

Scoping Archaeological Impact Assessment

**Proposed development of Joram Solar Facility near Upington on
Remainder of Portion 62 and a Portion of Portion 9 of the Farm
Vryheid No. 40, //Khara Hais Municipality, Northern Cape Province**

prepared for

PERCEPTION Planning, P.O. Box 9995, George, 6530, Western Cape,
Cell: 082 568 4719, E-mail: perceptionenvplg@gmail.com, **Applicant: Joram Solar
(Pty) Ltd.** , Unit 109B, The Foundry, 75 Prestwich Street, Greenpoint, Cape Town

by



Peter Nilssen, PO Box 2635, Mossel Bay, 6500
044 691 0051 | 0827835896 | peter@carm.co.za

4 August 2014

Name, Expertise and Declaration

I, **Peter Nilssen** (PhD in archaeology, UCT 2000), herewith confirm that I am a Professional member - in good standing - of the Association of South African Professional Archaeologists (ASAPA), including the Cultural Resource Management section of the same association.

As the appointed independent specialist (archaeologist) for this project hereby declare that I:

- act as an independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.



Signature of the specialist:

Date: 4 August 2014

Introduction

The applicant, Joram Solar (Pty) Ltd., is proposing to establish a commercial solar energy facility - currently referred to as Joram Solar Facility - on Remainder of Portion 62 and a portion of Portion 9 of the Farm Vryheid (Vaalkoppies) No. 40. In total, the affected area is approximately 4696 ha in extent and is situated about 10km ESE of Upington in the //Khara Hais Municipality, Northern Cape Province (Figures 1 & 2).

While detailed specifications and development layouts of the proposed solar facility will be guided and determined by the Environmental Impact Assessment (EIA) process, it is likely to include the following (see Figure 2):

- between 300 and 400 ha development footprint for the installation of solar panels
- an onsite substation
- Loop-in power line option to link to existing Eskom 132kV power line that traverses the study area
- Own built power line option to link to the Gordonia Substation
- Access road and internal service and maintenance roads
- Service and maintenance buildings (ablution, workshop & storage)

Activities associated with the proposed development of the Joram Solar Facility trigger the National Heritage Resources Act (Act 25 of 1999), and therefore, this author was appointed to provide archaeological input for the broader integrated Heritage Impact Assessment that is being undertaken by Perception Planning in terms of Section 38(8) of the National Heritage Resources Act. Cape Environmental Assessment Practitioners (CapeEAPrac) is facilitating the EIA process.

The current phase of the process involves a Scoping Archaeological Impact Assessment (SAIA) of the affected environment. Because the proposed development activities - construction and installation - may have a permanent negative impact on archaeological resources in the development footprint, this SAIA serves to assess the likelihood of such resources occurring on the site and provides a strategy for further assessment. To this end, this report gives a basic description of the archaeological record in the surrounding environment, and outlines the methodology to be employed during the full Archaeological Impact Assessment (AIA).

Study Area

The following description of the surroundings and geological context is drawn from this author's work a few kilometres east of the study area (Nilssen 2012). The E-W flowing Orange River and associated canal system is situated to the north and the surrounding land use is rural and agricultural.

Apart from some rocky outcrops, the topography consists of gentle to moderate sloping hills with intervening drainage lines that slope down to the Orange River in the north (Figure 2). Vegetation is open and sparse, and dominated by Karoo shrubs, grasses and small/short trees of mostly *Acacia* species. Consequently, archaeological visibility is excellent. Surface sediments are mostly stony with quartz dominating and these lie in and atop beige to brown sand that is variable in coarseness. These geological deposits appear to be alluvial gravels that are also exposed in stream cuttings and geotechnical test holes. Outcrops of calcrete also occur in the area.

Overview of Previous Studies

Very little archaeological research has been conducted in this portion of South Africa and the bulk of information concerning the history and archaeology of the area was obtained through heritage and archaeological studies associated with environmental impact assessments for a variety of development activities. No previous archaeological or heritage related work has been done on the affected properties for the proposed Joram Solar Facility.

Structures, graves as well as remnants of the Anglo-Boer War characterize the archaeological record of the historic period in the surroundings of Upington. The bulk of human occupation of the general surroundings, however, relates to the pre-historic period where Rock Art and herder sites as well as artefacts of the Early, Middle and Later Stone Ages are represented. No significant archaeological sites were identified in the immediate surroundings of the affected area and stone artefacts - made in a variety of raw materials - are most commonly found in low density scatters across the landscape. Overall, the Stone Age finds made in the area are considered to be of low to little archaeological significance because of their low frequencies, temporally mixed nature as well as their disturbed, derived and unstratified contexts (Beaumont 2006a, b, c, d & e, Beaumont 2008, Dreyer 2006, Kaplan 2008, Morris 2006 & 2013, Nilssen 2012, Pelsner 2012, Webley and Halkett 2010).

Potential Impacts on Archaeological Resources

Because tangible heritage resources are non-renewable and each archaeological occurrence is unique, it is important that areas affected by development are assessed for the presence and sensitivity of such resources prior to development. The Joram Solar Facility will involve both area and linear developments that could have a permanent negative impact on archaeological resources if they were to occur in the area. This scoping study has shown that archaeological resources do occur in the surrounding environment and are therefore likely to occur on the properties in question. The purpose of the broader EIA process is to assess the sensitivity of environmental resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures. The future AIA will serve the same purpose concerning archaeological resources.

Because the planning and design phase of the development will be informed by the AIA and broader EIA, any direct negative impacts on significant archaeological and environmental resources can be avoided or minimized by altering the design and layout plans accordingly. A construction phase Environmental Management Plan (EMP) will further avoid or minimize direct negative impacts.

Potential direct negative impacts on archaeological and tangible heritage resources will occur during the construction and installation phase of the proposed development. Indirect and cumulative impacts may occur during the operational phase, but these can be avoided or minimized by means of an EMP that should be implemented during the operational phase of the development.

Based on results from previous heritage impact studies in the surrounding environment, including this author's work conducted a few kilometres to the east, it is unlikely that significant archaeological sites will be identified by the AIA. Nevertheless, the presence of significant sites in the study area cannot be ruled out entirely and therefore a ground truthing study is needed.

Proposed Methodology for the Archaeological Impact Assessment

The purpose of an AIA is to conduct a survey of the affected area to identify, record and rate the significance of archaeological resources, to assess the impact of the proposed area and linear development on such resources and to recommend mitigation measures where necessary.

To assess the nature and significance of the archaeological record in the affected area, it is necessary to conduct a comprehensive foot survey. Initially, the latter will focus on the provisional development layout plan including the footprint area for the solar panels, own built power line route and access road (Figure 2). In the unlikely event that these areas prove to be archaeologically sensitive, the search area will be expanded to identify areas that are not archaeologically sensitive and that are suitable for development purposes.

Open vegetation, exposed ground surfaces and considerable areas of erosion provide excellent archaeological visibility and will allow for a good understanding of the archaeological record in the area based on surface observations and those of exposed sedimentary profiles in erosion gullies. Due to good archaeological visibility, survey walk tracks will be spaced some 30m apart and will be fixed with a hand held GPS to record the search area. The position of archaeological occurrences, observations and photo localities will also be fixed by GPS. Digital audio notes of observations will be kept and a comprehensive, high quality digital photographic record will be made.

The potential for different landforms, sediments or landscape features to contain archaeological traces is assessed according to type, such as rocky surfaces, sandy surfaces, cultivated areas, previously developed or disturbed areas, rock shelters, and so on. Overall, the significance of archaeological occurrences or sites will be evaluated in terms of their content and context. Attributes to be considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, aesthetic appeal, potential for future research, density of finds and the context in which archaeological traces occur.

Once archaeological traces have been identified, recorded and assessed in terms of their significance, the aim of the AIA is to assess the potential negative impacts of development on such resources and to make recommendations in mitigation. In the unlikely event of finding highly significant sites, it may be required to alter the development layout plans in order to avoid such sites, and so that they can be protected and conserved in perpetuity. In other cases it may be sufficient to record and/or retrieve samples from archaeological occurrences with a permit from the relevant heritage authority. In the event that an archaeological site, after being recorded and/or sampled, will be disturbed, damaged, or destroyed by development activities, then a destruction permit must be obtained from the relevant heritage authorities. Having said this, it is anticipated that the archaeological record in the affected area will be of low significance and that these measures will not be required.

The end product of the AIA is a report that forms part of the Integrated Heritage Impact Assessment and that meets standards required by the South African Heritage Resources Agency (SAHRA) in terms of the National Heritage Resources Act, No. 25 of 1999. The AIA report will detail results from the literature review and fieldwork, and will assess potential negative impacts associated with the proposed development and make recommendations in mitigation where necessary.

References

Beaumont, P.B. 2006a. Phase 1 Heritage Impact Assessment Report on a Planned Residential Development Flanking Dakota Drive in Upington, //Khara Hais Municipality, Northern Cape Province. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0260.

Beaumont, P.B. 2006b. Phase 1 Heritage Impact Assessment Report on a Planned Extension of the Louisvalebweg Township, //Khara Hais Municipality, Northern Cape Province. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0293.

Beaumont, P.B. 2006c. On a Planned Extension of the Leerkrantz Township, Siyanda District Municipality, Northern Cape. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0294.

Beaumont, P.B. 2006d. Phase 1 Heritage Impact Assessment Report on a Planned Extension Flanking Rondonstraat, //Khara Hais Municipality, Northern Cape Province. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0296.

Beaumont, P.B. 2006e. Phase 1 Heritage Impact Assessment Report on a Planned Extension of the Raaswater Township, Siyanda District Municipality, Northern Cape Province. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0301.

Beaumont, P.B. 2008. Phase 1 Heritage Impact Assessment Report on a Portion of the Farm Keboes 37, near Kanoneiland, Siyanda District Municipality, Northern Cape Province. An unpublished report by The McGregor Museum on file at SAHRA as: 2008-SAHRA-0027.

Dreyer, C. 2006. First Phase Archaeological and Cultural Heritage Assessment of the Proposed Concentrated Solar Thermal Plant (Csp) at the Farms Olyvenhouts Drift, Upington, Bokpoort 390 and Tampansrus 294/295, Groblershoop, Northern Cape. An unpublished report on file at SAHRA as: 2006-SAHRA-0087.

Kaplan, J.M. 2008. An Archaeological Assessment of Two Borrow Pits Alongside DR 3321 Uap, Northern Cape Province. An unpublished report by the Agency for Cultural Resources Management on file at SAHRA as: 2008-SAHRA-0387.

Morris, D. 2006. Archaeological Specialist Input to the EIA Phase for the Proposed Aries-Garona Eskom Transmission Power Line, Northern Cape and Comment on Garona Substation Extension. An unpublished report by The McGregor Museum on file at SAHRA as: 2006-SAHRA-0327.

Morris, D. 2013. RE Capital 3 Solar Development on the property Dyasons Klip west of Upington, Northern Cape: Scoping phase Heritage Input. An unpublished report by The McGregor Museum.

Nilssen, P. 2012. Phase 1a Archaeological Impact Assessment. The Proposed Building and Operation of a Bulk Water Supply Line near Upington on Remaining Extent of the Farm Vaalkoppies No. 40, //Khara Hais Municipality, Northern Cape Province

Pelser, A.J. 2012. A Report on a Heritage Impact Assessment (HIA) for the Proposed Photo-Voltaic Solar Power Generation Plant on the Farm Padrooi 13 near the Augrabies Falls National Park in the Northern Cape.

Webley, L and Halkett, D. 2010. An Archaeological Impact Assessment (Report 4): Proposed Construction of a Substation Between Aries-Garona and Associated Loop In and Loop Out Lines, North-West of Kenhardt in the Northern Cape

Figures and Plates (on following pages)

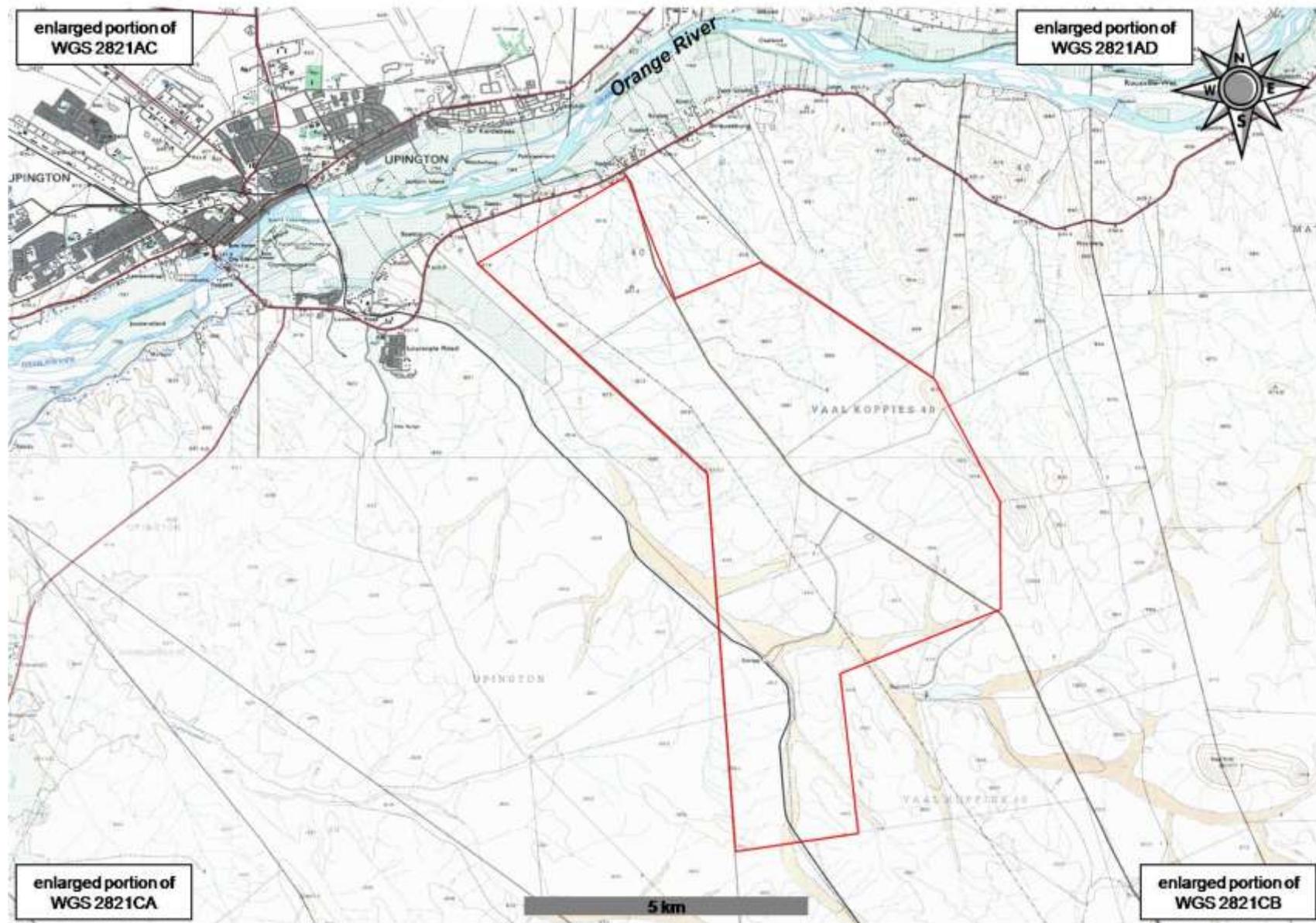


Figure 1. Location of study area (red polygon) relative to Upington, Northern Cape Province. (courtesy of The Chief Directorate, Surveys & Mapping, Mowbray).

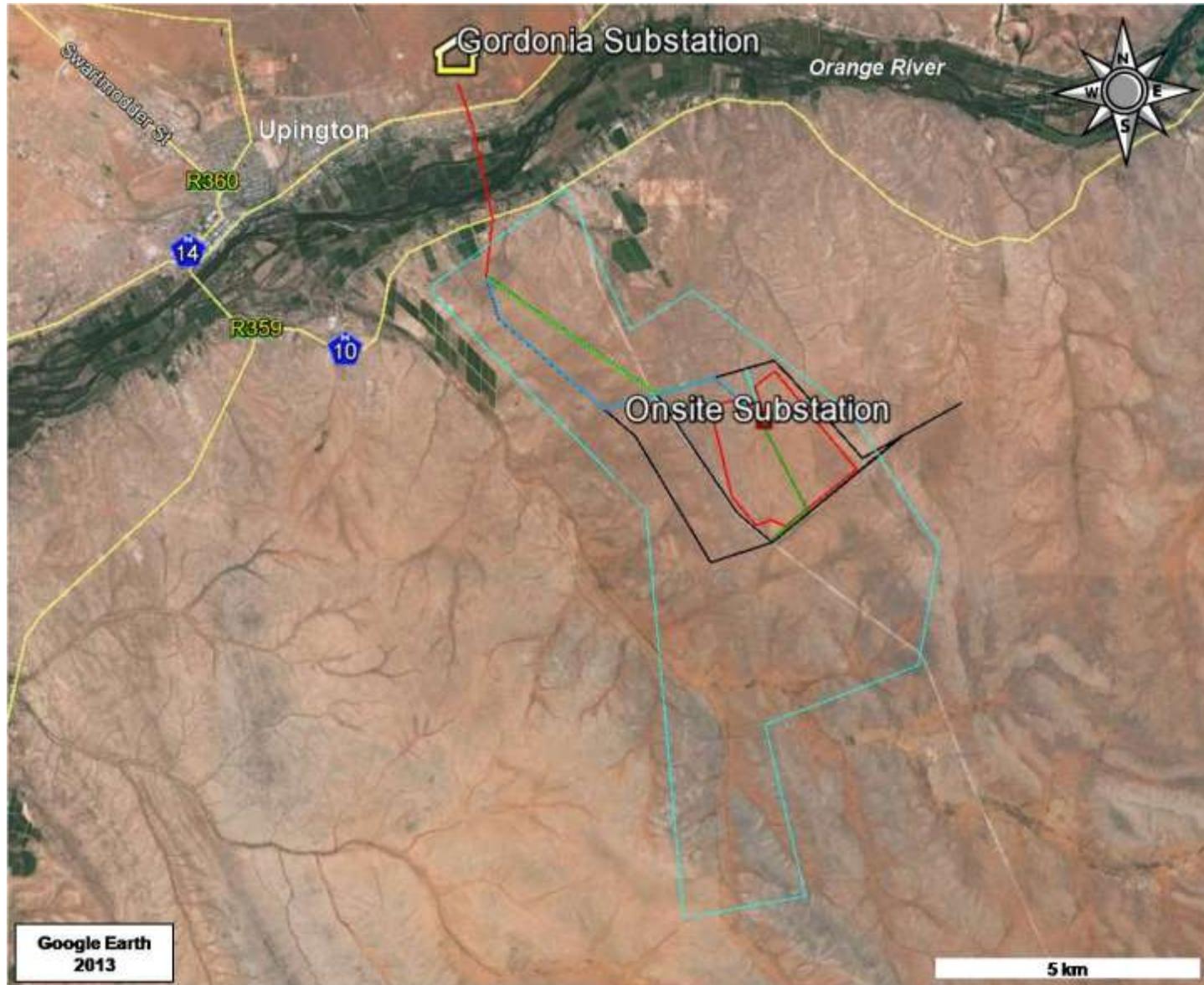


Figure 2. Provisional development layout on affected properties (pale blue polygon); area for solar panels (red polygon), existing Eskom 132kV line (black-blue-red lines on left linking to Gordonia Substation), own built 132kV power line (black-green line), access road (dark green line) and onsite substation.