



Executive Summary

Proposed 75 MW Kloofsig Solar PV Energy Facility, Northern Cape – Kloofsig 1

Draft 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 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 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 Draft Scoping Report (DSR) presents the findings of the Scoping Study, and offers an opportunity for key stakeholders and IAPs to review the issues identified, and to make any further comments. 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.

IAP's are encouraged to review the DSR to ensure that their comments have been accurately recorded and understood, and make further comments.

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 (see Comments and Responses report in Table 2);
- Distribution of the DSR to public venues for review by IAPs; and
- Distribution of an Executive Summary of the DSR (this document) to all IAPs registered for this project.

The following activities are still to be conducted in the Scoping Study:

- Advertisements of the availability of the DSR in 'Die Volksblad';
- Provision of a 30 day comment period on the Draft Scoping Report;
- Collation of public and 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) 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).

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 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.

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

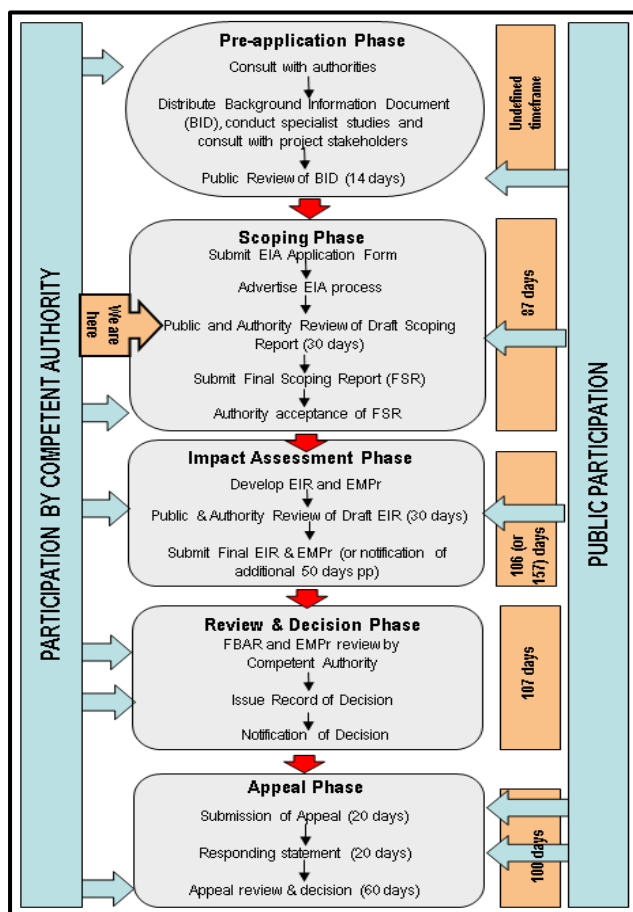


Figure 1: Flow diagram of the EIA Process, indicating when public comment will be solicited

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.
- 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; 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.

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 Draft Scoping Report is not a final report and will be amended in response to the comments received. The Final Scoping Report will be submitted to DEA, together with a Plan of Study for the EIA, for their approval. Comments on the Draft Scoping Report will assist in focussing the EIA and will be used to define the Terms of Reference for specialist studies. The public is therefore urged to submit comments, as these could influence the recommendation of the Final Scoping Report and decision taken by DEA.

This Executive Summary has been distributed to all registered IAPs. A printed copy of the full DSR will be made available for public review at the following location:

- Vanderkloof Public Library.

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 DSR and **send written comment by 17h00 on 16 September 2016 to:**

Wanda Marais at SRK Consulting

PO Box 21842, Port Elizabeth, 6000

Email: wmarais@srk.co.za

Fax: (041) 509 4850

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
Submission of Final Scoping Report and Plan of Study for EIA to DEA	September 2016	October 2016
DEA approval of Plan of Study for EIA (potentially including recommendations)	November 2016	December 2016
Conduct Specialist Studies and Compile Draft EIR	August 2016	September 2016
Issue Draft EIR for Public Comment	December 2016	-
Public Comment Period for Draft EIR	December 2016	January 2017
Submit Final EIR to DEA for a decision	February 2017	-

Table 2: Comments from Interested and Affected Parties

Commentator	Issue Raised	Response (by SRK)
L Bosoga (DAFF)	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).	[SRK] At this stage, SRK is only corresponding with DAFF as commenting authority for the EIA. Any application in terms of SALA will be dealt with by the applicant directly.
J Vorster (DAFF)	Care should be taken to disturb as little as possible areas in terms of removal of vegetation for the purpose of constructing roads and/or infrastructure.	[SRK] Measures to minimise vegetation clearing will be included in the EMPr, and the significance to the clearing that would take place will be assessed in the EIR.
J Vorster (DAFF)	The occurrence of soil erosion in terms of water and / or wind must be prevented and mitigated immediately on identifying the potential or occurrence of soil erosion.	[SRK] Measures to minimise vegetation clearing will be included in the EMPr, and the significance to the clearing that would take place will be assessed in the EIR.
J Vorster (DAFF)	Sloping, landscaping, ripping and establishment of natural vegetation are essential during rehabilitation of resources impacts and needs to be done continuously during the development process.	[SRK] Recommendations regarding rehabilitation of the site will be included in the EMPr.
J Vorster (DAFF)	The occurrences and establishment of all declared weeds must be controlled in terms of Reg 15 and 16 of Act 43 of 1983.	[SRK] Control of alien invasive vegetation will form part of the standard measures included in the EMPr.
N Abrahams (SANRAL)	Seems as if the proposed development will not have an impact on SANRAL due to distance away for the National Road N12.	[SRK] Noted. Any further input from SANRAL is welcomed.
G Julius (SANRAL)	SANRAL must be timeously informed regarding proposed route for the transportation and movement of any heavy loads on the national roads that involves this development. This is to ensure that appropriate planning is involved to ensure minimum impact to the road use and potential impact on any construction related activities on the national routes.	[SRK] This will be included as a condition in the draft EMPr.
BC Spies (Neighbouring Landowner)	According to the map, the proposed 132 kV connection will be traversing my farm. I am, however, in favour of the project.	[SRK] Correct and noted.
RC Bester (Neighbouring Landowner)	I need a more detailed map to see how development will affect me.	[SRK] This is addressed in Appendix G in the report (DSR).
RC Bester (Neighbouring Landowner)	Development will destroy natural beauty of area.	[SRK] A visual impact assessment is proposed as part of the EIA (see draft terms of reference in Section 7)
RC Bester (Neighbouring Landowner)	Who will be responsible for my losses in the event of poaching / theft / damages? My game camp is in the area.	[SRK] Measures to prevent and manage poaching, theft and damage will be included in the EMPr.
RC Bester (Neighbouring Landowner)	Will I be able to continue with my established farming practices?	[SRK] Potential impacts on surrounding land users will be assessed as part of the impact assessment report, and where required, mitigation measures will be recommended to minimise any impacts. To date, no impacts have been identified that could potentially affect neighbouring farming practices.

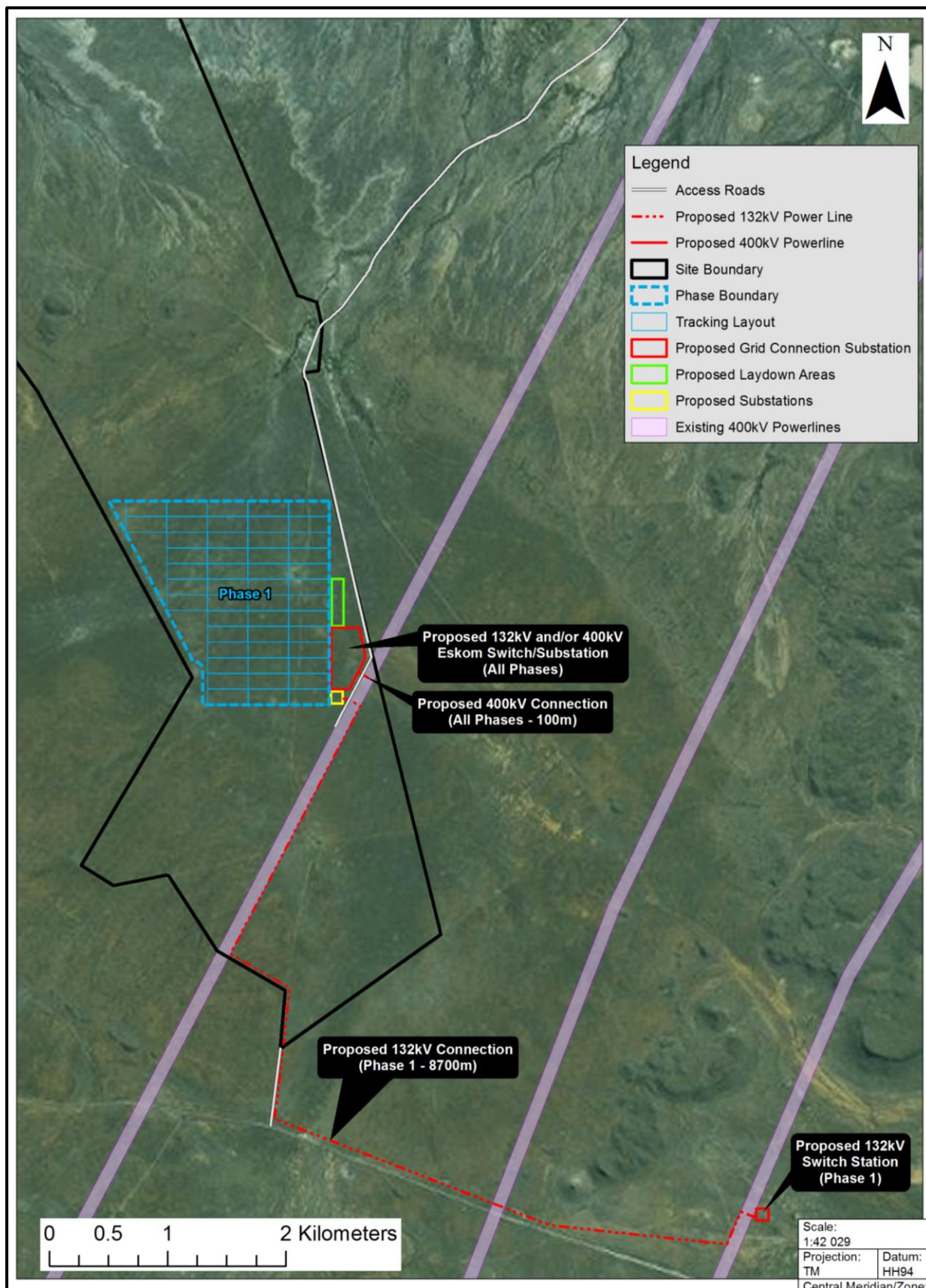


Figure 2: Preliminary layout plan for Kloofsig 1

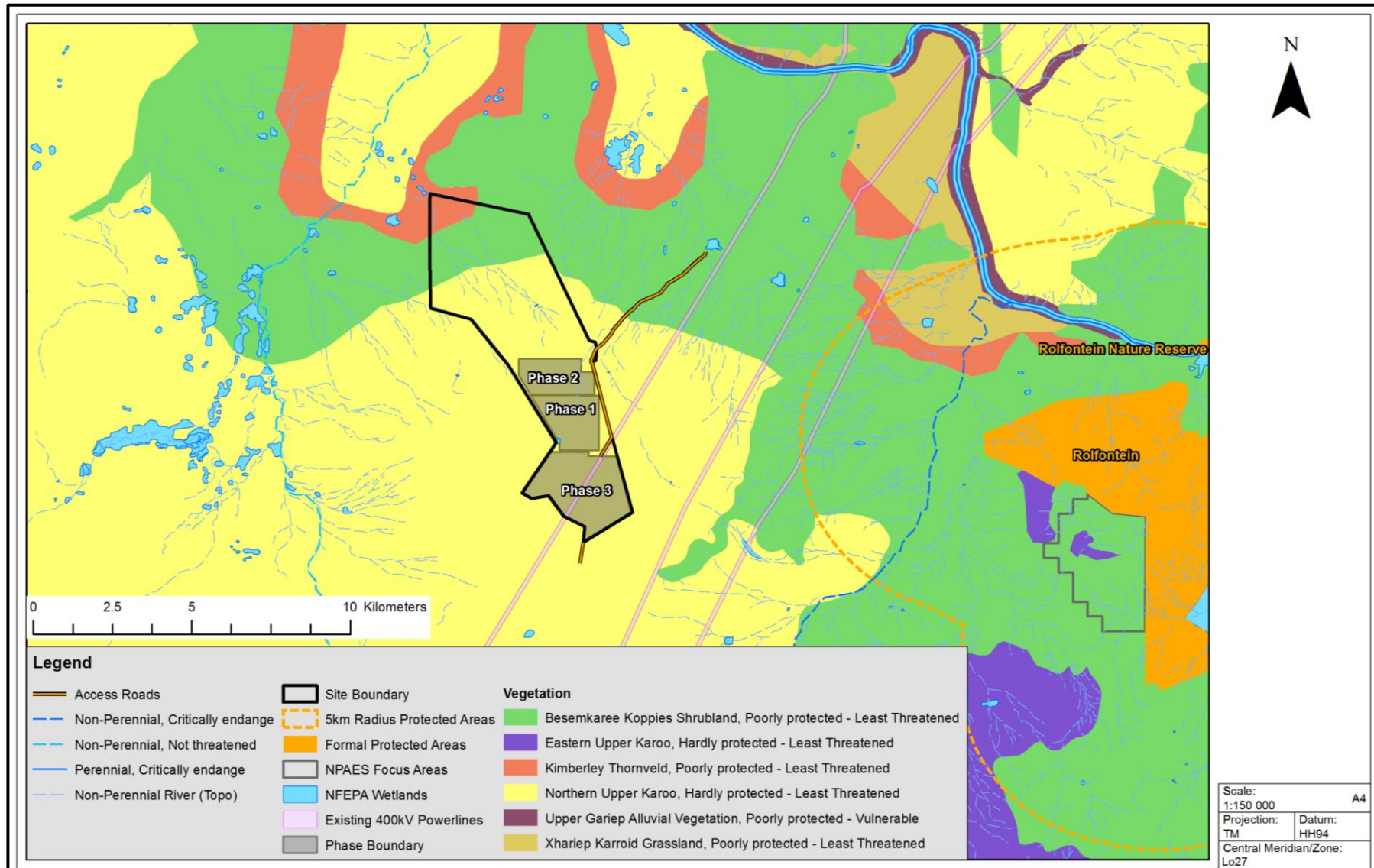


Figure 3: Geographical areas map for Kloofsig 1, 2 and 3, based on BGIS, July 2016