, and it is suggested that the development activities associated with the solar facility be placed within these areas, as far as possible, in order to minimize the impact.

Overall, from an archaeological perspective there are no fatal flaws, and therefore, no objections to the authorization of the proposed development of the Joram Solar Facility and associated grid connection routes to the Gordonia Substation.

Recommended Mitigation Measures;

- *Archaeological resources identified during this study do not require further recording/studies, and because they are considered to be of low heritage value and have been adequately recorded through this assessment, it is suggested that they can be disturbed or damaged without a permit from SAHRA;*
- *Certain areas within the larger 450 ha study area for the Joram Solar Facility contain very few artefacts and it is suggested that the development footprint be placed in these areas as far as possible, though this is not considered to be a requirement (see Figure 13).*
- *The development may benefit from having an on-site display of the Stone Age archaeological record in the area, though this will require negotiation with and permission from SAHRA.*

Required Mitigation Measures;

- In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately;
- If significant archaeological or heritage resources are exposed during construction activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer;
- In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency (Mrs Colette Scheermeyer) and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer.”

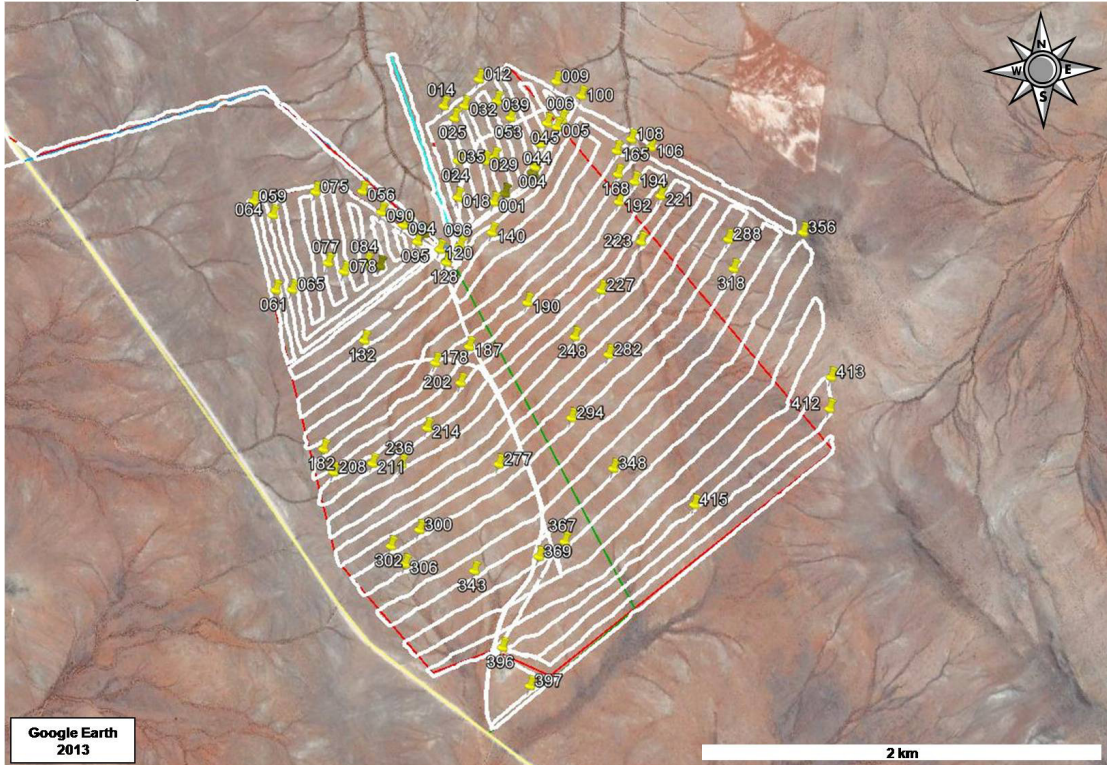


Figure 11: AIA Findings - archaeological occurrences recorded on and within proposed site boundaries (Source: Nilssen, P)

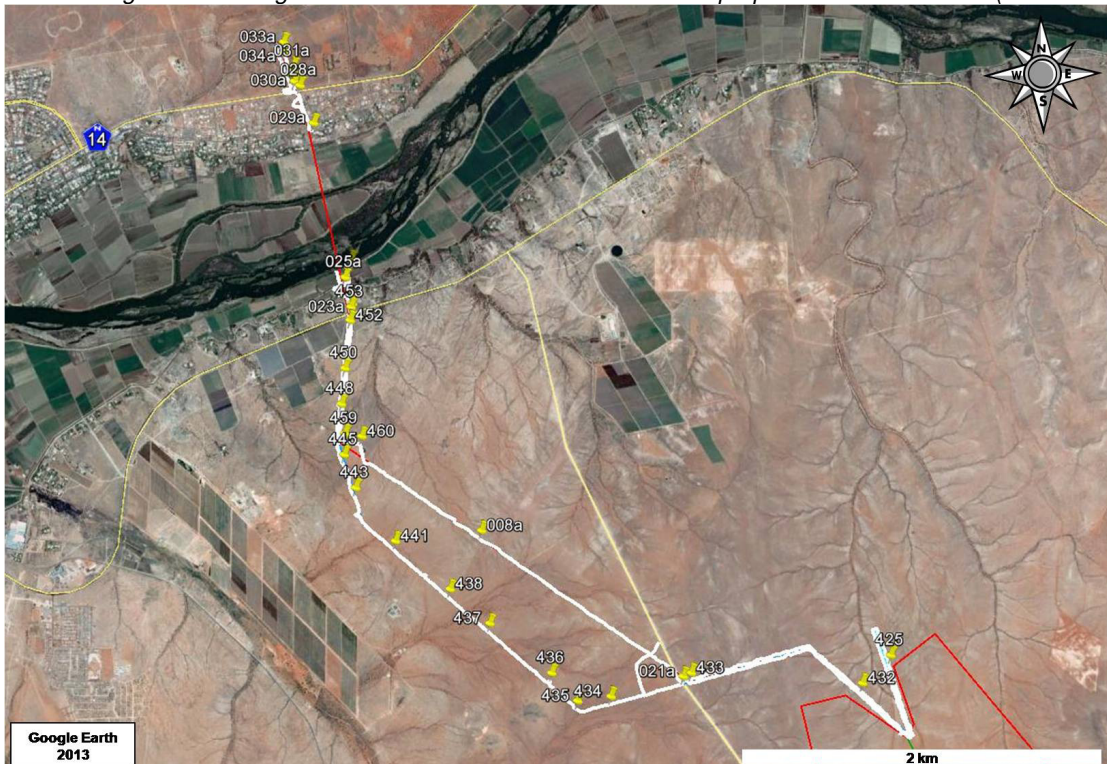


Figure 12: AIA Findings - archaeological occurrences recorded along possible grid connections (Source: Nilssen, P)

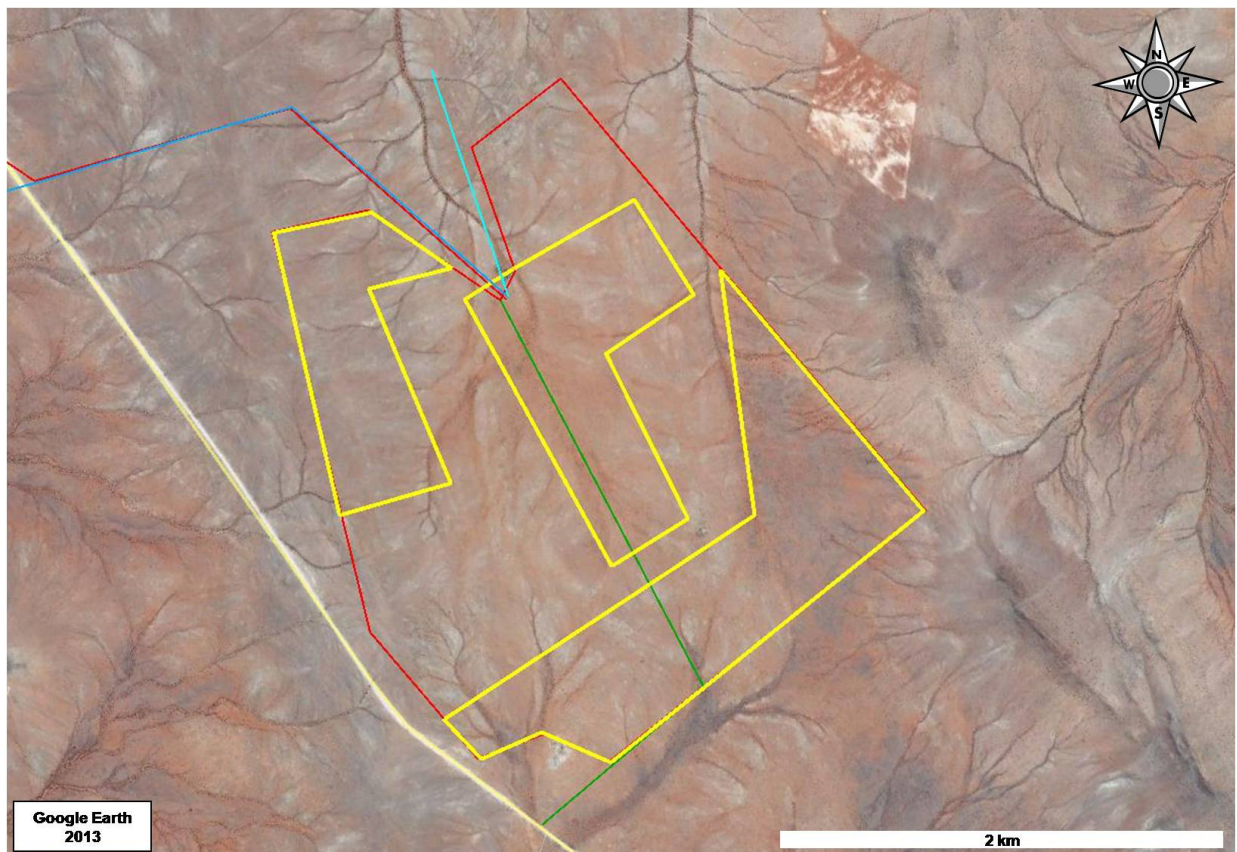


Figure 13: Yellow polygons demarcating areas that contain fewer Stone Age stone artefacts. While not a requirement, it is suggested that the solar facility footprint be placed within these polygons that have a collective extent of some 250 ha (Source: Nilssen, P)

8.3 Palaeontology

The findings and recommendations from a desktop palaeontological study (summarised below), compiled by Natura Viva (Dr. John Almond) conclude that no further related studies or mitigation would be required. Kindly refer to specialist's full report and recommendations (Annexure 3).

"The igneous and metamorphic Precambrian basement rocks underlying the Joram Solar Development study area at depth are entirely unfossiliferous. The overlying aeolian sands and stream gravels of the Kalahari Group mantling the older bedrocks are generally of low palaeontological sensitivity. Significant impacts on possible – but unmapped - older (Tertiary) fossiliferous river gravels along the southern banks of the Gariep are not considered likely.

It is concluded that the proposed Joram Solar Development near Upington, including the associated short transmission line, is unlikely to have significant impacts on local palaeontological heritage resources.

It is therefore recommended that, pending the discovery of significant new fossils remains before or during construction, exemption from further specialist palaeontological studies and mitigation be granted for the proposed Joram Solar Development on the farm Vaal Koppies 40 near Upington, Northern Cape.

Should any substantial fossil remains (e.g. mammalian bones and teeth) be encountered during excavation, however, these should be safeguarded, preferably in situ, and reported by the ECO to SAHRA, i.e. The South African Heritage Resources Authority, as soon as possible (Contact details: Mrs Colette Scheermeyer, P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: cscheermeyer@sahra.org.za) so that appropriate action can be taken by a professional palaeontologist, at the developer's expense. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist."

8.4 Eco-tourism⁵

One of the goals of ecotourism is to offer tourists insight into the impact of human beings on the environment, and to foster a greater appreciation of our natural habitats and from an economic perspective, heritage resources may prove to be valuable resources when used in sustainable manner through eco-tourism. This may for example include investment in adaptive reuse of historic buildings so as to conserve and enhance the unique character and historic themes pertinent to this area. Heritage tourism can therefore serve as a driver for economic development, including infrastructure development and poverty alleviation through job creation. The broader region's rich archaeological, palaeontological, historical and natural heritage has the potential to provide unique tourism opportunities when developed and used in responsible and sustainable ways.

Given the location as well as pattern of existing land use within the proximity of the site and furthermore, the relative low density of heritage resources considered of cultural significance noted as part of this assessment, we do not consider that the proposed development would offer significant heritage-related eco-tourism opportunities associated with the development site.

9. HERITAGE INFORMANTS AND INDICATORS

According to the requirements of Section 38(3) of the NHRA, land use planning and EIA processes must be informed by and incorporate heritage informants and indicators (as done through the mapping and grading of relevant heritage resources in Section 8 of this report). It is the purpose of this Section to define heritage informants and indicators pertaining to the way in which heritage resources must be incorporated into the overall layout and design of the proposed development as read in conjunction with preceding Sections.

9.1 Cultural landscape issues

From a regional and natural landscape perspective, the proposed development site forms part of a highly-transformed landscape altered through mining activities as well as high concentration of proposals for development of several renewable energy (solar) facilities. While the proposal would relate to a landscape modification, we do not consider that it would alter any natural or cultural landscape of cultural significance.

9.2 Archaeology

All recommendations contained in AIA, as summarised in Section 8.2 of this HIA report shall be adhered to.

9.3 Palaeontology

It is recommended that no further palaeontological studies or mitigation be undertaken in respect of the proposed development site. Should substantial fossil remains be exposed during construction, however, the ECO should safeguard these, preferably *in situ*, and alert SAHRA as soon as possible so that appropriate action (e.g. recording, sampling or collection) can be taken by a professional palaeontologist.

10. PUBLIC PARTICIPATION

Due to the fact that there are no known local heritage conservation bodies in the Humansrus area (registered as such with the relevant provincial heritage resources authority in terms of Section 25 of the National Heritage Resources Act, 1999 (Act 25 of 1999)), the Public Participation Process (PPP) for this HIA will be coordinated with that of the EIA Process facilitated by *Cape Environmental Assessment Practitioners (Pty) Ltd* (Cape EAPrac) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), so as to solicit possible heritage-related comments with relation to the proposed development.

11. LIMITATIONS AND ASSUMPTIONS

- This report is limited to the assessment of the potential impact of the proposed facility on heritage resources found on/ within the proximity of the development site as defined in this report;

⁵ Section included in accordance with requirements set by National Department of Environmental Affairs

- There is a limitation in terms of understanding the cumulative impacts of the project when taken in conjunction with other similar future development projects in the surrounding area.

12. RECOMMENDATION

Having regard to the above assessment, it is recommended that:

11.1 This report fulfils the requirements of an Integrated Heritage Impact Assessment (HIA);

11.2 That the recommendations below be incorporated into the proposed development and that the Department of Environmental Affairs be informed accordingly:

Recommended Conditions of Approval	
AIA-1	<i>Certain areas within the larger 450 ha study area for the Joram Solar Facility contain very few artefacts and it is suggested that the development footprint be placed in these areas as far as possible, though this is not considered to be a requirement</i>
AIA-2	<i>In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately</i>
AIA-3	<i>If significant archaeological or heritage resources are exposed during construction activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer</i>
AIA-4	<i>In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency (Mrs Colette Scheermeyer) and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer.</i>
PIA-1	<i>Should any substantial fossil remains (e.g. mammalian bones and teeth) be encountered during excavation, however, these should be safeguarded, preferably in situ, and reported by the ECO to SAHRA, i.e. The South African Heritage Resources Authority, as soon as possible (Contact details: Mrs Colette Scheermeyer, P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502 (Email: cscheermeyer@sahra.org.za), so that appropriate action can be taken by a professional palaeontologist, at the developer's expense. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist.</i>

PERCEPTION Planning
25th November 2014

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