



Executive Summary

Proposed 75 MW Kloofsig Solar PV Energy Facility, Northern Cape – Kloofsig 1 (DEA ref 14/12/16/3/3/2/951) Final Scoping Report

1. Introduction

Kloofsig Solar (Pty) Ltd proposes to develop a solar photovoltaic (PV) energy generation facility and associated infrastructure on the remaining extent (portion 0) of Farm 18, Kalkpoort in the vicinity of Petrusville in the Northern Cape (Figure 2). SRK Consulting (SRK) has been appointed by Kloofsig Solar, as the independent environmental consultants to assess the environmental impacts of the proposed development according in terms of the National Environmental Management Act 107 of 1998 (NEMA) 2014 Environmental Impact Assessment (EIA) Regulations. Due the size of the proposed project, in accordance the NEMA 2014 EIA regulations the proponent needs to apply for environmental authorisation from the Department of Environmental Affairs (DEA) via a Scoping and Environmental Impact Assessment (S&EIA) process.

The proposed development consists of three project phases (Kloofsig 1, 2 and 3) of 75 MW each (with a total power generation capacity of 225 MW), covering a total area of approximately 970 ha. For technical reasons, each phase requires a separate environmental authorisation. Consequently, three separate EIA process are being conducted concurrently for each of these projects. The three phases are described as follows:

- **Kloofsig 1 (the subject of this report)** is at the centre of the site and includes a 132 kV powerline (approximately 8.5 km long) and a substation to enable connection to the grid at the existing 132 kV line running to the south-east of the site. An on-site substation and short connection to the 400 kV powerline crossing the site (this infrastructure will support all phases of the development, should they be developed) is also proposed.
- Kloofsig 2 (DEA ref 14/12/16/3/3/2/952) is on the northern-most portion and includes the on-site substation and connection to the 400 kV powerline crossing the site as described for Kloofsig 1.

- Kloofsig 3 (DEA ref 14/12/16/3/3/2/953) comprises the southern-most portion, connecting to the common infrastructure described above for Kloofsig 1.

*This report presents the findings for **Kloofsig 1**. Similar, and almost identical, reports are also available for Kloofsig 2, and Kloofsig 3. Key differences between these reports are highlighted by means of **bold text**.*

Note that the terms Phase 1, 2 and 3 are used interchangeably with the project names Kloofsig 1, 2 and 3.

2. Approach to the Study

The first step of the regulated EIA process (see Figure 1) is the Scoping phase, which is aimed at identifying the issues and/or impacts that may result from the proposed activities, including the concerns of Interested and Affected Parties (IAPs), in order to inform the Impact Assessment phase. The Final Scoping Report (FSR) will form the basis of the terms of reference for specialist studies, and it is therefore important that all issues and potential impacts that may be associated with the proposed development be identified and recorded.

The EIA process thus far has focussed on developing a more detailed description of the development proposal, and on identifying the issues and concerns of stakeholders and IAPs. IAPs are encouraged to review the FSR to ensure that their comments have been accurately recorded and understood.

The activities that have been conducted to date as part of this Scoping Study are as follows:

- Placement of on-site posters;
- Distribution of the Background Information Document (BID) for a 30 day comment period to identified IAPs, stakeholders and neighbouring residents;
- Preparation of a DSR including comments that were raised on the BID and on-site posters;

- Distribution of the DSR to public venues for review by IAPs;
- Distribution of an Executive Summary of the DSR (this document) to all IAPs registered for this project;
- Advertisements of the availability of the DSR in 'Die Volksblad' on 18 August 2016;
- Provision of a 30 day comment period on the Draft Scoping Report;
- Collation of IAP comments on the DSR, and incorporation of these into the FSR;
- Distribution of the executive summary of the FSR (including comments and responses report - see Table 2) to IAPs; and
- Submission of FSR and Plan of Study for EIA to DEA for a decision regarding authorisation to proceed to the Impact Assessment phase of the EIA, which includes compilation of an Environmental Impact Report (EIR).

increasing energy demand, as well as the contribution to the establishment of South Africa's renewable energy sector.

Due to concerns such as climate change, and the on-going exploitation of non-renewable resources, there is increasing international pressure to increase renewable energy generation. The South African Government (White Paper on Renewable Energy, 2003) has recognised the country's high levels of untapped renewable energy potential and fossil-fired power generation, and has placed targets for renewable energy (biomass, wind, solar and small hydro) to redress the balance.

Kloofsig PV Energy Facility intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the projects operational phase. The project will be subject to the REIPPPP bidding process, one of the key assessment criteria of which is likely to be a local economic development plan.

The proposed project is also consistent with the aims of the relevant provincial and municipal planning policy framework for the area.

The proposed project site was selected due to:

- Topographic suitability - the flat, generally level topography of the site;
- Existing power infrastructure in the area, allowing for relatively economical connection to the national power grid;
- The site is situated within a Central Transmission Corridor in terms of the Renewable Energy Development Zones (REDZ) and Transmission Corridors;
- Existing road access – the site can be accessed from two existing access route options;
- Most of the site has been previously disturbed;
- Low agricultural potential of the land;
- Relatively low environmental sensitivity of the land;
- High need for economic development in the area;
- Good solar resource and suitable climate; and
- High suitability for solar PV technology.

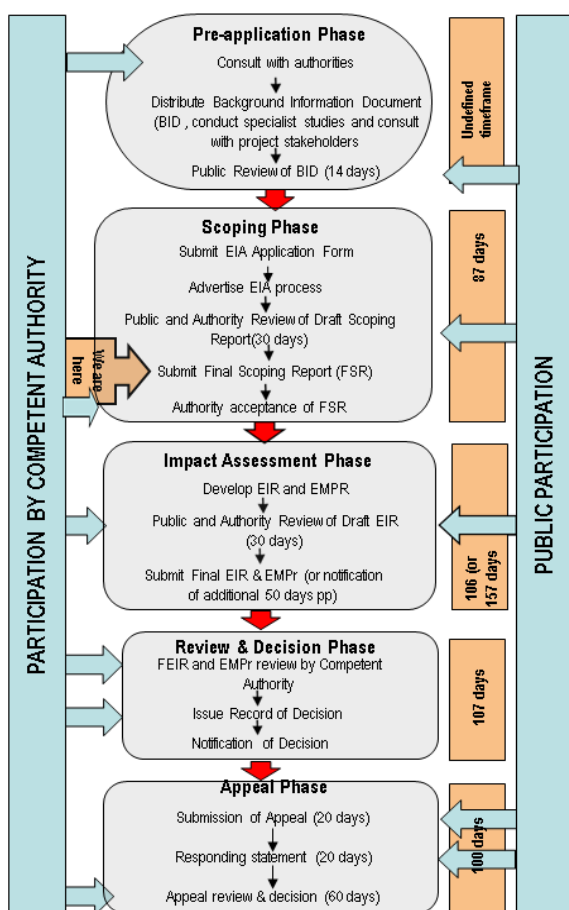


Figure 1: Flow diagram of the EIA Process, indicating when public comment will be solicited

3. Motivation for the Proposed Development

Two of the main rationales for the proposed solar facility are the need for additional energy generation as a result of

4. Development Proposal

The proposed development (Kloofsig 1) includes a 132 kV overhead powerline (approximately 8.5 km) and a substation to allow connection to the existing 132 kV powerline running to the south-east of the site as well as a 132 kV switching station at the Eskom connection point. An additional on-site substation (converting 132 kV to 400 kV power) and short connection line to the existing 400 kV powerline crossing the site is also proposed, due to uncertainty regarding the future capacity of the 132 kV Eskom line to accept the connection from the proposed project at

the time of development (capacity is however currently available). Although authorisation for both of the powerline connections described above is sought, the intention is that only one of these would be developed, depending on the available grid capacity at the time of development. The total footprint of Kloofsig 1 is in the order of 270 ha and includes the 31 m servitude of the 132 kV powerline to the south of the site, as shown on Figure 2.

The main components of the proposed solar energy facility, which will be similar for each of the proposed phases (Kloofsig 1, 2 and 3) are listed as follows:

- Solar panels (fixed or tracking), mounted in arrays/modules, and arranged in clusters;
- Underground low voltage cables linking solar panels within a cluster to an inverter (for converting DC to AC current);
- Substations – a 132 kV collector / step up substation for each phase (covering an area of 1 ha), as well as a central switching substation (covering an area of approximately 12.4 ha) servicing all three phases and allowing for connection to the nearby 400 kV Eskom overhead powerline. Kloofsig 1 will also include a second switching substation to the south-east of the site;
- Underground power lines (of a medium voltage) from inverter substations to a central collector/ step-up substation for each phase;
- A 132 kV above ground powerline with maximum tower height (lattice or monopole) of 24m, connecting the step-up substations with the switching substations (both on-site and to the south-east of the site for Kloofsig 1);
- A 33kV below ground powerline with Supervisory Control and Data Acquisition (SCADA) (a system for remote monitoring and control) or fibre optics;
- Laydown areas and construction camp, – an laydown area has been set aside for each phase; and
- Offices, ablution facilities, store room- permanent office, ablution and store room facilities will be situated at the 1 ha on-site substation buildings for each phase.

Associated infrastructure includes the following:

- Access roads - Access to the site from the R 369, between Van der Kloof and Orania, is via the existing Kalkpoort gravel road to the northeast of the site. The Kalkpoort gravel road will require maintenance and expansion to extend the road to the southern side of Kloofsig 1. A second access road (approximately 500 m long) to the south of the site, connecting to the existing secondary road running south of the site is also proposed;
- Internal roads - A network of internal roads will be required, and these are envisaged to be 4- 5 m in width;

- Water supply – via existing or new boreholes on the property. The anticipated water demand during construction is 53 m³/day, and 18 m³/day during operation (including provision for fire suppression);
- Wastewater treatment - a septic tank & soak away system is proposed for treating minor quantities of domestic sewage generated during construction and operational phases. If this is not technically feasible, conservancy tank(s) will be installed; and
- Solid waste management – waste streams include construction waste (mainly packaging material), domestic waste, and scrapped equipment (during operation). Where possible this will be recycled, or if necessary disposed of off-site.

The construction phase is expected to take 12 to 18 months to complete. The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance, after which the facility would either be decommissioned or refurbished for an additional 20 year operating period.

Cleaning of the panels will be required approximately four times a year, and will require water, including small amount of biodegradable detergent.

Alternatives that will be assessed as part of the EIA include:

- Fixed and tracking PV technology alternatives;
- Lattice and monopole overhead powerline masts;
- The no-go alternative (which assumes the site remains in its current state, i.e. agricultural land).

5. Baseline Environment

The site and surrounding area consists of flat open plains, with gentle slopes in parts. All drainage in the area is directed eventually into the Gariiep River, before its confluence with the Vaal River. Most of the farms in the area conduct extensive livestock and game management on natural rangelands, and the proposed development site is used primarily for sheep farming. The region is generally hot and dry with fluctuating temperatures and generally low rainfall.

Overall, the study site falls within the Nama Karoo biome and is dominated by small karroid shrubs, most below 50 cm high. The plant species composition is mostly quite similar, especially as far as dominant plant species are concerned. Most of the mammal species of the resident diversity are common and widely distributed.

The entire farm falls within the Platberg–Karoo Conservancy Important Bird Area (IBA), spanning approximately 1,250,000 ha. This IBA provides important habitat for a number of globally threatened large terrestrial species and raptors, such as the blue crane, various bustard species, secretary bird, black harrier and martial eagle. The site does not fall within or close to any Critical Biodiversity Areas (CBAs) or conservation corridors.

The main economic activities in the area include high intensity irrigation farming, eco-tourism and game farming, with agriculture being the main source of employment.

A map showing regional geographical information potentially relevant to the project site, based on the available information on SANBI's biodiversity information mapping tool, BGIS, is provided as Figure 3, and does not reveal any sensitivities relating to the site apart from the possible presence of watercourses.

A site sensitivity screening study (based on heritage and ecologically sensitive features), was undertaken by the relevant specialists prior to the scoping stage of the project and was used to identify the most suitable portion of the site for development, and thereby inform the layout proposed.

6. Potential Impacts

The identification of potential impacts of the proposed activity was based on the following factors:

- The legal requirements;
- The nature of the proposed activity;
- The nature of the receiving environment; and
- Issues raised during the public participation process.

Considering these factors, the following key environmental impacts were identified which could potentially result from the proposed solar facility:

- Impacts on heritage resources - Damage or destruction to archaeological resources on the site may occur due to site clearing, earthworks and excavations during construction;
- Impacts on terrestrial ecology (including birds) - Indigenous vegetation will need to be cleared to prepare the site for installation of services infrastructure and solar PV panels, resulting in loss of habitat and possibly species of special concern. Spread of invasive alien vegetation species may also result;
- Socio-economic impacts - The proposed project could have a beneficial local economic effect, providing employment opportunities for local communities and suppliers (primarily during the construction phase) and indirect benefits to local businesses;
- Impacts on aquatic environments - These may include erosion and sedimentation of non-perennial streams or wetlands near development areas, pollution due to contaminated stormwater runoff (mainly during the construction phase), and changes in stormwater regime due to development of the site;
- Impacts on agricultural potential - reduction or loss of agricultural potential, may occur both through the presence of physical surface infrastructure on the site, and indirect impacts such as erosion and loss of topsoil;

- Waste management impacts - Lack of adequate waste management could result in spread of litter, illegal dumping, pollution of soil and water resources, and increased prevalence of scavengers at the site, especially during construction;
- Visual impacts - The proposed development will cover an extensive area and may be visible from a great distance. It could also be considered to be out of character in a predominantly agricultural area, and reflection off the solar panels could potentially create a nuisance to onlookers;
- Stormwater and erosion impacts - Vegetation clearing and disturbance of soils during construction will leave them vulnerable to erosion by water and wind. This could lead to increased sediment load in stormwater runoff. Loss of topsoil and erosion will also limit the potential for vegetation growth, leading to further erosion;
- Traffic impacts - During the construction phase, heavy construction vehicles will transport equipment and materials to the site. This may cause deterioration in the condition of existing access roads, which may result on increased wear and tear on vehicles for other road users, as well as associated safety impacts for pedestrians and other drivers. The additional construction traffic could also affect traffic flows in the area. Some degree of traffic congestion is possible especially on the R369, between Van der Kloof and Orania, during the construction phase.
- Cumulative impacts - Cumulative impacts may result from the subsequent phases of the proposed development, the EIAs for which will need to assess these potential impacts, as well as potentially from other developments in the area.

7. Draft Terms of Reference for Specialist Studies

The following specialist studies are proposed in the Impact Assessment phase in order to investigate the potential environmental impacts associated with the proposed development:

- Ecological Impact Assessment, including aquatic environments;
- Avifaunal Impact Assessment;
- Visual Impact Assessment;
- Archaeological Impact Assessment;
- Paleontological Impact Assessment; and
- Agricultural Potential Assessment.

It is proposed that the following impacts are addressed in-house by the SRK, mitigation or enhancement measures for which will be included in the EMP:

- Socio-economic impacts;
- Waste management impacts;

- Stormwater and erosion impacts;
- Traffic impacts; and
- Construction-related impacts.

The proposed Terms of Reference (ToR) for each of the identified specialist studies are provided in this section. Where required, specialists have been asked to provide practical recommendations regarding mitigation measures, which will be incorporated into the Environmental Management Programme (EMPr), which will form part of the EIR, and where relevant, cumulative impacts should be included in the assessment.

Terrestrial & Aquatic Ecological Impact Assessment

- Identify and delineate any riparian and wetland areas on and within 500 m of the proposed solar photovoltaic (PV) energy facility;
- Assess the Present Ecological State (PES) of any wetland identified;
- Comment on potential impacts on water resources resulting from the development;
- Make recommendations regarding the mitigation of any potential damage to wetlands;
- Desktop assessment of available data layers (vegetation types, red data book species, bioregional plans, etc.);
- Limited site assessment to ground truth desktop assessment;
- Identify and map the vegetation units and ecosystems that occur on the site;
- Assess the ecological sensitivity of these ecosystems and comment on ecologically sensitive areas, in terms of their biodiversity and where needed ecosystem function;
- Assess qualitatively and quantitatively the significance of the fauna habitat components and current general conservation status of the site;
- Comment on connectivity with natural vegetation and habitats on adjacent sites,
- Recommend suitable buffer zones, if relevant;
- List plant and vertebrate fauna species that do or might occur on site and that may be affected by the development, and to identify species of conservation concern;
- Describe and rate potential impacts of the proposed development on vegetation, fauna and flora of the study site;
- Provide management recommendations that might mitigate negative and enhance positive impacts, should the proposed development be approved; and
- Comment on the ability of vegetation in the area to recover from trampling and dust during construction, and to accommodate increase shade as a result of the shadows of panels.

Avi-Fauna Impact Assessment

- Conduct a site assessment and list those species observed and expected to occur on the site, also noting those of conservation concern (including Red Listed species);
- Review the available literature for the area relating to distribution of birds, including Important Bird Areas (IBAs);
- Assess the quantitative and qualitative condition of suitable habitat for the Red Listed species that may occur in the area;
- Assess the possibility of species of conservation concern being present on the study site;
- Discuss and assess potential impacts on bird species resulting from the proposed development and propose practical and implementable mitigation measures; and
- Identify, map if required, and describe particular ecologically sensitive areas.

Archaeological Impact Assessment

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint;
- Assess the area of the proposed solar PV energy facility;
- Describe and map any sensitive or no-go areas to inform the final layout;
- Comment on potential impacts on these resources resulting from the development;
- Make recommendations regarding the mitigation of any damage to archaeological resources identified, or that may be identified during the construction phase.

Palaeontological Impact Assessment

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint;
- Assess the area of the proposed solar PV energy facility; and
- Describe and map any sensitive or no-go areas to inform the final layout.
- Comment on potential impacts on these resources resulting from the development; and
- Make recommendations regarding the mitigation of any damage to paleontological resources identified, or that may be identified during the construction phase.

Agricultural Impact Assessment

- Describe the soils, rainfall, water availability and subsequent agricultural potential of the study area and the relationship thereof with current land use and land capability (it is anticipated that this will require limited soil profiling);

- Determine the (livestock) carrying capacity of the study area and the potential for crop production;
- Specify the areas of viable agricultural potential and appropriate types of agricultural use in these areas;
- Using expert judgement, comment on the likelihood of such agricultural uses being economically viable without subsidisation;
- Comment on the economic value of existing agricultural activity; and
- Comment on cumulative impacts as applicable to each phase of the development.

Visual Impact Assessment

- Conduct a site visit to obtain an overview of the proposed development.
- Conduct a literature review to identify relevant reports and documentation relating to the development.
- The collection of baseline data to establish:
 - the receiving environment and define the view catchment area.
 - view corridors, viewpoints and receptors.
 - the identification of potential lighting impacts at night (if requested by Interested and Affected Parties (IAPs)).
- Conduct a viewshed analysis including the following:
 - analysis of the potential visual impacts
 - investigate the effectiveness of the mitigation measures through the use of GIS 3D modelling packages to evaluate the possible effect the mitigation measures may have on the final visual impact ratings.
- Identify mitigation measures to reduce or eliminate any potential visual impacts identified.

8. The Way Forward

The key activities and the provisional timetable required to achieve the objectives of the EIA process are summarised in Table 1 below.

Table 1: Activities and Timetable

Stage / Activity	Target Dates	
	Start	End
DEA approval of Plan of Study for EIA (potentially including recommendations)	October 2016	November 2016
Conduct Specialist Studies and Compile Draft EIR	August 2016	October 2016
Issue Draft EIR for Public Comment	November 2016	-
Public Comment Period for Draft EIR	November 2016	December 2016
Submit Final EIR to DEA for a decision	January 2017	-

Note that the intention is for the EIAs for Kloofsig 1, 2 and 3 to run concurrently, with separate but similar reports being issued for each project according to the estimated timeframes indicated below. Authorities and IAPs will therefore be provided with three separate reports for review and comment, and clearly indicate which of the project(s) their comments relate to. DEA reference numbers are not yet available for the applications, but will be provided with subsequent reports and IAP correspondence.

The public participation programme has given IAPs an opportunity to assist with the identification of issues and potential impacts, and further opportunities are provided as indicated below.

This Executive Summary (this report) of the Final Scoping Report has been distributed to all registered IAPs.

The report can also be accessed as an electronic copy on SRK Consulting's webpage via the 'Public Documents' link <http://www.srk.co.za/en/page/za-public-documents>

The public are encouraged to review the FSR and send further written comment to DEA directly (Reference Number 14/12/16/3/3/2/951), using the following contact details:

Ms Nonhlahla Mkhwanazi

Department of Economic Affairs

Private Bag X447, Pretoria, 0001

Environment House, 473 Steve Biko Road, Arcadia

Email: NMkhwanazi@environment.gov.za

A copy of any comments must also be forwarded to:

Wanda Marais

SRK Consulting

PO Box 21842, Port Elizabeth, 6000

Email: wmarais@srk.co.za

Fax: (041) 509 4850

Table 2: Comments from Interested and Affected Parties on the DSR

Commentator	Issue Raised	Response (by SRK unless otherwise noted)
N Mkhwanazi - DEA	All relevant listed activities applied for must be specific and able to be linked to the development activity or infrastructure as described in project description. If activities applied for in application form differ from those mentioned in FSR, an amended application form must be submitted.	All relevant listed activities and associated development activities are provided in Table 1-2 of the FSR.
N Mkhwanazi - DEA	FSR must investigate and identify all associated traffic impacts.	A description of potential traffic impacts and how they will be assessed in the EIR is included in Section 5.1.9 of the FSR.
N Mkhwanazi - DEA	All issues raised by registered IAPs and relevant authorities must be dealt with in FSR.	Responses to all comments are provided in this table.
N Mkhwanazi - DEA	Comments must be requested from the Department's Biodiversity Section.	A copy of the DSR has been sent to the relevant representatives (see proof of delivery in Appendix D) and comment received below.
N Mkhwanazi - DEA	Proof of correspondence with various stakeholders must be included in FSR. If no comments received, proof of attempts to obtain comments must be included.	See Appendix E for correspondence received and Appendix D3 for proof of attempts to obtain comment.
N Mkhwanazi - DEA	Provide a description of any identified alternatives for proposed activity that are feasible and reasonable, including advantages and disadvantages on the environmental and community. Alternatively submit written proof of any investigation and motivation if no reasonable or feasible alternatives exist.	Additional discussion on alternatives has been included in Section 2.5 of the FSR
N Mkhwanazi - DEA	Department requires comment from Square Kilometer Array (SKA) to be included in FSR.	Comment has been solicited from the SKA, however none has been received to date (see proof of requests for comment in Appendix D3). Further attempts to obtain comment from SKA will be made during the Draft EIR stage.
N Mkhwanazi - DEA	Specific requirements noted in respect of specialist studies conducted in-house or by a specialist who is not suitably qualified in the relevant field.	The specific requirements have been noted and all specialist reports to be presented in the EIR will explicitly address these requirements..
N Mkhwanazi - DEA	Specific requirements noted in respect of EAP declaration.	A declaration by the EAP is included in Appendix F
N Mkhwanazi - DEA	The details of the EAP who prepared the report and their expertise must be submitted.	CVs for the EAPs are included in Appendix F.
S Tshitwamulomoni – DEA: Biodiversity	Requests electronic copy of DSR and future reports.	An electronic copy of the DSR has been provided for comment, as will future reports.
N Higgitt - SAHRA	No heritage resources may be disturbed without a permit for the relevant heritage resources authority. Before such disturbance, a Heritage Impact Assessment must be done (Phase 1 and Phase 2).	Phase 1 archaeological and palaeontological assessments have been conducted, specialist reports for which will be made available for comment with the DEIR. Where possible the layout has avoided areas of identified heritage resources (Figure 3-3 in the FSR)
N Higgitt - SAHRA	Where bedrock is affected, or where there are coastal sediments, or marine or river terraced and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be done, or at least a letter of exemption obtained.	A palaeontological study has been conducted, and the specialist's report will be distributed with the DEIR for comment.
N Higgitt - SAHRA	Any other heritage resources that may be affected such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or views must also be assessed.	Heritage studies (palaeontology and archaeology) have been conducted, and a visual impact assessment is proposed. See ToR in Section 5.3 of the FSR.
N Higgitt - SAHRA	Project must be correctly mapped on the GIS layer of the SAHRIS Case application. A kml file must be uploaded.	The relevant kml file has been uploaded to SAHRIS

Commentator	Issue Raised	Response (by SRK unless otherwise noted)
N Higgitt - SAHRA	Please upload Final Scoping Report and all appendices to SAHRIS case file. The Draft EIR must be submitted to SAHRIS during the next comment period.	All relevant reports will be made available to SAHRA for comment via SAHRIS
L Bosoga - DAFF: Land Use & Soil Management	DAFF is commenting authority in terms of Conservation of Agricultural Resources Act 43 of 1983 (CARA) and competent authority in terms of Subdivision of Agricultural Land Act 70 of 1970 (SALA).	This information has been conveyed to the applicant, who will handle these applications outside of the EIA process.
BN de Lange - DAFF: Land Use & Soil Management	Acknowledge receipt of notification and request for comment.	Noted
J Scholtz - Department of Environment and Nature Conservation	Acknowledge notification and request for comment.	Noted
S Mabaso - DMR	Acknowledge notification and request for comment.	Noted
J Vorster - DAFF: Agriculture	Has no further comments in addition to those previously submitted on the BID.	Noted
MA Gabaitumele - Telkom	Approves proposed work as indicated on drawings. Provides contact details of Network Field Services Department to be notified before commencement of any work.	These contact details have been forwarded to the applicant.
R de Kock - SANRAL	Unaffected by proposed project and does not have any comment.	Noted
JH Bredenkamp – Local Resident	Why was the alternative of locating the facility nearer to Vanderkloof substation not considered? There are farms nearer to the Roodekuil sub-station if you are planning on using that substation.	[Africoast] (project engineers): Eskom have indicated that the Van der Kloof Substation and associated powerline are dedicated to the Hydro Power Plants. It would also be prohibitively costly to connect to this substation. The Roodekuil substation was considered as a grid connection point, but the higher value agricultural land close to the river, surface complexities and the location relative to existing 400 kV overhead lines have informed the final site selection process, and not proximity to the above-mentioned substations.

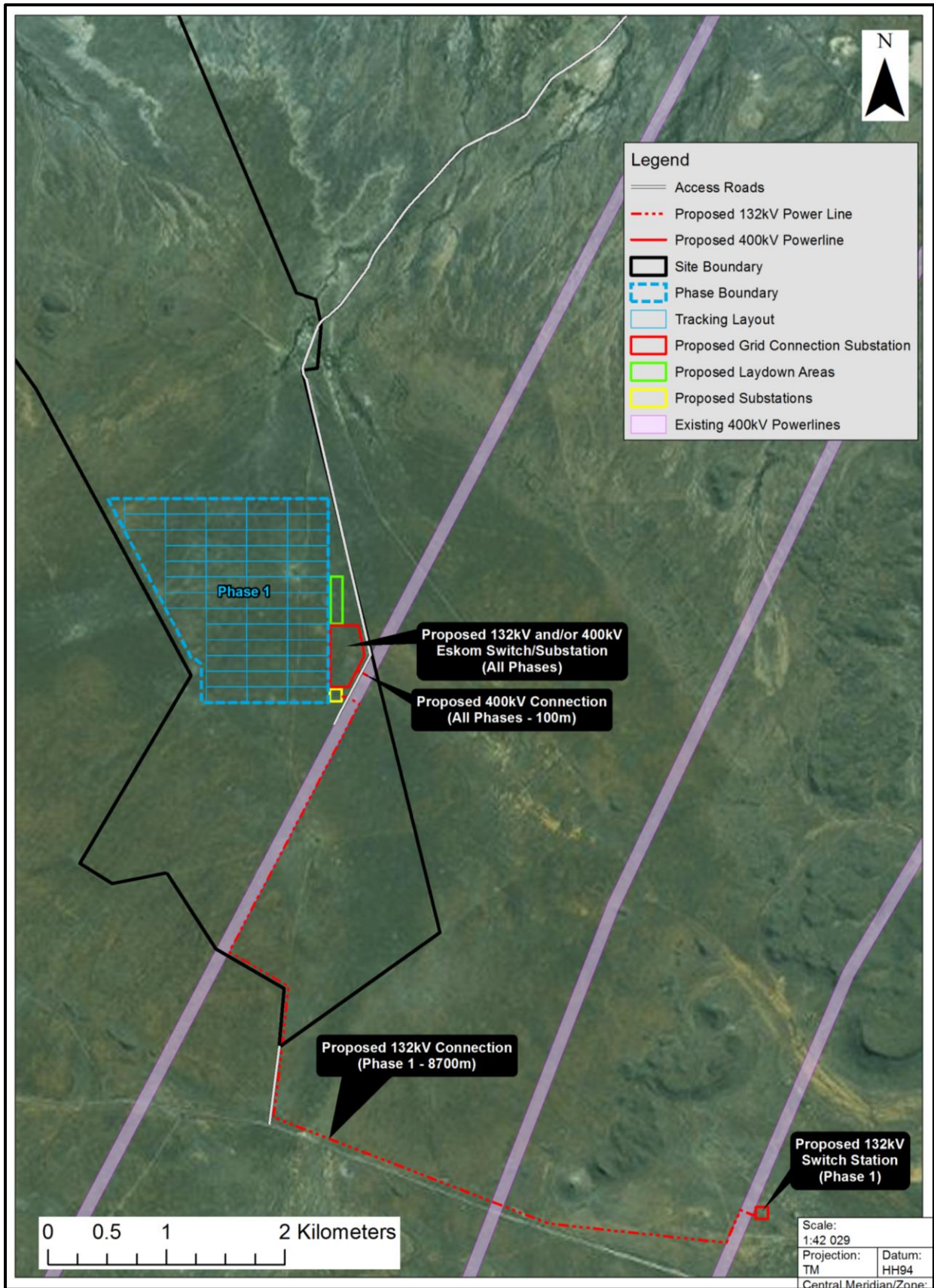


Figure 2: Preliminary layout plan for Kloofsig 1

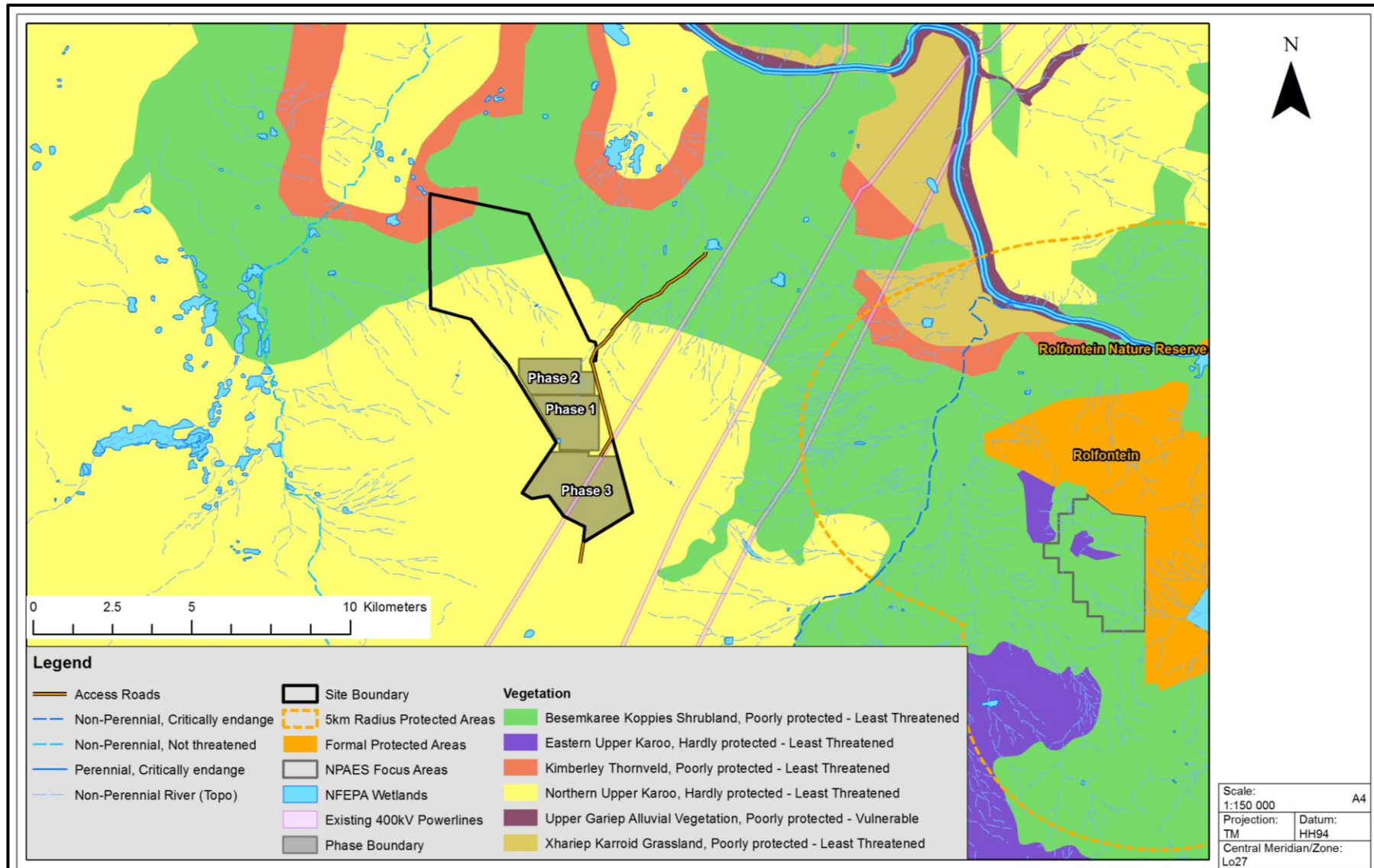


Figure 3: Geographical areas map for Kloofsig 1, 2 and 3, based on BGIS, July 2016

