SOLARRESERVE SA (PTY) LTD

Proposed Construction of a 132kV Power Line and Associated Infrastructure for the evacuation of power from the Kalkaar Concentrating Solar Thermal Power Project on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal, Free State and Northern Cape Provinces

Updated Draft Basic Assessment Report

DEA Reference No.: 14/12/16/3/3/1/1577
Issue Date: 9th December 2016
Version No.: 1
Project Number: 13620 – Kalkaar Power Line

Date:	9th December 2016
Document Title:	Proposed Construction of a 132kV Power Line and Associated Infrastructure for the evacuation of power from the Kalkaar Concentrating Solar Thermal Power Project on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal, Free State and Northern Cape Provinces: Updated Draft Basic Assessment Report
Author:	Shaun Taylor
Revision Number:	1
Checked by:	Rebecca Thomas and Andrea Gibb
Approved:	Kelly Tucker
Signature:	
For:	SiVEST Environmental Division

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.

15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SOLARRESERVE SOUTH AFRICA (PTY) LTD

PROPOSED CONSTRUCTION OF A 132KV POWER LINE AND ASSOCIATED INFRASTRUCTURE FOR THE EVACUATION OF POWER FROM THE KALKAAR CONCENTRATING SOLAR THERMAL POWER PROJECT ON THE REMAINDER OF PORTION 1 OF THE FARM KALKAAR 389 NEAR JACOBSDAL, FREE STATE AND NORTHERN CAPE PROVINCES

UPDATED DRAFT BASIC ASSESSMENT REPORT

Executive Summary

SolarReserve South Africa (Pty) Ltd ('**SolarReserve**') has appointed SiVEST Environmental Division as the independent Environmental Assessment Practitioner ('EAP') to undertake the Basic Assessment process for the proposed 132kV Power Line and associated infrastructure (the '**Power line Project**') for the evacuation of power from the Kalkaar Concentrating Solar Thermal Power Project (the "**CSP Project**") on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal in the Free State Province and Northern Cape Provinces (the **CSP Project Site'**).

On the 3rd of September 2015, SolarReserve received an environmental authorisation (EA – DEA Ref: 14/12/16/3/3/2/660; for the CSP Project.

In order to evacuate the electricity generated by the CSP Project, a grid connection solution was assessed by SolarReserve, and as such a Basic Assessment (BA) processes was initiated for the proposed Power Line Project.

The initial Draft Basic Assessment Report (DBAR) was compiled and released for public review and comment from the 24th of June 2016 to the 25th of July 2016. During this period, the South African Heritage Resources Agency (SAHRA) submitted an interim comment on the 26th of July 2016 recommending that the Heritage Impact Assessment (HIA) be updated and a field-based Paleaontological Impact Assessment (PIA) be undertaken. The SAHRA requested that these reports be included in the Final BAR. In order to undertake and include the updated findings of the PIA and updated HIA, a request for extension was submitted to the National Department of Environmental Affairs (DEA). On the 24th of August 2016, the DEA granted an extension of 230 days from the date that the application was submitted (25th May 2016). As such, the DBAR was updated with the information obtained from the PIA and updated HIA and will be re-released to all Interest and Affected Parties (I&APs) for review and comment.

The additional public review and comment period of an additional 30 days will take place from the 9th of December 2016 until the 30th of of January 2016 (including December shut-down period from the 14th of December 2016 to the 5th of January 2017).

The preferred evacuation point for the electricity generated by the CSP Project is from the Jacobsdal Substation via the Project Substation (which is situated on the CSP Project Site) and terminating at the Kimberley Distribution Substation ('**KDS**') to Boundary Substation near Kimberley. As such, in order to evacuate the electricity generated by the CSP Project, this environmental authorisation process was undertaken to assess the environmental feasibility of the proposed Power line Project to the aforementioned interconnection point. Importantly, it must be noted that the grid connection solution proposed for the CSP Project will only be finalised by Eskom at the Budget Quote stage of Eskom's Load and Demand Network Integration Studies. The preliminary Load and Demand Network Integration Studies have however shown that Eskom may require that the CSP Project evacuate power via via the KDS to the Boundary Substation and the Jacobsdal Substation.

The Power line Project will comprise of the following:

- Construction of Tern power lines or equivalent of a 132kV power line from the proposed CSP Project to the proposed Jacobsdal, Kimberley and Boundary substations and all the necessary expansion and changes to Eskom infrastructure at the substations.
- The grid connections that will be assessed include the following:
    - Jacobsdal Link = approximately 19km in length;
    - CSP Project via Kimberley DS to Boundary Substation Alternative 1 = approximately 61km in length; and
    - CSP Project via Kimberley DS to Boundary Substation Alternative 2 = approximately 62km in length.
- Install 48 core optical ground wire (OPGW) on the power line.
- Build 2-3 bay substations next to the approved substations on the CSP Project Site. Proposed substations will be approximately 100m x 100m – one for Eskom and one for the Project site.
- Inclusive of all cable trenches.
- Install 10 x 25m lighting/lightning masts.
- Building of an access road to the substation.
- Building of a standard control room (5.5m x 12m) with top entry and cable racks. This will include a sewage system, air-conditioning and energy efficient lighting.
- Installation of a security fence with entrance gates.
- 1 x 132kV line bay and 1 x 132kV metering bay at each connection substation.
- Installation of a required Control Plant, AC/DC, Metering, SCADA and Telecoms.
- V drain extension of substation for drainage purposes.
- And or all extensions required (132kV yard, fencing etc.) of the connecting Eskom Assets i.e. Kimberley DS / Boundary / Jacobsdal Substation(s)

The proposed Power line Project will be an Eskom owned asset, and only constructed by the Applicant under a self-build agreement with Eskom.

The proposed substations will be adjacent to the on-site CSP Project substations authorised under the EA (DEA Ref: 14/12/16/3/3/2/660). The footprint of the proposed substations would be approximately 100m x 100m, respectively.

Three power line corridors were assessed. Two of the three corridors are up to 2km (1km either side of the centre line) wide originating from the CSP Project Site routing via the KDS to the Boundary Substation. The aforementioned two corridors will serve as alternatives to each other for the comparative assessment. An additional corridor of 500m in width (250m either side of the centre line) is required for the CSP Project interconnection solution, from the Jacobsdal Substation to the CSP Project Site before evacuating the power to the Boundary-Kimberley substations. This route is not subject to an alternative assessment, but environmental considerations will be applied to determine the alignment best suited to the receiving environment within this corridor. As such the preferred power line route is Corridor 1 (Green) in combination with Corridor 2 Alternative 2 (Turquoise).

Please note that Eskom dictates the size of the servitude and there is a possibility that larger servitudes will be required. However, at this stage, it is anticipated that the registered servitude width will be 31 metres (15.5 metres either side of the centre line) or unless otherwise required by Eskom.

The three power line corridors include the following:

- Corridor 1 (Green) – Jacobsdal Substation – CSP Project Site (approximately 19km in length);
  This corridor is needed to complete the interconnection solution using Corridor 2 to evacuate the power to the KDS and Boundary Substations.
- Corridor 2 Alternative 1 (Purple) – CSP Project Site via KDS to Boundary Substation (approximately 61km in length); and
- Corridor 2 Alternative 2 (Turquoise) – CSP Project Site via KDS to Boundary Substation (approximately 62km in length).

The proposed Power line Project will also include the establishment of all associated infrastructure as required (including but not limited to access roads, control rooms, security systems etc.).

The proposed Power line Project study area is located primarily within the Free State Province, with a relatively small portion cited in the Northern Cape Province near Kimberley. The proposed Power line Project traverse the Lejweleputswa District Municipality in the Free State Province and the Frances Baard District Municipality in the Northern Cape Province. More specifically, the proposed Power line Project traverse into the Tokologo and Letsemeng Local Municipalities in the Free State Province and the Sol Plaatje Local Municipality in the Northern Cape Province. Land uses for the Power line Project encompasses mainly mining, industrial (renewable), agricultural farming activities and urban as well as residential areas.

A Site Locality Map for the Power line Project has been provided in Figure i below.

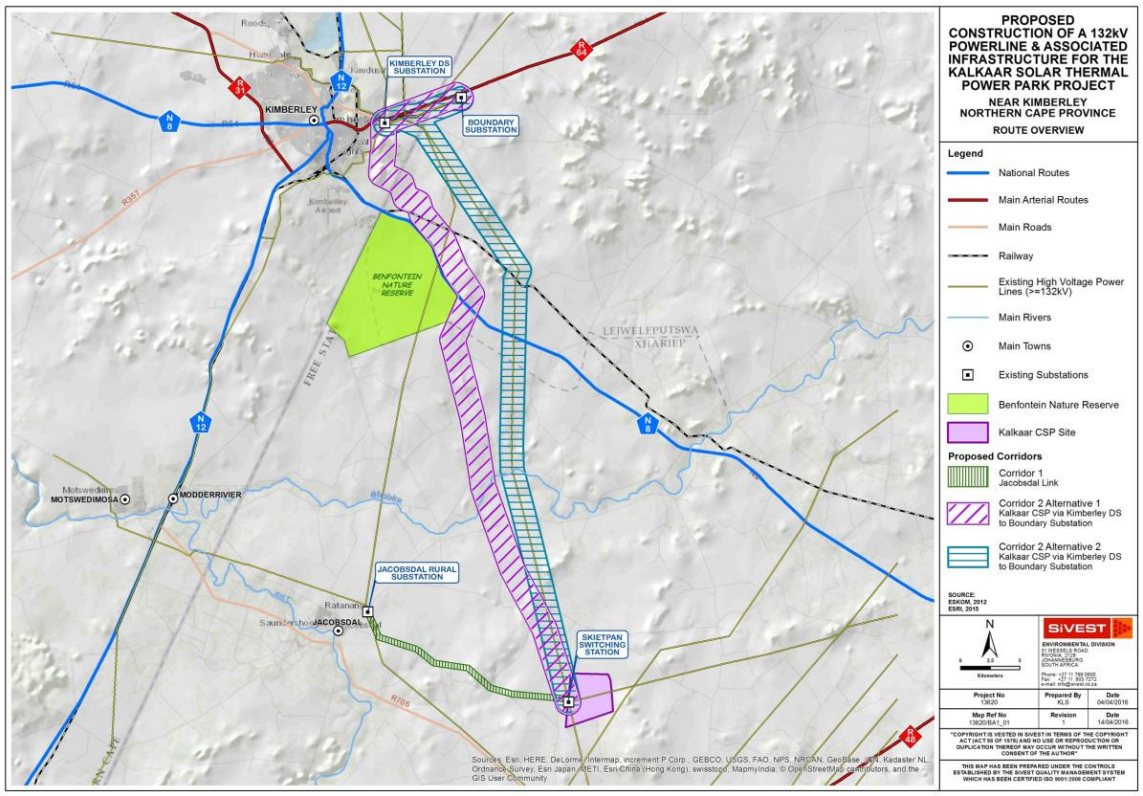

Figure i: Site Locality Map

Several specialist studies were conducted during the BA process to identify issues and legislative implications associated with the proposed Power line Project. These include the following:

- Biodiversity Assessment (fauna and flora);
- Avifauna Assessment;
- Wetland Assessment;
- Soils and Agricultural Potential Assessment;
- Heritage and Palaeontology Assessment;
- Visual Assessment; and
- Socio-Economic Assessment.

A summary of the findings is provided in Table i below.

Table i: Specialist Findings Summary Table

Environmental Parameter	Summary of Major Findings	Recommendations
Biodiversity	In terms of flora, within the area affected by the proposed Power line Project, vegetation types that are affected include Kimberly Thornveld and Northern Upper Karoo, Highveld Salt Pans and Vaalbos Rocky Shrubland. Within these vegetation types however, the specific habitats that are actually occurring within the proposed corridor alternatives include the following: ▪ Kimberley Thornveld – Protected and listed species include *Boscia albitrunca and Acacia erioloba*; ▪ Northern Cape Upper Karoo; ▪ Vaalbos Rocky Shrubland; ▪ Pans – Protected and listed species include; ▪ Modder River – the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as the unique aquatic habitats present here that are not represented elsewhere in the landscape of the area. There are three (3) species of conservation concern that are listed in terms of the SANBI SIBIS database (quarter degree squares 2824 DB, DD and 2924 BB). Only *Acacia erioloba* can be confirmed present and occurs mostly in the north of the site in the areas of savanna on deeper sands near Kimberly. *Aloinopsis rubrolineata* occurs in areas of exposed calcrete and may occur in the central section of the routes between Kimberly and CSP Project Site where such habitat is present, but was not observed. There are however also additional species present which are either protected under the National Forests Act such as *Boscia albitrunca* and *Acacia erioloba* or protected under the Northern Cape Nature Conservation Act of 2009, which includes *Boscia foetida*, all *Mesembryanthemaceae*, all species within the *Euphorbiaceae*, *Oxalidaceae*, *Iridaceae*, all species within the genera *Nemesia* and *Jamesbrittenia*. In terms of fauna: ▪ 51 mammals have been recorded from the quarter degree squares traversed by the power line	▪ Preconstruction walk-through of power line route to identify and locate species of conservation concern that should be avoided or translocated where possible and practicable. ▪ Affected individuals of protected species which cannot be avoided should be translocated to a safe area on the site prior to construction where possible and practicable. ▪ There are also additional species present which are either protected under the National Forests Act such as *Boscia albitrunca* and *Acacia erioloba* or protected under the Northern Cape Nature Conservation Act of 2009, which includes *Boscia foetida*, all *Mesembryanthemaceae*, all species within the *Euphorbiaceae*, *Oxalidaceae*, *Iridaceae*, all species within the genera *Nemesia* and *Jamesbrittenia*. ▪ Relevant permits (i.e. plant removal/destruction permit from NCPG DENC or protected tree permits from the Department of Agriculture, Forestry and Fisheries (DAFF)) should be obtained before translocation/destruction/removal of listed and protected plant or tree species takes place and before construction commences, if required. ▪ Alien species especially large woody species such as *Propsopis glandulosa* should be cleared from the power line servitude, but indigenous species such as *Boscia albitunca* and *Boscia*

Environmental Parameter	Summary of Major Findings	Recommendations
	options. However, as many as 20 of these are large mammals, introduced or maintained for game farming operations and are not considered relevant to the current study as these are managed populations regulated and confined by landowners. The remaining 30 are free ranging species which occur naturally in the area. ▪ Five listed terrestrial mammals may occur in the area, the Honey Badger *Mellivora capensis* (Endangered), Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed cat *Felis nigripes* (Vulnerable), South African Hedgehog *Atelerix frontalis* (Near Threatened) and the Serval *Leptailurus serval* (Near Threatened). ▪ According to the SARCA database, 31 reptile species are known from the area suggesting that the reptile diversity within the site is likely to be fairly low. Species observed in the area include the Cape Skink *Trachylepis capensis*, Ground Agama *Agama aculeata aculeata*, Spotted Sand Lizard *Pedioplanis lineoocellata* and Leopard Tortoise *Stigmochelys pardalis*. There are no listed species known from the area. ▪ The site lies within the distribution range of 10 amphibian species. The only listed species which may occur in the area is the Giant Bullfrog *Pyxicephalus adspersus* which is listed as Near Threatened. Although it has not been recorded from the affected area, it is common in the wider area on account of the large number of pans in the area, which are the breeding habitat of the Giant Bullfrog. The major impacts of the development of the power line would occur during the construction phase, due to the disturbance of largely intact ecosystems that would take place at this time. Construction phase disturbance would however be transient	*foetida*, should not be cleared, where possible. ▪ Where the power line runs adjacent to existing power lines or access roads, the existing roads should be used optimally and any additional permanent roads should be kept to a minimum.

Environmental Parameter	Summary of Major Findings	Recommendations
	and while impacts on flora are likely to persist for some time, impacts on fauna during operation would be very low. Due to the low overall footprint of the power line and low operational disturbance levels, impacts associated with the construction and operation of the power line would be local in nature and of low overall significance after mitigation. In terms of mitigation, avoidance of the identified sensitive features is considered the most important measure to reduce the impact of the power line to a low level. Overall and with the suggested mitigation measures applied, the impact of the proposed Power line Project would be of local extent and low significance. There are no impacts associated with the development of the power line that are considered to be high and which cannot be mitigated to a low level. As such, there are no significant ecological reasons to oppose the construction of the CSP Project grid connections to Kimberly or to Jacobsdal.	
Avifauna	An estimated 313 bird species could potentially occur in the study area of which 28 are classified as Red Data species. Three Important Bird Areas (IBAs) in the vicinity including Dronfield Nature Reserve (approx. 5km north Kimberley – SA031), Kamfer's Dam (approx. 6km north of Kimberley – SA032) and Benfontein Nature Reserve (approx. 14km south east of Kimberley – SA033). There is also a vulture breeding area for White-backed Vultures (Susanna Vulture Breeding Area) that can be found covering both Corridor 2 Alternatives 1 and 2, as well as another breeding area approx. 10km outside Jacobsdal. Potential impacts during the construction and decommissioning phase include the displacement of priority species and habitat transformation. Impacts are mainly negative but low. With mitigation, these impacts can be reduced further. For the operation phase, electrocutions and collisions of red data species is the primary potential impact. Potential impacts for collisions of red data species are rated as medium for Corridor 1 Jacobsdal Link	▪ Construction and de-commissioning activities should be restricted to the immediate footprint of the infrastructure. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum. ▪ Prior to the construction of the line, a walk-through must be conducted to ascertain if any White-backed Vulture breeding pairs will be impacted by the construction activities. If any breeding pairs are potentially at risk, the construction will have to be

Environmental Parameter	Summary of Major Findings	Recommendations
	and high for Corridor 2 Alternatives 1 and 2. This can be mitigated to a low level for Corridor 1 Jacobsdal Link and a medium level for Corridor 2 Alternatives 1 and 2. Potential impacts for electrocutions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Finally, for the decommissioning phase, displacement of red data species as a result of disturbance is rated as low for Corridor 1 Jacobsdal Link and medium for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Corridor 1 Jacobsdal Link is the shortest power line route and does not transect any vulture breeding areas. All potential impacts can be mitigated to a low level. There is not much difference in preference between Corridor 2 Alternative 1 and 2 as both are relatively the same length and traverse the Susanna White-backed Vulture breeding area. There is no preference between the two alternatives.	timed to fall outside the breeding season. ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant collision mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ The power line should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, alternating black and white or as per agreement with independent Avifaunal specialist and Eskom. ▪ All the steel monopoles should be fitted with bird perches.
Wetlands	Two (2) main hydrogeomorphic types were identified including well developed riparian systems (namely the Modder River) and several depressions that differ in size (small pans – 0.9ha to 20ha; large pans – larger than 58ha to 401ha). Summary of assessments undertaken applied to riparian resources include the following: ▪ Modder River: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; ▪ Large Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; and ▪ Small Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision. Types of impacts to the riparian systems	▪ Ensuring that during the design phase, cognisance is taken of the locality of identified freshwater resources and their associated buffers, and as far as is practicable, to avoid the placement of infrastructure within those zones unnecessarily. It is preferable that no infrastructure is placed within the river nor in the pans; ▪ Should it be absolutely essential at certain crossings to place infrastructure within the freshwater resources habitat, access to these areas must be limited to essential personnel (and

Environmental Parameter	Summary of Major Findings	Recommendations
	included: ▪ Loss of riparian habitat and ecological structure; and ▪ Changes to riparian ecological and sociocultural service provision; ▪ Impacts on riparian hydrology and sediment balance. Overall significance after mitigation is a low negative impact after management and mitigation measure implementation. Based on the findings of this study, it is the opinion of the ecologists that the proposed Power line Project is regarded as having low levels of impact on the surrounding freshwater resources identified, even if less than desirable mitigation of impacts occurs. With careful planning of the final layout of the power lines and strict implementation of mitigation measures throughout all phases of the Power line Project, impacts can be reduced to very low significance levels and the Power line Project should, from a freshwater resource point of view, be considered favourably for development. Following the assessment of perceived impacts, consideration was given as to the preferred corridor option from a freshwater ecology perspective. As Corridor 1 was the only option provided for the routing of the power line between the CSP Project to Jacobsdal Substation, this potion is considered to be "favourable". Depending on the final layout of the power line within the corridor, with avoidance of most of the freshwater resources, this layout could have minimal impacts on the freshwater resources. Corridor 2, Alternative 2 is considered to be the best routing option for the power line between CSP Project and the KDS to the Boundary Substation, as it traverses over the least amount of freshwater resources identified by this study.	construction vehicles) and the boundaries thereof are to be clearly demarcated on site. No contract laydown areas are to be permitted within the freshwater resources habitat or associated buffer zone; ▪ Due to the degraded state of the vegetation, especially within the pans, care must be taken to ensure that as little vegetation as possible is removed, and that all exposed soils as a consequence of construction activities must be suitably protected with a geotextile to prevent erosion and sedimentation of the river, and loss of functionality of the pans; and ▪ Any freshwater resource directly impacted upon during construction activities must be immediately rehabilitated in accordance with the EMPr following the completion of such activities at that specific site.
Soils and Agricultural Potential	The proposed Power line Project is can be found on land zoned as and used for agriculture. Soils on the site are predominantly shallow to moderately deep, loamy sands on underlying rock or hard-pan carbonate (Hutton, Mispah and Coega soil forms).	▪ Implementation of an effective system of storm water run-off control to mitigate erosion; and topsoil stripping and re-spreading to mitigate loss of topsoil.

Environmental Parameter	Summary of Major Findings	Recommendations
	The major limitation to agriculture in the study area is the climatic restrictions i.e. moisture/precipitation availability. The limited depth of the soils is a further limitation. As a result, the study area is predominantly unsuitable for cultivation and agricultural land use is limited to grazing, except for some small irrigation areas along the Modder River. The land capability of the site varies according to land type from class 5 to class 7, which is from non-arable, moderate potential grazing land to non-arable, low potential grazing land. The limitations to agriculture are aridity and lack of access to water plus shallow soil depth. Because of these constraints, agricultural land use is mostly restricted to grazing. The natural grazing capacity is predominantly 14-17 hectares per animal unit. The centre pivot lands along the Modder River are considered to be of high agricultural sensitivity. The overhead power lines as well as any infrastructure on the ground must avoid these lands. There are three (3) factors that limit the significance of all potential agricultural impacts. The first is that the actual footprint of disturbance of the proposed Power line Project is very small in relation to available, surrounding properties. The second is that the impact of a power line on the kind of agricultural activity (predominantly grazing) along the proposed Power line Project is very minimal, as this can continue in the presence of a power line with negligible disturbance. The third factor is that the site has very low agricultural potential, limited by severe climatic restrictions and soils with a low carrying capacity i.e. shallow soils. Four (4) potential negative impacts of the Power line Project on agricultural resources and productivity were identified as: ▪ Loss of agriculturally zoned land due to the footprint of the power line infrastructure. ▪ Soil erosion caused by alteration of	

Environmental Parameter	Summary of Major Findings	Recommendations
	the surface characteristics. ▪ Loss of topsoil in disturbed areas, causing a decline in soil fertility. ▪ Degradation of veld vegetation beyond the direct footprint due to constructional disturbance, dust and vehicle compaction. All impacts were assessed as having low significance. Recommended mitigation measures include implementation of an effective system of storm water run-off control to mitigate erosion; and topsoil stripping and re-spreading to mitigate loss of topsoil. Because of the low agricultural potential of the site and resultant low agricultural impacts, the proposed Power line Project should, from an agricultural impact perspective, be authorised. Because of the low impacts and the uniformly low potential of the site, there is no preference between the different corridor options. There are no conditions resulting from this assessment that need to be included in the environmental authorisation.	
Heritage and Palaeontology	Heritage Findings: An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history. These desktop studies were followed by a fieldwork component that comprised driving and walking through the study area. A total of twenty seven (27) occurrences of heritage resources were identified within Corridor 2 Alternative 1. Fourteen (14) of these would require mitigation before exhumation (graves) or destruction (historical structures) if development were to come within 20 m. Site Kal1 and Kal2 must be avoided with a 50 meter buffer. Thirteen (13) occurrences of heritage resources have high significance and should not be disturbed by development within 20 m.	Heritage recommendations ▪ It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Therefore a final walk-down needs to be undertaken prior to the commencement of construction. Palaeontology recommendations ▪ Should fossil material exist within the Power line Project area, any negative impact upon it could be mitigated by surveying, recording, describing and sampling of well-preserved fossils by a professional palaeontologist. This should take place after initial vegetation clearance has

Environmental Parameter	Summary of Major Findings	Recommendations
	It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Palaeontological Findings: The Power line Project footprint is completely underlain by lower Permian sediments of the Ecca Group of the Karoo Basin (White Hill and Prince Albert Formations), Late Permian Volksrust Formation, and the Karoo Dolerite Suite and Quaternary deposits. The Power line Project footprint as a whole is a fairly flat lying terrain with grassy vegetation cover in places as well as a few thorn trees. The Karoo dolerite Suite is unfossiliferous and the sensitivity in the Quaternary sediments is low. Overall Impact Statement: Heritage – The overall impact evaluation has shown that the pre-mitigation impact on heritage resources is rated as High negative. However, with the implementation of the recommended mitigation measures, this will reduce the potential impact to a low negative impact. Corridor 1 and Corridor 2 Alternative 2 are viewed as favourable options due to the low potential impact on heritage resources which can be mitigated to address envisaged impacts. Corridor 2 Alternative 1 however, is viewed as not preferred as there is a large amount of heritage resources along this route. Palaeontology – From a palaeontological perspective, although the palaeontological sensitivity of the Whitehill, Prince Albert and Volksrust Formations is rated as high to very high, scarcity of fossil-bearing sediments and lack of exposure at the proposed sites indicate that the impact on palaeontological material is low. The fossil heritage in the development area is low/ negligible. As such, there is no preference between any of the proposed alternative corridors.	taken place but before the ground is levelled for construction. Excavation of fossil heritage will require a permit from SAHRA and the material must be housed in a permitted institution. In the event that an excavation is impossible or inappropriate the fossil or fossil locality could be protected and the site of any planned construction and infrastructure moved..
Visual	The Visual Impact Assessment (VIA) conducted for the proposed Power line Project has demonstrated that most of the	▪ None

Environmental Parameter	Summary of Major Findings	Recommendations
	study area has a rural, partially scenic visual character which is transformed in part. The northern and south-western parts of the study area, near Kimberley and Jacobsdal respectively, are characterised by a more visually degraded landscape, which is mostly attributed to the presence of large-scale mining activities, existing electrical infrastructure as well as informal/semi-formal settlements and residential areas/communities. As such, the visual character in these parts of the study area is visually degraded, typical of a peri-urban environment. In addition, the southern and central parts of the study area are characterised by a more natural / scenic visual character due to the prevalence of the natural intact vegetation, limited human habitation and limited transformation and/or development. The visual character in these areas is thus typical of a natural rural environment. Commercial cultivation is concentrated along the Modder River in the southern parts of the study area. These areas are dominated by various agricultural activities and other elements typical of a pastoral environment. The study area is not typically valued or utilised for its natural scenic value and therefore relatively few tourism, historically or culturally significant sensitive receptors were identified during the fieldwork. A desktop investigation revealed that several farmsteads are also present within the study area which may perceive the power line to be an unwelcome intrusion, depending on the perception of the viewer. The impact assessment revealed that the significance of the visual impacts resulting from the proposed Power line Project would be low during the construction phase and medium during the operational phase. These potential impacts can be mitigated to acceptable levels provided the recommended mitigation measures are implemented. All the proposed power line corridor alternatives were assessed to determine which alternative would result in the lowest overall visual impact. Based on the assessment, Corridor 1 (Green) is considered to be a favourable alignment	

Environmental Parameter	Summary of Major Findings	Recommendations
	for the proposed Power line Project while Corridor 2 Alternative 1 (Purple) is not considered to be a preferred alignment. Corridor 2 Alternative 2 (Turquoise) was considered to be the preferred alignment, due to the presence of existing power lines and lack of visually sensitive and potentially sensitive receptor locations within close proximity.	
Socio-Economic	The review of the relevant policy documents concluded that the Power line Project falls in line with the national and local government developmental objectives. It may also form part of the SIP10 and SIP8. Furthermore, the Power line Project is not expected to compromise the spatial visions of the three municipalities and two provinces; however, care needs to be taken when the route is chosen as to avoid green areas earmarked by the Sol Plaatje LM. The project will improve the reliability of electricity supply in the region as the CSP Project will augment the national electricity supply, which could lead to establishment of more electricity connections in the region or country as a whole. The Power line Project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between approximately R60 million and R144 million, depending on the corridor approved, is likely to stimulate between approximately R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. All three corridors have been considered. It appears that commercial livestock and game farming is the dominant land use that may be impacted by any of these corridor options and alternatives. The agricultural sector is a significant contributor to the economies of Letsemeng and Tokologo and creates approximately 33% and 22% of all job opportunities in the respective municipalities. This emphasises the need to minimise the project's potential negative impact on the dominant activities observed in the zone of influence of the project.	Due to nature of the businesses of surrounding landowners, consultation was identified as important with regards to the final power line routing for the project, and consultation will be undertaken with each affected landowner by the Project Company.

Environmental Parameter	Summary of Major Findings	Recommendations
	Corridor Alternatives received the same average scores for positive and negative impacts for both before and after mitigations measures. Considering the preferences allocated to these two alternatives for each impact, no clear differentiation can be made between the alternatives and all could be equally considered.	

An impact assessment was conducted to ascertain the level of each identified impact, as well as mitigation measures which may be required. The potential positive and negative impacts associated within these studies have been evaluated and rated accordingly. The results of the specialist studies have indicated that no fatal flaws exist as a result of the proposed Power line Project.

The comparative impact assessment that was undertaken identified the following alternatives as preferred options for the Power line Project:

In terms of the environmentally preferred corridor between Corridor 2 Alternative 1 and 2, the following was selected as the preferred after a comparative assessment was undertaken:

Corridor 2 Alternative 2 – CSP Project Site via Kimberley DS to Boundary Substation (Preferred)

There is not much difference in terms of preference with regards to avifauna, soils and agricultural potential, palaeontology and socio-economic aspects. However, there are reasons against the selection of Corridor 2 Alternative 1 (heritage and visual) as well as reasons motivating for the selection of Corridor 2 Alternative 2 (with regards to wetlands and biodiversity). As such, the selection of the Corridor 2 Alternative 2 – CSP Project Site via Kimberley DS to Boundary Substation as the preferred option was made taking into account the following:

- Presence of an existing line along this route will decrease the footprint and negative impact of the new line;
- Lower number of freshwater resources to be affected;
- Lowest potential impact on heritage resources and with appropriate mitigation measures, could address envisaged impacts.
- Follows existing power lines; and
- Fewer potential sensitive receptors.

Importantly, Corridor 1 – Jacobsdal link is not an alternative to the above mentioned alternative corridors and therefore did not undergo comparative assessment. It is a mandatory link which requires environmental authorisation for the completion of the interconnection circuit from Jacobsdal Substation to the CSP Project site which will then route via Kimberly Distribution Substation to

Boundary Substation. All sensitivities, potential impacts and required mitigation measures were however determined and included in this report.

Corridor 1 – Jacobsdal Link (Preferred)

Ultimately, the following was be taken into account for this proposed corridor as being preferred:

- The Jacobsdal link has not very high sensitivity sections along the route;
- Much lower risk of avifauna collision mortality and avoidance of vulture breeding areas;
- Least number of freshwater resources to be affected;
- Lowest potential impact on heritage resources and with appropriate mitigation measures, could address envisaged impacts.
- Shorter route and thus less physical impact (reduced footprint);
- Reduced potential negative socio-economic impacts;
- Lowest visual impact; and
- More economically viable being the shorter route.

From the above, Corridor 2 Alternative 2 (Turquoise) and Corridor 1 – Jacobsdal Link (Green) are both to be environmentally authorised with the implementation of mitigation measures.

A thorough Public Participation Process (PPP) is underway as part of the BA. During this process on-going consultation is taking place with various key stakeholders and organs of state, which include provincial, district and local authorities, relevant government departments, parastatals and Non-Governmental Organisations (NGO's).

Through the findings of the BA process and report, it is the opinion of the EAP that the Power line Project should be granted environmental authorization by the DEA, provided that the recommended mitigation measures are implemented and the following conditions are adhered to:

- All mitigation measures recommended by the various specialists should be implemented, where possible and practical.
- Final Environmental Management Programme (EMPr) should be approved by the Department of Environmental Affairs (DEA) prior to construction.

Comments received from the DEA (as the determining authority of this BA application) on the 6th of July 2016 and 24th of August 2016 have been included here for the updated Draft Basic Assessment Report. Accordingly, the responses addressing all comments have been included as follows:

DEA Comment & Date Received	SiVEST Response	Section in Updated DBAR
Corridors It has been noted that Eskom's preferred (Corridor 2 Alternative 2) evacuation point for the electricity generated by the CSP Project is via Kimberley Substation to Boundary Substation near Kimberley. However,	Note that the interconnection points from Jacobsdal Substation to the CSP Project site via the KDS to the Boundary Substation is one complete circuit. It may be required by Eskom that power will need to be	Executive Summary Section A(1)(a) Section D(2)

SolarReserve is also considering the nearby Jacobsdal Substation near Jacobsdal as a secondary evacuation point. As a result, you want both these options to be considered for authorisation. You have stated that Corridor 1: Jacobsdal is a mandatory connection point. However, no explanation has been provided to support this statement. You have failed to motivate as to why Corridor 1 is required as an additional option to Corridor 2 Alternative 2. Will both these lines be constructed: should you receive a positive decision? If yes, has Eskom given any input regarding the feasibility of the Jacobsdal Link as an additional grid connection point? You are requested to provide more clarity on the above and obtain rewritten comments from Eskom regarding the feasibility of the Jacobsdal Link as a second connection point.	evacuated via the Jacobdal Substation to KDS and Boundary Substation from the CSP Project site.	
Appendix B: Site Photographs No site photographs were included in the draft BAR. You are requested to provide the site photographs (in colour) and a description of the site photographs as per the requirements of the BAR, which reads as follows: "Colour photographs from the centre of the site must be taken in at least eight (08) major compass directions with a description of each photograph".	Photographs have been taken in eight (08) major compass directions in approximately the midway point of the corridors (taken as, "the centre of the site").	See Appendix B
Public Participation Process The following information must be included in the final BAR:	A thorough Public Participation process has been undertaken. Responses as per bullet points are as follows:	The relevant Sections and Appendices where the information can be found, as per bullet points, are as follows:

The public participation process (PPP) must comply with the minimum requirements of Chapter 6 of the EIA Regulations, 2014. You are therefore requested to ensure that the following information is included in the final BAR: ▪ Proof that notification letters for the availability of the draft BAR were sent out to organs of state and authorities (e.g. registered mail records, facsimile confirmation report, copies of e-mails sent, etc.) of the proposed activities. ▪ A comment and responses report must be included in the final BAR. You are requested to include the summary of all issues raised by Interested and Affected Parties (IAPs) and the responses provided. The report must reflect the details of the I&APs/authorities that commented, indicated who commented, when the comments were received, and response provided to the issues raised. Please also indicated if comments were received via email, letter or were noted during a public and/or authorities meeting that took place during public engagements, etc. ▪ The minutes of any meetings held by the EAP with interested and affected parties and other role players must also be incorporated into the report.	▪ Proofs that notification letters for the availability of the DBAR were sent out to organs of state and authorities have been included; ▪ Proofs for notifications letters of the updated DBAR will be included in the FBAR. ▪ A comment and responses report (CRR) has been included in the updated DBAR along with all required details; ▪ The minutes of any meetings held by the EAP with interested and affected parties and other role players have been included in this updated DBAR accordingly.	▪ See Appendix E2; ▪ See Appendix E3; and ▪ See Appendix E6.

Appendix G: Environmental Management Plan The Environmental Management Programme (EMPr) must address all impact management issues raised by the I&APs and must meet the requirements of Appendix 4 of the EIA Regulations, 2014.	The Environmental Management Programme (EMPr) includes measures for addressing all raised I&AP issues. It also meets with the requirements of Appendix 4 for the EIA Regulations, 2014.	See Appendix G.
Appendix J: Additional Information On Page 38, it is indicated that the proposed activity will require environmental authroisation. You are requested to provide proof in the final BAR that a water use license has been submitted to the Department of Water and Sanitation (DWS).	Note that the DWS will only process a water use license application for an applicant applying for a water use permit for a renewable energy project that has received preferred bidder status as well as Environmental Authorisation. This was confirmed via correspondence from the DWS on the 5th of August 2016. As the Power line Project is still to be decided on by the determining authority, the WUL required for the Power line Project cannot be processed at this stage. However, should a positive environmental authorisation get issued and the project received Preferred Bidder status, the WULA process will commence..	See Appendix J8 for correspondence with DWS.
Undertaking of an Oath The submitted draft BAR does not include an undertaking under oath or affirmation by EAP. You are therefore required to include an undertaking of oath or affirmation as per the requirements of Appendix 1 (3) (r) of	The EAP affirmation letter has been compiled and signed accordingly as per the requirements of Appendix 1 (3) (r) of EIA Regulation 2014.	See Appendix H – Details of EAP and Expertise of Environmental Project Team.

EIA Regulation 2014 which state that the BAR must include: "an undertaking under oath or affirmation by the EAP in relation to: i) the correctness of the information provided in the reports; ii) the inclusion of comments and inputs from stakeholders and I&APs; iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and iv) any information provided by the EAP to interested and affected parties and any responses.		
General Please ensure that the BAR includes the period for which environmental authorisation is required and the date which the activity will be concluded as per the (3) (1) (q) of Appendix 3 of GN. 982. You are further reminded to comply with regulation 19 (1) (a) of the Environmental Impact Assessment Regulations (2014), which state that: (a) a basic assessment report, inclusive or specialist reports, an EMPr, and where applicable a closure plan, which have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority"	Environmental Authorisation is required for a period of five (5) years. The date which the activity is expected to have commenced is the June 2021. With regards to Regulation 19, a letter was submitted and received by the DEA on the 24th August 2016 requesting extension of the submission timeframe for the Power line Project. In terms of Regulation 3 (7) of the EIA Regulations (2014), the Department accepted this request and allowed an additional 140 days (including the 50 days as per Regulation 19b).The Final BAR therefore must be submitted within 230 days	Updated DBAR and All Appendices

Should there be significant changes or new information that has been added to the basic assessment report or EMPr which changes or information was not contained in the reports or plans consulted on during the initial public participation process, you are therefore required to comply with Regulation 19 (b) which states: "notification in writing that the basic assessment report, inclusive of specialist reports and EMPr, and where applicable, a closure plan, will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the basic assessment report or EMPr or, where applicable, a closure plan, which changes or information was not contained in the reports or plans consulted on during the initial public participation process contemplated in sub-regulation (1) (a) and that the revised reports or, EMPr, or, where applicable, a closure plan will be subjected to another public participation process of at least 30 days". Should you fail to meet any of the timeframes stipulated in Regulation 19 of the Environmental Impact Assessment Regulations (2014), your application will lapse. You are hereby reminded of Section 24F of the National Environmental	counting from the date of the submission of the application for environmental authorization (25th May 2016) In light of the above, confirmation that the BA process has been undertaken in accordance with Regulation 19 (b) and Regulation 3 (7) of the Environmental Impact Assessment Regulations (2014) has been complied with by means of this updated DBAR, including that the updated DBAR, inclusive of specialist reports and EMPr, and where applicable, a closure plan (not applicable), will be submitted within 230 days of receipt of the application by the competent authority, as new information has been added to the DBAR and / or EMPr or, where applicable, a closure plan (not applicable), which information was not contained in the reports or plans consulted on during the initial public participation process contemplated in sub-regulation (1) (a) and that the revised reports or, EMPr, or, where applicable, a closure plan (not applicable) will be subjected to another public participation process of at least 30 days. As the second round of public participation is yet to be undertaken, notifications	

Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department (DEA).	in writing of the above will be included in the Final Basic Assessment Report (FBAR) accordingly. Section 24F of the National Environmental Management Act, Act No 107 of 1998 is hereby acknowledged and it is noted by the applicant that no activity may commence prior to an environmental authorisation being granted by the Department (DEA).	

SOLARRESERVE SOUTH AFRICA (PTY) LTD

PROPOSED CONSTRUCTION OF A 132KV POWER LINE AND ASSOCIATED INFRASTRUCTURE FOR THE KALKAAR CONCENTRATING SOLAR THERMAL POWER PROJECT ON THE REMAINDER OF PORTION 1 OF THE FARM KALKAAR 389 NEAR JACOBSDAL, FREE STATE AND NORTHERN CAPE PROVINCES

UPDATED DRAFT BASIC ASSESSMENT REPORT

Contents

List of Appendices

List of Abbreviations

ASAPA	Association of South African Professional Archaeologists
BA	Basic Assessment
BAR	Basic Assessment Report
BFD	Bird Flight Diverter
C&RR	Comments and Response Report
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
GIS	Geographic Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
NEMA	National Environmental Management Act, 1998 (Act No.107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NFA	National Forests Act, 1998 (Act No. 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public Participation Process
PV	Photovoltaic
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency SOC Limited
SDF	Spatial Development Framework
SG	Surveyor General
SHEQ	Safety, Health, Environment and Quality

SOLARRESERVE SOUTH AFRICA (PTY) LTD

PROPOSED CONSTRUCTION OF A 132KV POWER LINE AND ASSOCIATED INFRASTRUCTURE FOR THE KALKAAR CONCENTRATING SOLAR THERMAL POWER PROJECT ON THE REMAINDER OF PORTION 1 OF THE FARM KALKAAR 389 NEAR JACOBSDAL, FREE STATE AND NORTHERN CAPE PROVINCES

UPDATED DRAFT BASIC ASSESSMENT REPORT

INTRODUCTION

SolarReserve South Africa (Pty) Ltd ('**SolarReserve**') has appointed SiVEST Environmental Division as the independent Environmental Assessment Practitioner ('EAP') to undertake the Basic Assessment process for the proposed 132kV Power Line and associated infrastructure (the '**Power line Project**') for the evacuation of power from for the Kalkaar Concentrating Solar Thermal Power Project (the "**CSP Project**") on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal in the Free State Province (the **CSP Project Site'**).

On the 3rd of September 2015, SolarReserve received an environmental authorisation (EA – DEA Ref: 14/12/16/3/3/2/660; for the CSP Project.

The initial Draft Basic Assessment Report (DBAR) was compiled and released for public review and comment from the 24th of June 2016 to the 25th of July 2016. During this period, the South African Heritage Resources Agency (SAHRA) submitted an interim comment on the 26th of July 2016 recommending that the Heritage Impact Assessment (HIA) be updated and a field-based Paleaontological Impact Assessment (PIA) be undertaken. The SAHRA requested that these reports be included in the Final BAR. In order to undertake and include the updated findings of the PIA and updated HIA, a request for extension was submitted to the National Department of Environmental Affairs (DEA). On the 24th of August 2016, the DEA granted an extension of 230 days from the date that the application was submitted (25th May 2016). As such, the DBAR was updated with the information obtained from the PIA and updated HIA and will be re-released to all Interest and Affected Parties (I&APs) for review and comment.

The additional public review and comment period of an additional 30 days will take place from the 9th of December 2016 until the 30th of January 2016 (including December shut-down period from the 14th of December 2016 to the 5th of January 2017).

The preferred evacuation point for the electricity generated by CSP Project is from the Jacobsdal Substation via the Project Substation (which is situated on the CSP Project Site) and terminating at the Kimberley Distribution Substation ('**KDS**') to the Boundary Substation near Kimberley. As such, in order to evacuate the electricity generated by the CSP Project, this environmental authorisation process was undertaken to assess the environmental feasibility of the proposed Power line Project corridors to the aforementioned interconnection point. Importantly, it must be noted that the grid connection solution proposed for the CSP Project will only be finalised by Eskom at the Budget Quote stage of Eskom's Load and Demand Network Integration Studies. The preliminary Load and Demand Network Integration Studies have however shown that Eskom may require that the CSP Project to evacuate power not only via the KDS to the Boundary Substation from the Jacobsdal Substation.

1. PROJECT DESCRIPTION

The Power line Project will comprise of the following:

- Construction of Tern power lines or equivalent of a 132kV power line from the proposed CSP Project to the proposed Jacobsdal, Kimberley and Boundary substations and all the necessary expansion and changes to Eskom infrastructure at the substations.
- The grid connections that will be assessed include the following:
    - Jacobsdal Link = approximately 19km in length;
    - CSP Project via Kimberley DS to Boundary Substation Alternative 1 = approximately 61km in length; and
    - CSP Project via Kimberley DS to Boundary Substation Alternative 2 = approximately 62km in length.
- Install 48 core optical ground wire (OPGW) on the power line.
- Build 2-3 bay substations next to the approved substations on the CSP Project Site. Proposed substations will be approximately 100m x 100m – one for Eskom and one for the Project site.
- Inclusive of all cable trenches.
- Install 10 x 25m lighting/lightning masts.
- Building of an access road to the substation.
- Building of a standard control room (5.5m x 12m) with top entry and cable racks. This will include a sewage system, air-conditioning and energy efficient lighting.
- Installation of a security fence with entrance gates.
- 1 x 132kV line bay and 1 x 132kV metering bay at each connection substation.
- Installation of a required Control Plant, AC/DC, Metering, SCADA and Telecoms.
- V drain extension of substation for drainage purposes.
- And or all extensions required (132kV yard, fencing etc.) of the connecting Eskom Assets i.e. Kimberley DS / Boundary / Jacobsdal Substation.

The proposed Power line Project will be an Eskom owned asset, and only constructed by the Applicant under a self-build agreement with Eskom.

The location of the proposed substations will be adjacent to the on-site Project substations of the approved layout of the CSP Project, authorised under the EA (DEA Ref: 14/12/16/3/3/2/660). The footprint of the proposed substations would be approximately 100mx100m respectively.

Three power line corridors were assessed. Two of the three corridors are up to 2km (1km either side of the centre line) wide originating from the CSP Project Site routing via the KDS to the Boundary Substation. The aforementioned two corridors will serve as alternatives to each other for the comparative assessment. An additional corridor of 500m in width (250m either side of the centre line) is required for the CSP Project interconnection solution, from the Jacobsdal Substation to the CSP Project Site before evacuating the power to the Boundary-Kimberley substations. This route is not subject to an alternative assessment, but environmental considerations will be applied to determine the alignment best suited to the receiving environment within this corridor. As such the preferred power line route is Corridor 1 (Green) in combination with Corridor 2 Alternative 2 (Turquoise).

Note that Eskom dictates the size of the servitude and there is a possibility that larger servitudes will be required. However, at this stage, it is anticipated that the registered servitude width will be 31 metres (15.5 metres either side of the centre line) or unless otherwise required by Eskom.

The three power line corridors include the following:

- Corridor 1 (Green) – Jacobsdal Substation – CSP Project Site (approximately 19km in length);
  This corridor is needed to complete the interconnection solution using Corridor 2 to evacuate the power to the KDS and Boundary Substations.
- Corridor 2 Alternative 1 (Purple) – CSP Project Site via KDS to Boundary Substation (approximately 61km in length); and
- Corridor 2 Alternative 2 (Turquoise) – CSP Project Site via KDS to Boundary Substation (approximately 62km in length).

The proposed Power line Project will also include the establishment of all associated infrastructure as required (including but not limited to access roads, control rooms, security systems etc.).

A Site Locality Map for the Power line Project has been provided in Figure 1 below.

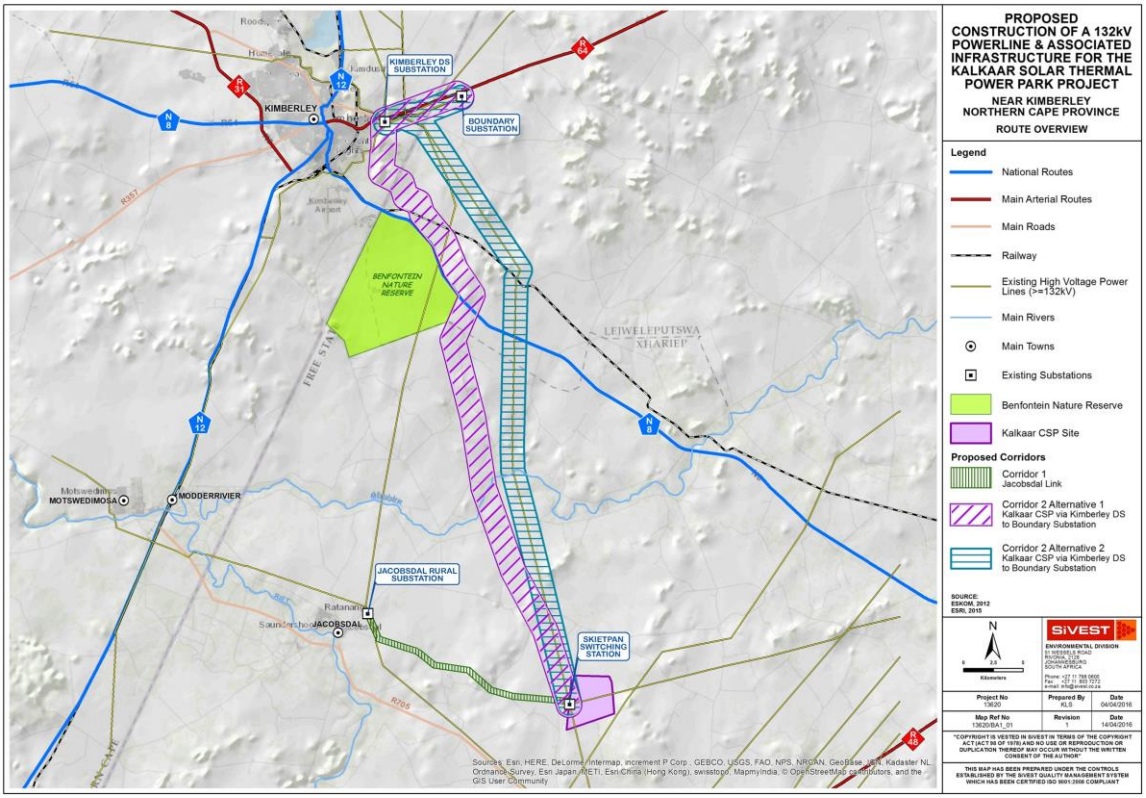

Figure 1: Site Locality Map

2. BRIEF DESCRIPTION OF THE RECEIVING ENVIRONMENT

The Power line Project study area is located primarily within the Free State Province, with a relatively small portion cited in the Northern Cape Province near Kimberley. The proposed Power line Project traverse the Lejweleputswa District Municipality in the Free State Province and the Frances Baard District Municipality in the Northern Cape Province. More specifically, the proposed Power line Project traverse into the Tokologo and Letsemeng Local Municipalities in the Free State Province and the Sol Plaatje Local Municipality in the Northern Cape Province.

Accessibility is mainly form the N8 highway to the south east of Kimberley (Figure 2). Secondary and tertiary roads can be used for access thereafter. The Modder River bisects both Corridor 2 alternatives.

Land uses for the Power line Project encompasses mainly mining, industrial (renewable energy generation facilities), agricultural activities and urban as well as residential areas (Figure 3).

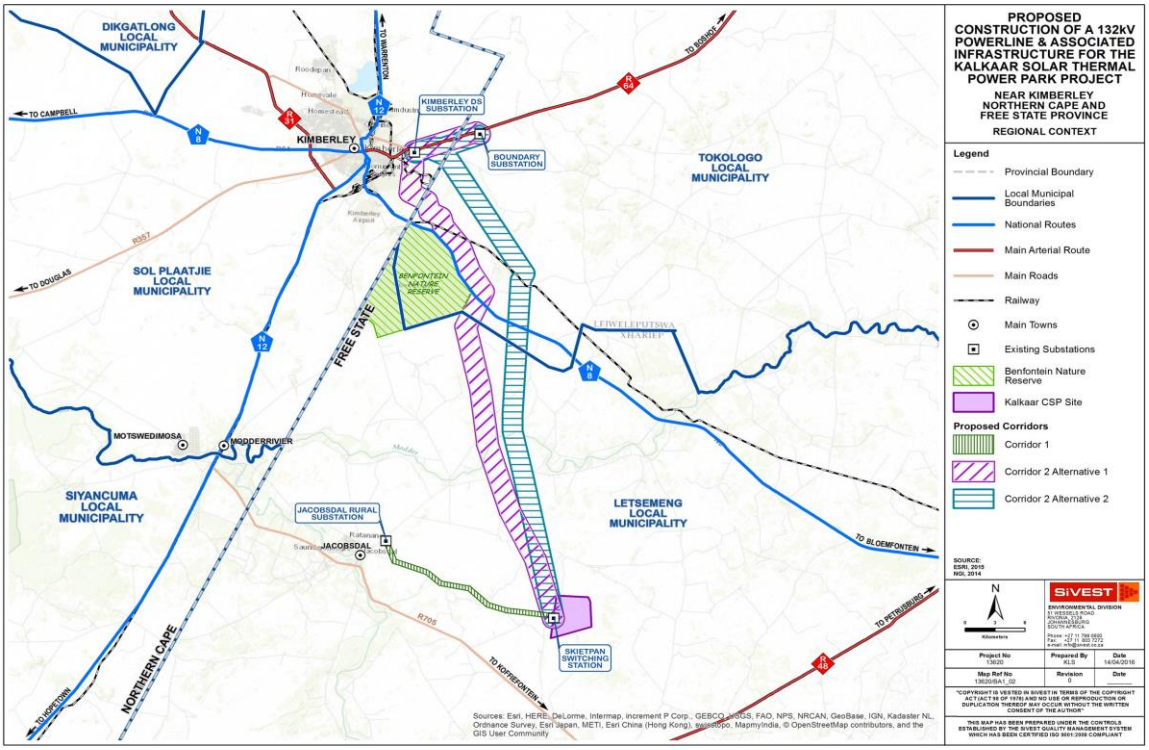

Figure 2: Regional Locality Map

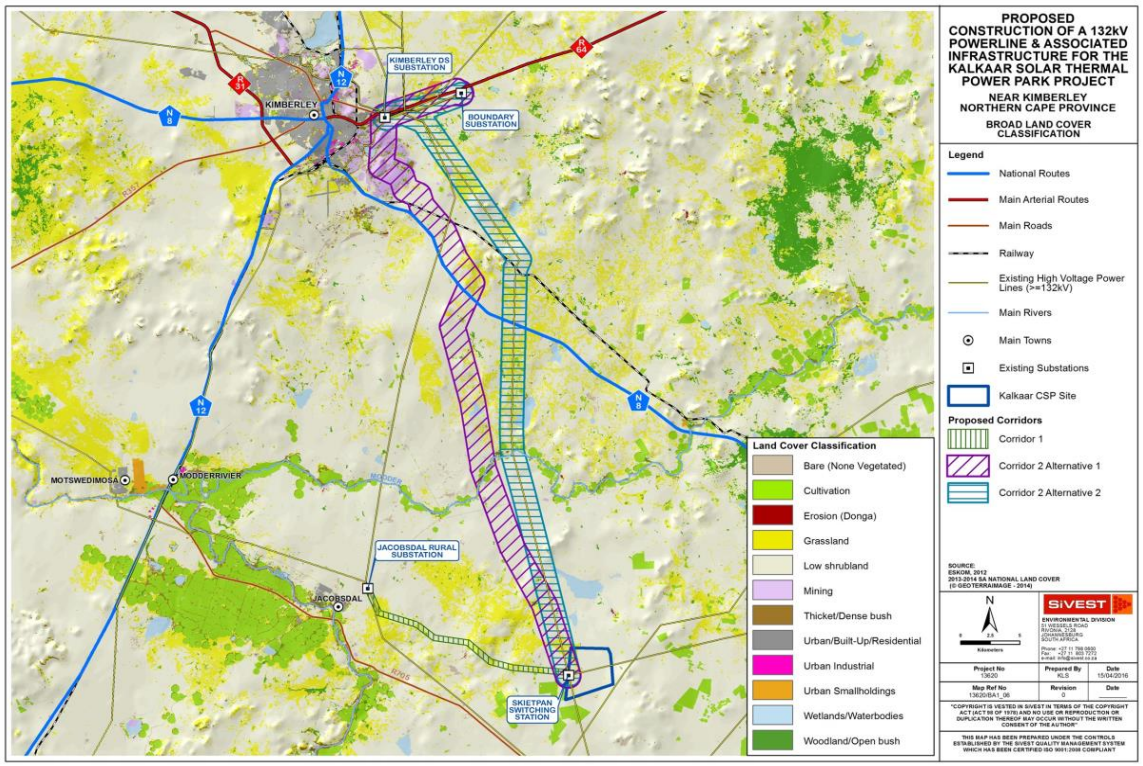

Figure 3: Land Use Map

3. EXPERTISE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

The Power line Project requires Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA). However, the provincial authorities will also be consulted. The two provincial authorities include the Northern Cape Provincial Government Department of Environment and Nature Conservation (NCPG DENC) as well as the Free State Department of Economic Development, Tourism and Environmental Affairs (FS DEDTEA). The Basic Assessment (BA) for the proposed Power line Project will be conducted in terms of the EIA Regulations promulgated in terms of Chapter 5 NEMA (National Environmental Management Act), which came into effect on the 8th of December 2014 as amended. In terms of these regulations, a Basic Assessment (BA) is required for the Power line Project. All relevant legislations and guidelines will be consulted during the BA process and will be complied with at all times.

SiVEST has considerable experience in the undertaking of BAs. Staff and specialists who have worked on this project and contributed to the compilation of this Final Basic Assessment Report (FBAR) are detailed in Table 1 below.

Table 1**:** Project Team

Name and Organisation	**Role**
Kelly Tucker – SiVEST	Project Director
Shaun Taylor – SiVEST	Environmental Assessment Practitioner (EAP) Public Participation Practitioner
Andrea Gibb – SiVEST	Visual
Kerry Schwartz – SiVEST	GIS and Mapping and Visual
Simon Todd – Simon Todd Consulting cc	Biodiversity
Chris Van Rooyen – Chris Van Rooyen Consulting cc	Avifauna
Scientific Aquatic Services (SAS) – Stephen Van Staden	Surface Water
Johann Lanz – Independent consultant	Agricultural Potential
Wouter Fourie – Professional Grave Solutions (Pty) Ltd	Heritage and Palaeontology
Elena Broughton, Helene Debbari – Urban-Econ Development Economists	Socio-economic
Riaan Barnard – Continuum	Public Participation Practitioner

As per the requirements of the EIA Regulations (2014), the details and level of expertise of the persons who prepared the FBAR are provided in Table 2 below.

Table 2: Expertise of the EAP

Environmental Project Manager	SiVEST (Pty) Ltd – Kelly Tucker
Contact Details	kellyt@sivest.co.za
Qualifications	B.Sc. Earth Sciences, B.Sc. Hons Geography and Environmental Management, M. Sc. Environmental Management, Diploma in Advanced Project Management
Expertise to carry out the BA & EMPr	Kelly is an Environmental Scientist with 10 years' experience across various sectors. She specialises in the overall management and compilation of Environmental Impact Assessments (EIAs) and Environmental Management Programmes (EMPs) primarily related to mining, energy generation and electrical transmission projects. She furthermore has been involved in undertaking and managing Public Participation Processes, Consultation, Environmental Scans and Fatal Flaw / Feasibility Studies and independent review of environmental projects. She has been involved in numerous projects to which these skills have been applied. **Environmental Impact Assessments and Environmental Management Programmes:** ▪ Colenso Power EIA and Mining Application for new Coal fired power station and Coal mine in Coleso near Ladysmith in KwaZulu Natal (2013 – current). ▪ Basic Assessment and Waste License Application for the proposed new Iveco manufacturing plant, Rosslyn, South Africa (2013 – current). Environmental Advisory Services for the Moloto Development Corridor (MDC) Project which is located between the City of Tshwane Local municipality in Gauteng Province and Groblersdal, Limpopo Province, traversing Mpumalanga Province. Project Leader, SMEC/VelaVKE, 2012 - Current ▪ Environmental Advisory Services for the Moloto Development Corridor (MDC) Project which is located between the City of Tshwane Local municipality in Gauteng Province and Groblersdal, Limpopo Province, traversing Mpumalanga Province. Project Leader, SMEC/VelaVKE, 2012 - Current ▪ 3 Year Appointment: Environmental Management Compliance for the Integrated Rapid Transit project for Polokwane Municipality. Project Leader, City of Polokwane, 2013 - Current ▪ EIA and EMPr for the proposed 150 MW Renosterberg Wind Energy Company (RWEC) Wind Farm and 75 MW Solar Photovoltaic (PV) Plant, Northern Cape Province. The EIA includes the scoping process and detailed environmental impact assessment. The project includes detailed specialist studies such as social, visual, noise, heritage and biophysical as well as a full public participation process. RWEC, 2012 -

	Current ▪ EIA and EMP for the new proposed Nsoko Integrated Sugar Mill and Ethanol Plant for Nsoko Msele, in Swaziland (2013). ▪ BA and EMP for the Proposed Bulk Storage Fuel Oil Tank installation at the Grootvlei Power Station, Mpumalanga Province (2011) ▪ BA for the Proposed development of a 19MW Photovoltaic Solar Power Plant near Kimberley, Northern Cape Province (2012); ▪ BA for the Proposed development of a 19MW Photovoltaic Solar Power Plant near Danielskuil, Northern Cape Province (2012); ▪ EIA for the proposed Wind Energy and PV Facilities for Mainstream Renewable Power near Loeriesfontein, Northern Cape (2011 – 2012). ▪ EIA for the proposed Wind Energy and PV Facilities for Mainstream Renewable Power near Prieska, Northern Cape (2011 – 2012). ▪ EIA for the proposed Wind Energy and PV Facilities for Mainstream Renewable Power near Noupoort, Northern Cape (2011 – 2012). ▪ EIA for the proposed CSP and PV Facilities for Mainstream Renewable Power near Kimberley, Northern Cape (2011).
Environmental Assessment Practitioner	SiVEST (Pty) Ltd – Shaun Taylor
Contact Details	shaunt@sivest.co.za
Qualifications	BA Geography and Environmental Science, B. Sc. Hons Geography and Environmental Studies, M. Sc.
Expertise to carry out the BA and EMPr	Shaun has 8 years' work experience and specialises in undertaking and managing Environmental Impact Assessments (EIAs), Basic Assessments (BAs) and Environmental Management Programmes (EMPrs), primarily related to energy generation (renewable) and linear electrical distribution projects. He also specialises in undertaking wetland and riparian assessments, by making use of field based methodologies/surveys and ArcGIS technology. He has experience in overseeing public participation and stakeholder engagement processes, and has been involved in environmental baseline assessments, fatal flaw / feasibility assessments and environmental negative mapping / sensitivity analyses. From a business and administrative side, Shaun is actively involved in maintaining good client relationships, mentoring junior staff and maintaining financial performance of the projects he leads. **Environmental Impact Assessments and Basic Assessments:** ▪ BA for the Proposed Installation of a 500m³ Bulk Storage Fuel Oil Tank at Grootvlei Power Station, Mpumalanga Province; ▪ BA for the Proposed development of a 19MW Photovoltaic Solar Power Plant near Kimberley, Northern Cape Province; ▪ BA for the Proposed development of a 19MW Photovoltaic Solar Power

	Plant near Danielskuil, Northern Cape Province; ▪ BA for the Frankfort Strengthening Project: 88kV Power Line from Heilbron (via Frankfort) to Villiers, Free State Province; ▪ BA for the Wilger 132kV Overhead Distribution Power Line, Northern Cape Province; ▪ BA for the Limestone 1 – 132kV Overhead Distribution Power Line, Northern Cape Province; ▪ BA for the Limestone 2 – 132kV Overhead Distribution Power Line, Northern Cape Province; ▪ BA for the Proposed Tweespruit to Welroux Power Line and Substations, Free State Province; ▪ BA for the Sir Lowry's Pass River Flood Alleviation Project, Western Cape Province; ▪ EIA for the Loeriesfontein 70MW Photovoltaic and 132kV Power Line, Northern Cape Province; ▪ EIA for the Mookodi Integration Project Environmental Impact Assessment; ▪ EIA for the Noupoort Wind Farm, Northern Cape Province; ▪ EIA for the Loeriesfontein Wind Farm and PV Plant, Northern Cape Province; ▪ EIA for the Renosterberg Wind Farm and PV Plant near De Aar, Northern Cape Province.

4. BASIC ASSESSMENT REPORT STRUCTURE

- **Section A** describes the activity and technical project components, including the proposed alternatives, location and physical size of the activity. This section also provides an activity motivation by describing the need and desirability for the Power line Project. Section A expands on the legal ramifications applicable to the project and describes relevant development strategies and guidelines. Finally the section explains the infrastructural requirements of the Power line Project such as waste, effluent, emission water use and energy efficiency.
- **Section B** provides a description of the site and region in which the proposed Power line Project is intended to be located. Although the chapter provides a broad overview of the region, it is also specific to the application.
- **Section C** describes the Public Participation Process (PPP) undertaken during the Basic Assessment and tables issues and concerns raised by Interested and Affected Parties (I&APs).
- **Section D** identifies potential issues associated with the Power line Project by outlining the impacts that may result from the planning, design, construction, operational, decommissioning and closure phases. Section D also provides a description of the mitigation and management measures for each potential impact. The section concludes with an Environmental Impact

Statement which summarises the impacts that the proposed Power line Project may have on the environment.

- **Section E** outlines the recommendations of the Environmental Assessment Practitioner (EAP).

The content requirements of a Basic Assessment Report (BAR) as detailed in Appendix 1 of the EIA Regulations, 2014, as well as details of the section within this report that fulfils these requirements, are shown in **Table 3** below.

Table 3: Content Requirements for a BAR

Content Requirements	Applicable Section
(a) details of- (i) the EAP who prepared the report; and	Section 3
(ii) the expertise of the EAP, including a curriculum vitae;	Section 3 Appendix H
(b) the location of the activity, including- (i) the 21 digit Surveyor General code of each cadastral land parcel;	Section B
(ii) where available, the physical address and farm name;	Section B
(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	N/A
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-	Executive Summary Section 1
(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	Section A(2)(a)
(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	N/A
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and applied for; and	Section A(1)(b)
(ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Section A(1)(a)
(e) a description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section A(11)
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section A(10)
(g) a motivation for the preferred site, activity and technology alternative;	Section D(2)
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including:	Section D(2)

Content Requirements	Applicable Section
(i) details of all the alternatives considered;	Section (A)(2)(a)
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section (C) Appendix E
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Section C(3) Appendix E(3)
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section D(1) Appendix F
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section D(1) Appendix F
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Appendix F
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section D(1) Appendix F
(viii) the possible mitigation measures that could be applied and level of residual risk;	Section D(1) Section E Appendix F
(ix) the outcome of the site selection matrix;	Section D(2)
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	N/A
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section D(2) Section E
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section D(1) Appendix F
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring;	Appendix F

Content Requirements	Applicable Section
(v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Appendix F
(l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment;	Section E
(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	Section A(7) Appendix A Appendix J2
(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section D(1)
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	Section E
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section E
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 5
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section E
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Section E
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Appendix H
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning	N/A

Content Requirements	Applicable Section
management of negative environmental impacts;	
(t) any specific information that may be required by the competent authority; and	Executive Summary
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	All requirements in terms of section 24(4)(a) and (b) of the Act have been met in this report.

5. ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations have been taken into account when compiling this FBAR:

- It is assumed that all technical information provided by SolarReserve is technically acceptable and accurate;
- The proposed Power line Project is still in the planning stages and therefore some of the specific technical details are not available;
- The following assumptions, uncertainties and gaps in knowledge were encountered by various specialists:
    - **Biodiversity**
        - Ideally, a site should be visited several times during different seasons to ensure that the full complement of plant and animal species present are captured. However, this is rarely possible due to time and cost constraints and therefore, the representability of the species sampled at the time of the site visit should be critically evaluated. Although not all parts of the affected area had been sampled in the past, large sections of the power line corridors fall within areas that have been sampled multiple times, with the result that good temporal distribution of sampling effort on these sections has been achieved and the large amount of work done in the areas means that the ecological patterns of the area are well known to the consultant and the uncertainty associated with the field study is considered very low. As a result, the timing and duration of the site visit is not seen to pose a constraint on the results of the study and it is unlikely that any significant features or species would be revealed by additional site visits.
        - The lists of amphibians, reptiles and mammals for the site are based on those observed at the site and on adjacent properties as well as those likely to occur in the area based on their distribution and habitat preferences. In order to counter the likelihood that the area has not been well sampled in the past and in order ensure a conservative approach, the species lists derived for the site were obtained from an area significantly larger than the study area and are likely to include a much wider array of species than actually occur at the site. This is a cautious and conservative approach which takes the study limitations into account.
    - **Avifauna**
        - Although a total of 118 SABAP2 data cards have been completed to date for the area indicated in Figure 2, which should provide a reasonably accurate snapshot

of the avifauna in the study area, it is important to note that the southern block of nine pentads only have a total of 18 completed full protocol cards. As a result, the reporting rates of species may not be an accurate reflection of the true densities within all the pentads.

- The author has worked extensively on avifaunal impact assessments in the Kimberley area in the past 20 years. Personal observations and past experience have therefore also been used to supplement the data that is available from SABAP2, and has been used extensively in identifying likely bird/habitat associations.
- Predictions in this study are based on experience of these and similar species in different parts of South Africa. Bird behaviour can never be entirely reduced to formulas that will hold true under all circumstances; therefore, professional judgment played an important role in this assessment. It should also be noted that the impact of power lines on birds has been well researched with a robust body of published research stretching over thirty years.
- The focus of the study is on the potential impact on Red Data species.

- **Wetlands**
  - The wetland (including all freshwater resources) assessment is confined to the proposed Power line Project assessment corridors and does not include the neighbouring and adjacent properties, which were only considered as part of the desktop assessment;
  - The freshwater resource delineations as presented in this report are regarded as a best estimate of the freshwater resource boundaries based on the site conditions present at the time of assessment. Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required the freshwater resource zones will need to be surveyed and pegged according to surveying principles;
  - Limitations in the accuracy of the delineation in some areas due to anthropogenic disturbances such as the presence of roads and agricultural activities are deemed possible and therefore the delineations presented in this report are regarded as a best estimate of the riparian habitat boundaries based on site conditions present at the time of the assessment. The presented delineations are however considered to be accurate;
  - Due to the landscape in some areas being rugged and very undeveloped and with many freshwater resources occurring on extensive private properties with limited access, some freshwater resources were inaccessible. Therefore, verification points for freshwater resources were located at points as close to the freshwater resource to be verified as possible and where necessary the conditions at the exact point required were inferred or extrapolated;
  - Riparian and terrestrial zones create transitional areas where an ecotone is formed as vegetation species change from terrestrial to wetland species. Within this transition zone some variation of opinion on the freshwater resource

boundary may occur however if the DWAF 2008 method is followed, all assessors should get largely similar results; and

- With ecology being dynamic and complex, certain aspects (some of which may be important) may have been overlooked. It is, however, expected that the proposed Power line Project activities have been accurately assessed and considered, based on the field observations undertaken and the consideration of existing studies and monitoring data in terms of freshwater ecology.

- **Soils and Agricultural Potential**
  - The land type data used for this assessment is considered more than adequate for the purposes of this study and is therefore not seen as a limitation. A more detailed soil investigation is not considered likely to have added anything significant to the assessment of agricultural soil suitability for the purposes of determining the impact of the facility on agricultural resources and productivity.
  - The assessment rating of impacts is not an absolute measure. It is based on the subjective considerations and experience of the specialist, but is done with due regard and as accurately as possible within these constraints.
  - There are no other specific constraints, uncertainties and gaps in knowledge for this study.
- **Heritage**
  - Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.
  - Such observed or located heritage features and/or objects may not be disturbed or removed in any way, until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply.
- **Palaeontology**
  - The accuracy and reliability of desktop Palaeontological Impact Assessments, as components of heritage impact assessments, are normally limited by the following restrictions:
  - Old fossil databases that have not been kept up-to-date or are not computerised. These databases do not always include relevant locality or geological information. South Africa has a limited number of professional palaeontologists that carry out fieldwork and most development study areas have never been surveyed by a palaeontologist
  - The accuracy of geological maps where information may be based solely on aerial photographs and small areas of significant geology have been ignored. The

sheet explanations for geological maps are inadequate and little to no attention is paid to palaeontological material.

- Impact studies and other reports (e.g. of commercial mining companies) - is not readily available for desktop studies.
- Large areas of South Africa have not been studied palaeontologically. Fossil data collected from different areas but in similar Assemblage Zones might however provide insight on the possible occurrence of fossils in an unexplored area. Desktop studies of this nature therefore usually assume the presence of unexposed fossil heritage within study areas of similar geological formations. Where considerable exposures of bedrocks or potentially fossiliferous superficial sediments are present in the study area, the reliability of a Palaeontological Impact Assessment may be significantly improved through field-survey by a professional palaeontologist.

o **Visual**

- The identification of visual receptors has been based on a combination of desktop assessment as well as field-based observation. Due to the extensive area covered by the proposed Power line Project corridors and the limited access to properties within the study area, not all receptor locations were visited during the fieldwork. As such, a number of broad assumptions have been made in terms of the visual intrusion of the proposed Power line Project from each receptor location and the sensitivity of the receptor to the proposed Power line Project. It should be noted that not all receptor locations would necessarily perceive the proposed Power line Project in a negative way. This is usually dependent on the type of facility and standard use, which could not be established at a desktop level. Visual perception may also depend on several factors including the age, gender, activity preferences and traditions of the viewer (Barthwal, 2002). Homesteads / farmsteads in a largely natural setting were assumed to be more sensitive from a visual perspective than those in a more urbanised / industrial settings and were therefore included as potentially sensitive visual receptor locations that may be visually exposed to the proposed Power line Project.
- A matrix has been developed to assist with the assessment of the potential visual impact at each sensitive receptor location. The limitations of quantitatively assessing a largely subjective or qualitative type of impact should be noted. The matrix is relatively simplistic in considering five main parameters relating to visual impact, but provides a reasonably accurate indicative assessment of the degree of visual impact likely to be exerted on each sensitive receptor location by the proposed Power line Project. The matrix should therefore be seen as a representation of the likely visual impact at each sensitive receptor location. An assessment of the visual impact from each potentially sensitive location is beyond the scope of this Visual Impact Assessment that is being undertaken as part of the Basic Assessment study.
- It is important to note that Benfontein Nature Reserve could not be accessed during the field investigation. As a result, the visual impact of the proposed Power

line Project on Benfontein Nature Reserve was investigated via desktop means, making use of Google Earth.

- Although most human habitation occurs in areas surrounding the urban nodes of Kimberley and Jacobsdal and there are a high concentration of potential receptors within these areas, receptors in Kimberley and Jacobsdal are not regarded as sensitive to the visual impact of the proposed Power line Project due to the existing visual degradation within these areas. The introduction of a new power line in these settings would therefore be less intrusive considering the presence of existing infrastructure.
- Roads that are primarily used by local farmers are not regarded as visually sensitive receptor locations as they do not form part of any scenic tourist routes, and are unlikely to be valued or utilised specifically for their scenic or tourism potential.
- The assessment of receptor-based impacts has been based on the power line corridors approved by the proponent. It is recognised however that the exact route of the power line within the corridor has not been determined, and depending on this the proposed Power line Project may result in greater or lesser visual impacts on receptor locations.
- Given the nature of the receiving environment and the height of the proposed Power line Project towers, the study area for this visual assessment is assumed to encompass a zone of 5km from the outer boundary of the corridor alternatives. This area was assigned as distance is a critical factor when assessing visual impacts and beyond 5km the visual impact associated with the proposed Power line Project would be significantly diminished and thus the need to assess the impact on potential receptors beyond this distance would not be warranted.
- Viewsheds have not been generated for the proposed Power line Project due to the complexity associated with generating viewsheds off multiple points within the context of a corridor. In addition, detailed digital data was not available and the topography within the study area is relatively flat. Generating viewsheds from coarse-grained DTMs would only take the large scale topographical variations into account and not minor topographical features, vegetative screening, or man-made structures which are important factors influencing the severity of visual impacts in this context. Distance banding from each potentially sensitive receptor location has been used to gain an understanding of the level of visual exposure associated with the proposed Power line Project alignment.
- Visualisation modelling or three dimensional simulations of the proposed Power line Project were not undertaken for the proposed Power line Project due to budget limitations. Should the need for visualisation modelling be proven by stakeholder / I&AP feedback, then this will be able to be incorporated into this assessment.
- Undertaking a perception survey falls outside of the scope of this Basic VIA.
- Operational and security lighting will most likely be required for the proposed control room and substations at night. At the time of undertaking the visual study no information was available regarding the type and intensity of lighting required

and therefore the potential impact of the control room and substation lighting at night has not been assessed. General measures to mitigate the impact of additional light sources on the ambiance of the nightscape have been provided in the Visual Assessment Report (Appendix D6).

- Most rainfall within the area occurs from November to April during the summer months. The fieldwork was undertaken in April 2016 toward the end of the summer season. As such, the surrounding vegetation can be expected to provide the maximum potential screening. During winter months, the visual impact of the proposed Power line Project may therefore be greater, particularly from farmhouses surrounded by tall deciduous trees.
- General impacts and measures to mitigate the impact of associated infrastructure which would include, the substations, cable trenches, access roads, lighting/lightning masts and a control room have been provided.

o **Socio-Economic**

- It is assumed that the motivation for, and the ensuing planning and feasibility studies for the project were done with integrity, and that the information provided to date by the project owner and the independent environmental assessment practitioner is accurate.
- It is assumed that the strategic importance of promoting renewable energy and improving electricity distribution is supported by the national and provincial energy policies.
- The demographic data used in the study is largely based on the results of the 2011 Census and represents the latest demographic data for the study areas under analysis. Where possible, reference is made to the latest demographic data contained in local Integrated Development Plans and other documents. While the Census 2011 data provide useful information, it should be noted that this data may be out of date and may no longer reflect the current socio-economic situation.
- The study was done with the information available to the specialist within the time-frame and budget specified. The sources consulted are not exhaustive and additional information, which might strengthen the case for or against the project, might exist.
- The review of power line corridor options in this report only considered the social and economic acceptability of such alternatives and did not take into account the technical feasibility or other specialist impact areas.
- With regard to the in-person interviews undertaken the following assumptions were made:
- Questions asked during the interviews were answered accurately and truthfully.
- That the attitudes of the respondents towards the Power line Project will remain reasonably stable over the short- to medium-term.
- The assumption is that no significant concern exists for those landowners who could not be contacted or who refused/declined consultation. However, all effort was made to determine the current level of economic activity taking place on the

relevant farm portions to aid in assessment of any potential impact and its extent on the specific landowner.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? **YES√**
If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

SolarReserve South Africa (Pty) Ltd ('**SolarReserve**') has appointed SiVEST Environmental Division as the independent Environmental Assessment Practitioner ('EAP') to undertake the Basic Assessment process for the proposed 132kV Power Line and associated infrastructure (the '**Power line Project**') for the evacuation of power from for the proposed Kalkaar Concentrating Solar Thermal Power Project (the "**CSP Project**") on the Remainder of Portion 1 of the Farm Kalkaar 389 near Jacobsdal in the Free State Province (the **CSP Project Site'**).

On the 3rd of September 2015, SolarReserve received an environmental authorisation (EA – DEA Ref: 14/12/16/3/3/2/660; for the CSP Project.

The initial Draft Basic Assessment Report (DBAR) was compiled and released for public review and comment from the 24th of June 2016 to the 25th of July 2016. During this period, the South African Heritage Resources Agency (SAHRA) submitted an interim comment on the 26th of July 2016 recommending that the Heritage Impact Assessment (HIA) be updated and a field-based Paleaontological Impact Assessment (PIA) be undertaken. The SAHRA requested that these reports be included in the Final BAR. In order to undertake and include the updated findings of the PIA and updated HIA, a request for extension was submitted to the National Department of Environmental Affairs (DEA). On the 24th of August 2016, the DEA granted an extension of 230 days from the date that the application was submitted (25th May 2016). As such, the DBAR was updated with the information obtained from the PIA and updated HIA and will be re-released to all Interest and Affected Parties (I&APs) for review and comment.

The additional public review and comment period of an additional 30 days will take place from the 9th of December 2016 until the 30th of of January 2016 (including December shut-down period from the 14th of December 2016 to the 5th of January 2017).

The preferred evacuation point for the electricity generated by CSP Project is from the Jacobsdal Substation via the Project Substation (which is situated on the CSP Project Site) and terminating at the Kimberley Distribution Substation ('**KDS**') to the Boundary Substation near Kimberley. As such, in order to evacuate the electricity generated by the CSP Project, this environmental authorisation process was undertaken to assess the environmental feasibility of the proposed Power line Project corridors to the aforementioned interconnection point. Importantly, it must be noted that the grid connection solution proposed for the CSP Project will only be finalised by Eskom at the Budget Quote stage of Eskom's Load and Demand Network Integration Studies. The preliminary Load and Demand Network Integration Studies have however shown that Eskom may require that the CSP Project to evacuate power not only via the KDS to Boundary Substation from the Jacobsdal Substation.

The Power line Project will comprise of the following:

- Construction of Tern power lines or equivalent of a 132kV power line from the proposed CSP Project to the proposed Jacobsdal, Kimberley and Boundary substations and all the necessary expansion and changes to Eskom infrastructure at the substations.
- The grid connections that will be assessed include the following:
    - Jacobsdal Link = approximately 19km in length;
    - CSP Project via Kimberley DS to Boundary Substation Alternative 1 = approximately 61km in length; and
    - CSP Project via Kimberley DS to Boundary Substation Alternative 2 = approximately 62km in length.
- Install 48 core optical ground wire (OPGW) on the power line.
- Build 2-3 bay substations next to the approved substations on the CSP Project Site. Proposed substations will be approximately 100m x 100m – one for Eskom and one for the Project site.
- Inclusive of all cable trenches.
- Install 10 x 25m lighting/lightning masts.
- Building of an access road to the substation.
- Building of a standard control room (5.5m x 12m) with top entry and cable racks. This will include a sewage system, air-conditioning and energy efficient lighting.
- Installation of a security fence with entrance gates.
- 1 x 132kV line bay and 1 x 132kV metering bay at each connection substation.
- Installation of a required Control Plant, AC/DC, Metering, SCADA and Telecoms.
- V drain extension of substation for drainage purposes.
- And or all extensions required (132kV yard, fencing etc.) of the connecting Eskom Assets i.e. Kimberley DS / Boundary / Jacobsdal Substation.

The proposed Power line Project will be an Eskom owned asset, and only constructed by the Applicant under a self-build agreement with Eskom.

The substations will be adjacent to the on-site CSP Project substations of the approved layout of the CSP Project, authorised under the EA (DEA Ref: 14/12/16/3/3/2/660). The footprint of the proposed substations would be approximately 100mx100mm respectively.

Three power line corridors were assessed. Two of the three corridors are up to 2km (1km either side of the centre line) wide originating from the CSP Project Site routing via the KDS to the Boundary Substation. The aforementioned two corridors will serve as alternatives to each other for the comparative assessment. An additional corridor of 500m in width (250m either side of the centre line) is required for the CSP Project interconnection solution, from the Jacobsdal Substation to the CSP Project Site before evacuating the power to the Boundary-Kimberley substations. This route is not subject to an alternative assessment, but environmental considerations will be applied to determine the alignment best suited to the receiving environment within this corridor. As such the preferred power line route is Corridor 1 (Green) in combination with Corridor 2 Alternative 2 (Turquoise).
Note that Eskom dictates the size of the servitude and there is a possibility that larger servitudes will be required. However, at this stage, it is anticipated that the registered servitude width will be 31 metres (15.5 metres either side of the centre line) or unless otherwise required by Eskom.

The three power line corridors include the following:

- Corridor 1 (Green) – Jacobsdal Substation – CSP Project Site (approximately 19km in length);
  This corridor is needed to complete the interconnection solution using Corridor 2 to evacuate the power to the KDS and Boundary Substations.
- Corridor 2 Alternative 1 (Purple) – CSP Project Site via KDS to Boundary Substation (approximately 61km in length); and
- Corridor 2 Alternative 2 (Turquoise) – CSP Project Site via KDS to Boundary Substation (approximately 62km in length).

The proposed Power line Project will also include the establishment of all associated infrastructure as required (including but not limited to access roads, control rooms, security systems etc.).

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 983, 984 and 985	Description of project activity
GN 983, Activity 11 Item (i) The development of facilities or infrastructure for the transmission and distribution of electricity – (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;	The proposed Power line will be 132kV in capacity and will be located outside an urban area.
GN 983, Activity 12 Item (xii); (a) and (c) The development of: (xii) infrastructures or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32m of a watercourse, measured from the edge of a watercourse	Due to the number and width of the watercourses (including drainage lines, wetlands and riparian zones), the power line structures and associated infrastructure will need to be placed within watercourses as well as within 32 meters of the edge of the watercourses.
GN 983, Activity 19 Item (i) The development of infilling or depositing of any material of more than 5m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, grit, pebbles or rock of more than 5m³ from - : (i) a watercourse;	The proposed power line will need to be constructed through a number of watercourses which will involve the removal and infill of material that will be more than 5m³ from the respective affected watercourses.
GN 985 Activity 4 Item (a) (ii) (gg); (iii); (aa) & (bb) The development of a road wider than 4 metres with a reserve less than 13,5 metres a) In Free State and Northern Cape provinces: (ii) Outside urban areas, in (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (iii) In urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose;	Access roads will be in excess of 4 metres wide with a reserve less than 13,5 metres and they will be located directly adjacent to and within 5km from the Benfontein Nature Reserve that falls within the Free State province. Within urban areas of the Northern Cape Province the proposed access road will be located within Regional Open Space identified in the Sol Plaatje SDF.

GN 985 Activity 12 Item (d) (iv) The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes with a maintenance management plan. (d) In Northern Cape: iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned as open space, conservation or had equivalent zoning.	The clearance of an area of 300 square metres or more of indigenous vegetation within areas designated as "Regional Open Space" identified in the Sol Plaatje SDF for construction of the Power line Project.
GN 985 Activity 14 Item (xii) (a) (c); (a) (ii) (hh); (iii) (aa) (bb) The development of – (xii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs – (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. (a) In Free State and Northern Cape provinces: ii. Outside urban areas, in: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (iii) In urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose;	Due to the number and width of the watercourses (including drainage lines, wetlands and riparian zones), the proposed construction of the Power line Project will exceed 10 square metres and will be located be within 32 metres of the identified watercourses. Within the Free State province the development will occur directly adjacent to and within 5km from the Benfontein Nature Reserve and within the urban areas of the Northern Cape Province the proposed access road will be located within Regional Open Space identified in the Sol Plaatje SDF.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and

(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/a	N/a	N/a
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/a	N/a	N/a
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/a	N/a	N/a

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Corridor 1 Jacobsdal Link (Green – Preferred)		
• Starting point of the activity	S29° 11' 1.106"	E24° 58' 26.927"
• Middle/Additional point of the activity	S29° 9' 33.123"	E24° 52' 52.899"
• End point of the activity	S29° 7' 0.833"	E24° 47' 58.023"
Corridor 2 Alternative 1 via Kimberley DS to Boundary Substation (Purple)		
• Starting point of the activity	S29° 11' 1.106"	E24° 58' 26.927"
• Middle/Additional point of the activity	S28° 55' 8.731"	E24° 52' 34.493"
• End point of the activity	S28° 43' 25.010"	E24° 52' 52.058"
Corridor 2 Alternative 2 via Kimberley DS to Boundary Substation (Turquoise – Preferred)		
• Starting point of the activity	S29° 11' 1.106"	E24° 58' 26.927"

• Middle/Additional point of the activity	S28° 54' 34.566"	E24° 55' 35.785"
• End point of the activity	S28° 43' 25.010"	E24° 52' 52.058"

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

Full coordinate spreadsheets, including coordinates every 250m and at bend points, are included in Appendix J2.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The “no-go” alternative assumes that the proposed activity does not go-ahead, implying a continuation

of the current situation or the status quo. In the case of this project, the no-go alternative would result in no power line being constructed, and it would therefore not be possible to evacuate the electricity generated at the CSP Project to the national grid. South Africa is under immense pressure to provide electricity generating capacity in order to reduce the current electricity demand in the country. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Not exporting the electricity generated by the CSP Project would be detrimental to the mandate that the National Government has set to promote the implementation of renewable energy.

In general, the South African economy has shown a trend in significant and rapid growth over the past few years, placing tremendous strain on existing infrastructure and service delivery, as these are not capable of complying or supporting this growth trend. In order for the National Government to create an economic climate which is suitable to their growth targets, and will accommodate the existing economic growth and social development, it was found essential that basic services such as electricity provision be enhanced as a matter of urgency.

Power demand in South Africa is growing at a rate whereby power cuts due to shortages are anticipated within the next three years. Demand for electricity rose by 5.4% 2010 in comparison to 2009 with an annual forecast growth of 1.3%. In order to meet these demanding requirements, which is a clear indication of the country's future growth prospects, South Africa must facilitate the rapid build out of capacity in order not to limit the countries potential. The Power line Project will help facilitate this increase in supply capacity to the national grid.

The current infrastructure and generation capacity of South Africa's power utility, Eskom, is unable to accommodate a rapid growing economy in which reliable electricity provision is essential. South Africa has experienced electricity blackouts during 2008 and 2009 which dampened investor confidence in South Africa as an investor destination and also hampered industrial development. Ageing power plants and the prevalence of unplanned maintenance to these plants were major contributors to the problem, which caused erratic and unreliable electricity provision to major industries as well as households throughout South Africa.

In order to manage this supply versus demand gap, South Africa has embarked on an infrastructure growth program supported by various government initiatives, including but not limited to, the National Development Plan (NDP), the Presidential Infrastructure Coordinating Commission (PICC), the Department of Energy's Integrated Resource Plan and National Strategy for Sustainable Development, the National Climate Change Response White Paper, the Presidency of the Republic of South Africa Medium-Term Framework and National Treasury's Carbon Tax Policy Paper. These efforts are in support of, among other sectors, the ever increasing, growing demand for energy, to find solutions for the current electricity shortages, as well as the need to find more sustainable and environmentally friendly energy resources in support of Governments programs.

This being said it needs to be remembered that the bulk of South Africa's power is generated by coal fired power stations and a number of coal fired power stations are being planned to meet the ever increasing demand for power. This makes coal South Africa's primary energy resource. Beyond the fact that coal is not a renewable resource the burning of coal for the generation of electricity also has a very negative impact on the environment from the point of view that vast amounts of CO2 is being released into the atmosphere and contributing to the ever growing concern of the greenhouse effect

and global warming.

The CSP Project was designed to meet the increasing demand for clean, renewable electrical power in South Africa. The multiple benefits associated with developing renewable energy infrastructure have been recognized by both local regional and National policy-makers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national energy security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions at the same time creating a large number of jobs within a new industry at the same time raising the core knowledge bases of the country.

In addition, the Kyoto Protocol, as a result of concern about climate change, establishes the obligation of reducing green-house effect gas emissions by industrialised countries including South Africa. Energy efficiency and the use of renewable energy sources are presented as sustainable solutions leading to a reduction in CO2 emissions into the atmosphere. In the Integrated Resource Plan for Electricity 2010-2030, South Africa has committed to a target of 17.8 GW of primary energy consumption should come from renewable sources by 2030. In addition to these environmental and legislative reasons, the fact is that renewable energy sources mean a reduction in the country's energy dependence on carbon fuels, increasing the safety and quality of the energy supply and providing a valuable source of employment.

South Africa as a signatory to the United Nations Framework Convention on Climate Change committed to the stabilization of atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. With this commitment in place and the ever growing need for power, South Africa is urged to expand its generation capacity but through the development and utilisation of alternative resources, which are renewable and more environmentally sustainable.
South Africa's climate is ideal with regards to solar resources, with a broad time band of sunlight and a high level of energy delivered by area of land. Utilising this solar resource in combination with molten salt storage technology makes it an ideal system in the generation of renewable energy. As the additional demand for power continues to grow in other regions as older technology fossil fuel plants reach the end of their shelf lives, the project will contribute much needed on-peak power to the electrical grid serving the region.

Over and above the aforementioned, the South African Government adopted the National Infrastructure Plan in 2012 which is aimed at transforming the South African economic landscape as well as to provide the necessary aid regarding employment creation and delivery of basic services. The Plan is designed to integrate and coordinate the long-term infrastructure build which is done via the Presidential Infrastructure Coordination Commission (PICC). A need assessment undertaken on behalf of this plan has led to the identification of 18 Strategic Integrated Project (SIP) – SIP 8 – 10 relates to energy generation, green energy generation and the transmission and distribution of electricity to all. With respect to SIP 10, the National Government aims to expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity. The project forms part of the National Government's endeavours to provide infrastructure readily for services deliver.

The Infrastructure Development Act, Number 23 of 2014 was promulgated on 2 June 2014 in order to "provide for the facilitation and co-ordination of public infrastructure development which is of significant economic or social importance to the Republic; to ensure that infrastructure development in the Republic is given priority in planning, approval and implementation; to ensure that the development goals of the state are promoted through infrastructure development; to improve the management of such infrastructure during all life-cycle phases, including planning, approval, implementation and operations; and to provide for matters incidental thereto". Electricity generation and provision is regarded under strategic integrated projects and conspired a national priority in terms of Annexure 1 of the Act.

The proposed Power line Project has been designed to assist Government in meeting the increasing demand for clean, renewable energy in South Africa by providing the necessary interconnection infrastructure to transmit the power from the point of supply to point of demand.

As such, the CSP Project forms part of the country's strategies to meet future energy consumption requirements through the use of renewable energy, as the power generated by the facility will be evacuated to the national grid.

Should the proposed Power line Project not proceed, the multiple benefits associated with developing renewable energy infrastructure as well as infrastructure to strengthen the national grid that have been recognized by both local regional and National policy-makers, will not be realised.

The proposed Power line Project will be an Eskom owned asset, and only constructed by the Applicant under a self-build agreement with Eskom. Should the proposed Power line Project not proceed, this infrastructure will not be constructed and Eskom will not own this infrastructure.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative 1[1]	N/a – Linear activity
Alternative 2	N/a – Linear activity

or, for linear activities:

Alternative:	**Length of the activity:**
Corridor 1 Jacobsdal Link (Green – Preferred)	Approx. 19km
Corridor 2 Alternative 1 CSP Project Site via	Approx. 61km

Kimberley DS to Boundary Substation (Purple) **Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)**	Approx. 62km

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Corridor 1 Jacobsdal Link (Green – Preferred)	31m servitude
Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple)	31m servitude
Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)	31m servitude

Please note that Eskom dictates the size of the servitude and there is a possibility that larger servitudes will be required. However, at this stage, it is anticipated that the registered servitude width will be 31 metres (15.5 metres either side of the centre line) or unless otherwise required by Eskom.

4. SITE ACCESS

Does ready access to the site exist?	YES√ Existing roads to be used.
If NO, what is the distance over which a new access road will be built	N/A

Describe the type of access road planned:

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;

- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

An A3 locality map is included in Appendix A and J2.

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

An A3 layout/route plan map is included in Appendix A and J2.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

An A3 sensitivity map is included in Appendix A and J2.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Site photographs are included in Appendix B.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Facility Illustrations are included in Appendix C.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	**YES√**		Please explain
The project in question is for the proposed construction of a 132kV power line and associated infrastructure, which will consist of servitude within the properties it will be traversing.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	**YES√**		Please explain
The Free State Province Spatial Development Framework's (FSPSDF), 2014 energy objectives are derived from the NDP's energy directives and include, among others, promotion of the development of renewable energy supply schemes. The Provincial Government acknowledges the significant potential of the Province to harvest renewable energy sources, and specifically solar energy. The Xariep region has specifically been singled out as the area with the highest solar energy resource in the country, following that of Upington. This makes it "an ideal location for the development of concentrated solar power (CSP) and photovoltaic solar power (PV) generation technologies" (Dennis Moss Partnership, 2013). The Northern Cape Provincial Spatial Development Framework (NC PSDF) of 2012 recognises the potential of renewable energy sources in not only securing electricity and addressing the climate change issues, but also in unlocking the economic potential of the Province. The area, where the power line corridor alternatives are to be located has been demarcated as industrial area in the PSDF with numerous high voltage and medium voltage power lines envisaged to traverse the locality in			

question. Therefore, from the provincial spatial perspective, the project does not conflict with the spatial vision and is in direct alignment with the infrastructure envisaged to be developed in the area.			
(b) Urban edge / Edge of Built environment for the area	**YES✓**		Please explain
The proposed Power line Project is mainly located over land zoned as agriculture. However, near Kimberley, the proposed Power line Project routes via the KDS to the Boundary Substation. For this relatively small portion of the greater power line route, the proposed Power line Project will be within the urban edge of Kimberley.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	**YES✓**		Please explain
From a local perspective, the Letsemeng LM, where the biggest portion of the proposed Power line Project corridor alternatives falls into, has demarcated the area as environmentally sensitive area with pockets suitable for commercial cultivation and general agriculture. None of these activities are envisaged to be compromised by the establishment of power lines, suggesting no red flag areas from the Letsemeng SDF 2009/2010 perspective. The area where the proposed corridor alternatives are to traverse the Tokologo LM, is demarcated for agricultural use (CNdV Africa Planning and Design, 2012). The Tokologo SDF states that any non-agricultural development in this area should be subject to appropriate environmental offsets, meaning that non-agricultural projects would still be permitted in the area under certain conditions. Importantly, the Power line Project will not affect the land use and if a power line traversed agricultural activities, the land would not be sterilised from agricultural use and activities would still be continued. As such, it can be argued that the project does not contradict the spatial vision of the Tokologo LM. From the Sol Plaatje LM perspective (Africon/Koplan, 2008), the portion of the power line corridor alternatives that fall within the municipality will traverse land demarcated as mining area. A Green Area has also been included in this portion and one of the Corridor alternatives may traverse it, which means that care will need to be taken when choosing the route to avoid this portion. Aside from this, no red flag areas or possible contradictions with the spatial vision of the municipality could be identified.			
(d) Approved Structure Plan of the Municipality			Please explain
The proposed Power line Project is for service infrastructure and therefore will not have any bearing on the Municipalities' Structure Plans.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	**YES✓**		Please explain
There is no current version of an EMF at a District and Local Municipal level for the proposed study area. Should one become available, this will be taken into account before finalisation of the BA for the proposed Power line Project.			

(f) Any other Plans (e.g. Guide Plan)	**YES✓**		Please explain
The Frances Baard District Municipality GDS 2014/15 acknowledges that the district is not immune to challenges of poverty, unemployment, and income inequality; and therefore, recognises the district's moral obligation to address these challenges. The overarching direction of the district GDS points to a vision of economic, infrastructure and social development, safety and security, institutional development and poverty alleviation. The proposed Power line Project will contribute to infrastructure development, which will in turn support economic growth and development in the region.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed Power line Project in line with the projects and programmes identified as priorities within the credible IDP)?	**YES✓**		Please explain
The timeframes for implementation of SDF's can range from short term timeframes (approx. 3 years – for example, Letsemeng SDF) to long term timeframes (up to 20 years). Some have a standard 5 year implementation plan (for example, Sol Plaatje SDF). In all cases, the proposed Power line Project falls within the timeframes of the consulted District and Local SDFs.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	**YES✓**		Please explain
The local communities of Kimberley and Jacobsdal are in need of electrical bulk services. The Power line Project will contribute towards generating electricity and establishing the infrastructure necessary for future bulk services to be distributed from. The local community and area is therefore in need of the proposed activity which will contribute towards electricity infrastructure as well as generation and distribution.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	**YES✓**		Please explain
Eskom cost estimate letter (Appendix J7) states that there is capacity for for the proposed CSP Project to be connected to the national grid via the CSP Project substation on the CSP Project site.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	**YES✓**		Please explain
No, however the Power line Project will benefit the respective municipalities in that existing infrastructure will be provided by the applicant to Eskom as infrastructure which can be expanded in			

the future.			
7. Is this project part of a national programme to address an issue of national concern or importance?	**YES√**		Please explain
South Africa has embarked on an infrastructure growth programme supported by various government initiatives, including but not limited to, the National Development Plan (NDP), the Presidential Infrastructure Coordinating Commission (PICC), the Department of Energy's Integrated Resource Plan and National Strategy for Sustainable Development, the National Climate Change Response White Paper, the Presidency of the Republic of South Africa Medium-Term Framework and National Treasury's Carbon Tax Policy Paper. The South African Government adopted the National Infrastructure Plan in 2012 which is aimed at transforming the South African economic landscape as well as to provide the necessary aid regarding employment creation and delivery of basic services. The Plan is designed to integrate and coordinate the long-term infrastructure build which is done via the Presidential Infrastructure Coordination Commission (PICC). A need assessment undertaken on behalf of this plan has led to the identification of 18 Strategic Integrated Project (SIP) – SIP 8 – 10 relates to energy generation, green energy generation and the transmission and distribution of electricity to all. With respect to SIP 10, the National Government aims to expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity. Over and above the aforementioned, the Infrastructure Development Act, Number 23 of 2014 was promulgated on 2 June 2014 in order to "provide for the facilitation and co-ordination of public infrastructure development which is of significant economic or social importance to the Republic; to ensure that infrastructure development in the Republic is given priority in planning, approval and implementation; to ensure that the development goals of the state are promoted through infrastructure development; to improve the management of such infrastructure during all life-cycle phases, including planning, approval, implementation and operations; and to provide for matters incidental thereto". Electricity generation and provision is regarded under strategic integrated projects and conspired a national priority in terms of Annexure 1 of the Act. In consideration of the above, yes, the Power line Project is intrinsically linked to the construction of the CSP Project, which is an issue of national concern or importance with regards to renewable energy (RE) development.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	**YES√**		Please explain
Much of the study area is characterised by rural areas with low densities of human settlement. Agriculture in the form of maize cultivation along the Modder River, mining near Kimberley and industrial development in the form of renewable energy development are also prevalent land uses, which has transformed the natural vegetation in some areas. However, a large portion of the study area has retained a moderately natural appearance. The most prominent anthropogenic elements in			

these areas include the N8 national highway, existing 132kV power lines and other linear elements, such as telephone poles, communication poles and farm boundary fences. The presence of this infrastructure will have a very limited impact visually on the land use since there are existing power lines present in the area.			
9. Is the development the best practicable environmental option for this land/site?	**YES√**		Please explain
The Power line Project are intrinsically linked to the CSP Project, which is a National development priority. The project site already includes the N8 main road, 132kV power lines and other linear elements (such as telephone poles, communication poles and farm boundary fences). As such, the proposed Power line Project is a suitable development within this context considering that the presence of this infrastructure will have a very limited impact visually as there is existing infrastructure present.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	**YES√**		Please explain
The absence of the proposed Power line Project would mean that the CSP Project would not be connected to the national grid which would have negative consequences for the renewable energy targets in the country and limited increase of power supplied to the national grid. The positive impacts relating to job creation would also not be realised.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?		**NO√**	Please explain
Currently there are already a number of renewable energy developments around Kimberley which has already set a precedent for the proposed land use. Additionally, Eskom have also set a precedent with existing power lines in the study area.			
12. Will any person's rights be negatively affected by the proposed activity/ies?		**NO√**	Please explain
The proposed Power line Project will impact on individuals where the power lines are to be constructed on the property on which they are residing or using for various activities. Establishment of a servitude will be required where the power line route is to be constructed. However, servitude negotiations with the affected landowners will take place before construction of the final route and tower positions.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		**NO√**	Please explain
The proposed Power line Project would not impact the urban edge as it is a linear infrastructure development.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	**YES√**		Please explain
The Strategic Integrated Projects (SIPs) have been identified based on a spatial analysis of the South Africa's needs. The proposed Power line Project would contribute to SIP 8 – 10 relating to energy generation, green energy generation and the transmission and distribution of electricity to all. With respect to SIP 10, the National Government aims to expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.			

15. What will the benefits be to society in general and to the local communities?	Please explain
The proposed construction of the proposed Power line Project will assist by providing the infrastructure for distribution of electricity to local communities and the country as a whole, as to be determined by Eskom. At a national level, the Power line Project is a critical part of the CSP Project and also has the potential to stimulate the national economy through an increase in production to the value of ~R180 million.	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
As mentioned above, the Power line Project is needed in order connect the CSP Project to the national grid in order to aid with the generation of electricity to consumers.	
17. How does the project fit into the National Development Plan for 2030?	Please explain
The National Development Plan 2010 – 2030 (NDP 2030) aims to eliminate poverty and reduce inequality by 2030. At the same time, it is geared towards achieving economic growth by expanding opportunities, building capabilities, reducing poverty, and involving communities in their own development, all leading to an increase in living standards of these communities. The NDP 2030 recognises nine key challenges that need to be addressed. Although all challenges are seen to be important, the priority areas can be identified as job creation and improvement of the quality of national education. Managing the transition towards a low carbon economy is also one of the nine key national challenges; in line with this, the expansion and acceleration of a commercial RE sector is seen as a key intervention strategy. The NDP 2030 seeks to ensure that half of all electricity generation capacity is provided by renewable resources (National Planning Commission, 2011). The CSP Project is dependent on the Power line Project and is therefore in line with the goals of the NDP.	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the required BA and public participation process (PPP) is being undertaken for the proposed Power line Project in order to investigate and assess any potential environmental impacts associated with the proposed Power line Project prior to implementation. As part of the BA process several specialist studies were conducted to evaluate the actual and potential impact that the proposed Power line Project could have on the biophysical environment, socio-economic conditions and cultural heritage within the study area. In line with the general objectives of Integrated Environmental Management, the risks and consequences of the various alternatives were assessed and mitigation measures were recommended by each specialist in order to minimise the negative impacts and maximise the benefits of the Power line Project. In addition, a thorough PPP is being undertaken as part of the BA, which will involve consultation with various key stakeholders and organs of state, including provincial, district and local authorities, relevant government departments, parastatals and NGO's.	
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
The principles of environmental management as set out in section 2 of the NEMA require that environmental management must place people and their needs at the forefront of development and that development must be socially, environmentally and economically sustainable. As described above; these principles will be taken into account by undertaking a thorough PPP in order to ensure	

that all Interested and Affected Parties (I&APs) are given the opportunity to be involved in the BA process and ultimately that their comments are taken into consideration by the DEA when reviewing the application. Several specialist studies were also undertaken to ensure that the development is sustainable and that disturbance to the environment is avoided were possible, minimised through appropriate mitigation measures and remedied via appropriate measures.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)	In terms of the NEMA the proposed Power line Project must be considered, investigated and assessed prior to implementation.	Department of Environmental Affairs (DEA)	1998
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	In terms of section 38 of the NHRA, the responsible heritage resources authority can call for a Heritage Impact Assessment (HIA) where a power line is being proposed.	South African Heritage Resources Authority (SAHRA)	1999
National Water Act, 1998 (Act 36 of 1998)	If the development may need to take place within a water resource or within 500m radius of a delineated wetland a water use license is likely to be required with regards to water uses (c) and (i) of the NWA.	Department of Water and Sanitation (DWS)	1998
National Environmental Management: Biodiversity Act, 2004 (Act No. of 2004)	Under the NEMBA the project proponent is required to take appropriate reasonable measures to limit the impacts on biodiversity, to obtain permits (if required) and to invite SANBI to provide commentary on any documentation resulting from the proposed Power line Project.	Department of Environmental Affairs (DEA) and South African National Biodiversity Institute (SANBI)	2004
National Forests Act, 1998 (Act 84 of 1998) (NFA)	The Power line Project may result in the disturbance or damage to a tree protected	Department of Agriculture, Forestry	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	under the NFA.	and Fisheries (DAFF)	
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) as amended in 2001 (CARA)	The construction of power lines may impact on agricultural resources and vegetation on the site. The CARA prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this.	Department of Agriculture, Forestry and Fisheries (DAFF)	1983
National Road Traffic Act, 1996 (No. 93 0f 1996)	All the requirements stipulated in the NRTA regarding traffic matters will need to be complied with during the construction and operational phases of the proposed Power line Project.	South African National Roads Agency Limited (SANRAL)	1996
Regulations			
NEMA EIA 2014 Regulations	In terms of the EIA 2014 Regulations, a basic assessment process is required for this Power line Project.	Department of Environmental Affairs (DEA)	2014
Guidelines			
Northern Cape Provincial Spatial Development Framework	The SDF is one of the fundamental implementation instruments, which provides the spatial dimensions for achieving the strategies for the province. The proposed Power line Project should be aligned with the provincial SDF.	Northern Cape Provincial Government	2012
Northern Cape Provincial Growth and Development Strategy (NCPGDS), 2011	The NCPGDS is one of the fundamental implementation instruments, which provides the growth and development plans for achieving the strategies for the province. The Power line Project should be aligned with the provincial NCPGDS.	Northern Cape Provincial Government	2011
Free State Provincial Spatial Development Framework (FSPSDF), 2014	The SDF is one of the fundamental implementation instruments, which provides	Free State Provincial Government	2014

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	the spatial dimensions for achieving the strategies for the province. The proposed Power line Project should be aligned with the provincial SDF.		
Free State Provincial Growth and Development Strategy (FSPGDS), 2012	The FSPGDS is one of the fundamental implementation instruments, which provides the growth and development plans for achieving the strategies for the province. The proposed Power line Project should be aligned with the provincial FSPGDS.	Free State Provincial Government	2012
Xhariep District Municipality Integrated Development Plan 2015/2016	The vision of the Xhariep District Municipality Integrated Development Plan is to be a leader in sustainable development. The Power line Project will contribute to achieving this vision through sustainable, renewable energy generation.	Xhariep District Municipality	2015
Lejweleputswa District Municipality IDP 2016/2017	The vision of the Lejweleputswa District Municipality Integrated Development Plan is to be a leader in sustainable development and service delivery by 2030. The Power line Project will contribute to achieving this vision through sustainable, renewable energy generation.	Lejweleputswa District Municipality	2016
Frances Baard District Municipality Integrated Development Plan 2015/2016	The vision of the Frances Baard District Municipality Integrated Development Plan is to be a municipality with a clear development focus to improve the quality of life of all communities in the district. The Power line Project will contribute to achieving this vision through providing	Frances Baard District Municipality	2015

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	electrical infrastructure and electrical capacity to assist in alleviating electrical demands for society in general, thereby improving the quality of life for society.		
Frances Baard District Municipality Growth and Development Strategy 2014/15	The FBDGDS is one of the fundamental implementation instruments, which provides the growth and development plans for achieving the strategies for the province. The proposed Power line Project should be aligned with the provincial FBDGDS.	Frances Baard District Municipality	2014
Letsemeng Local Municipality Integrated Development Plan 2016/17	The vision of the Letsemeng Local Municipality Integrated Development Plan is to maximise quality service to local communities. The Power line Project will contribute to achieving this vision through providing Eskom power line infrastructure which can be expanded to supply electricity to local communities.	Letsemeng Local Municipality	2016
Sol Plaatje Local Municipality Integrated Development Plan 2014/15-2016/17	The vision of the Sol Plaatje Local Municipality Integrated Development Plan is to create conditions for economic growth social development and meet the basic needs of the community and improve the quality of life of all residents. The Power line Project will contribute to achieving this vision through providing electrical infrastructure and electrical capacity to assist in alleviating electrical demands for society in general, thereby improving the quality of life for society.	Sol Plaatje Local Municipality	2014 & 2016

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES✓**
If YES, what estimated quantity will be produced per month?	Unknown

How will the construction solid waste be disposed of (describe)?

All solid waste collected shall be disposed of at registered/licensed landfill site. Skip waste containers and waste collection bins will be maintained on site and the contractor will arrange for them to be collected regularly and transported to the landfill site.

Under no circumstances will waste be burned or buried on site.

Hazardous materials and contaminants will be stored carefully to prevent contamination until being disposed of at a licensed landfill site.

Where will the construction solid waste be disposed of (describe)?

All solid waste will be disposed of at the nearest registered landfill site.

Will the activity produce solid waste during its operational phase?	**YES✓**
If YES, what estimated quantity will be produced per month?	Unknown

How will the solid waste be disposed of (describe)?

All solid waste will be collected and disposed of. Waste separation and recycling will take place where possible.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

All solid waste will be disposed of at the nearest registered landfill site.

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

The waste will be disposed of at the next nearby registered landfill sites.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	**NO✓**

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	**NO✓**

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO✓
If YES, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	NO✓

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	NO✓

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

The proposed activity will only require a small amount of water during construction, which will be trucked in. There will be no generation of waste water for the construction of the Power line Project.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?		NO✓
If YES, is it controlled by any legislation of any sphere of government?	YES	NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

Other that exhaust emissions and dust associated with construction phase activities, the activity will not release emissions into the atmosphere.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	NO✓

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	YES✓
If YES, is it controlled by any legislation of any sphere of government?	NO✓

Describe the noise in terms of type and level:

Noise will be generated during the construction phase. This impact is transient and is unlikely to be heard by many noise receptors due to the limited human habitation in the area. The impact of the project on ambient noise levels does therefore not warrant a specialist noise impact assessment.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	N/a
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES✓

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

An application for water use can only be submitted once the applicant is awarded Preferred Bidder Status following submission to the Department of Energy should environmental authorisation be granted. This was confirmed via correspondence with the Department of Water and Sanitation (DWS) on the 5th of August 2016 (Appendix E6). Pre-application meeting with the DWS will be undertaken in due course should environmental authorisation be granted accordingly.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

Where electricity is to be used for the operation of machinery and equipment during construction, this will be generated using conventional fuel generators.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The proposed Power line Project will evacuate power generated by a renewable energy generation facility, the CSP Project. The CSP Project indirectly provide self-generated electricity by augmenting the national electricity supply by means of evacuating it via the proposed Power line Project.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? **YES√**

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

A 'specialist declaration of interest" for each specialist is included in Appendix I and all specialist reports are contained in Appendix D.

Property description/physical address:

Province	Free State and Northern Cape Provinces
District Municipality	Lejweleputswa District Municipality (Free State Province) and Frances Baard District Municipality (Northern Cape Province)
Local Municipalities	Tokologo and Letsemeng Local Municipalities (Free State Province) and Sol Plaatje Local Municipality (Northern Cape Province)
Ward Number(s)	Free State Province Wards 2 & 3; Northern Cape Province Wards 21, 25 & 28
Farm name and number	Linear Activity – Please see Appendix J2
Portion number	Linear Activity – Please see Appendix J2
SG Code	Linear Activity – Please see Appendix J2

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Linear Activity – Please see Appendix J2

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? **YES√**

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Corridor 1 Jacobsdal Link (Green – Preferred):

Flat√	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple):

Flat√	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred):

Flat√	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Most of the terrain in the study area is flat to gently undulating. An A3 Slope Classification Map and Topography Map are included in Appendix A.

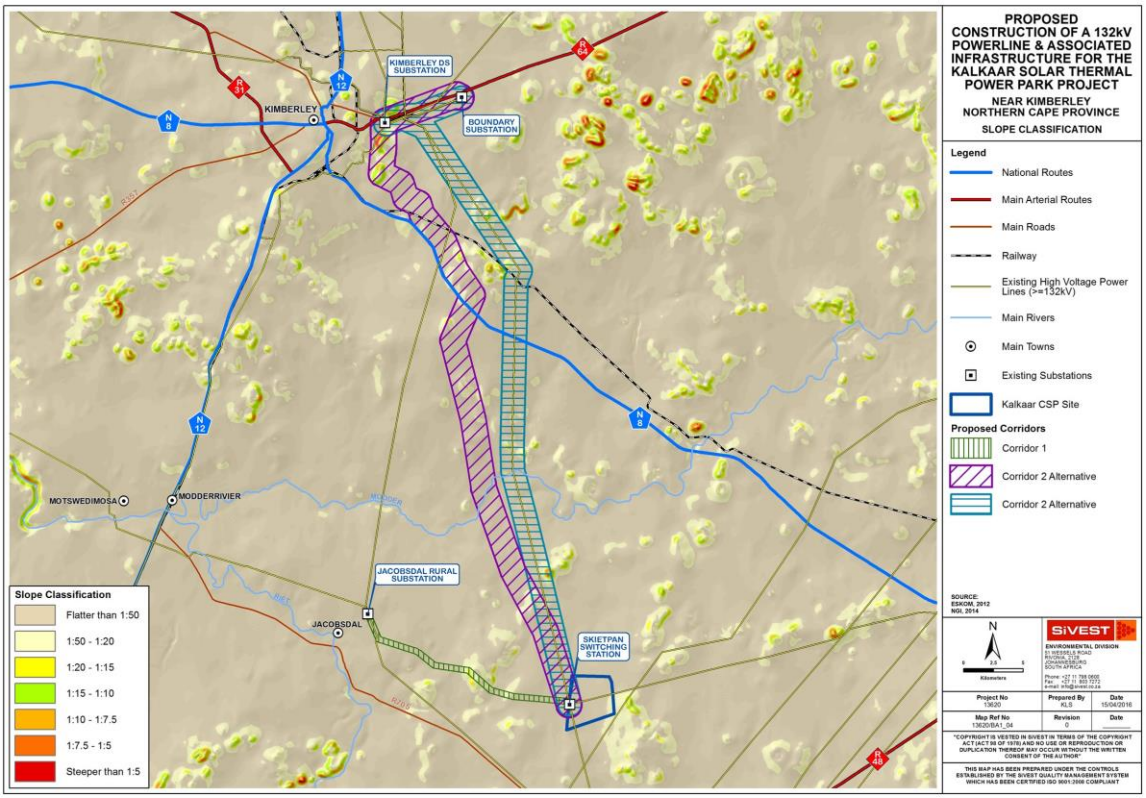

Figure 4: Slope Classification Map

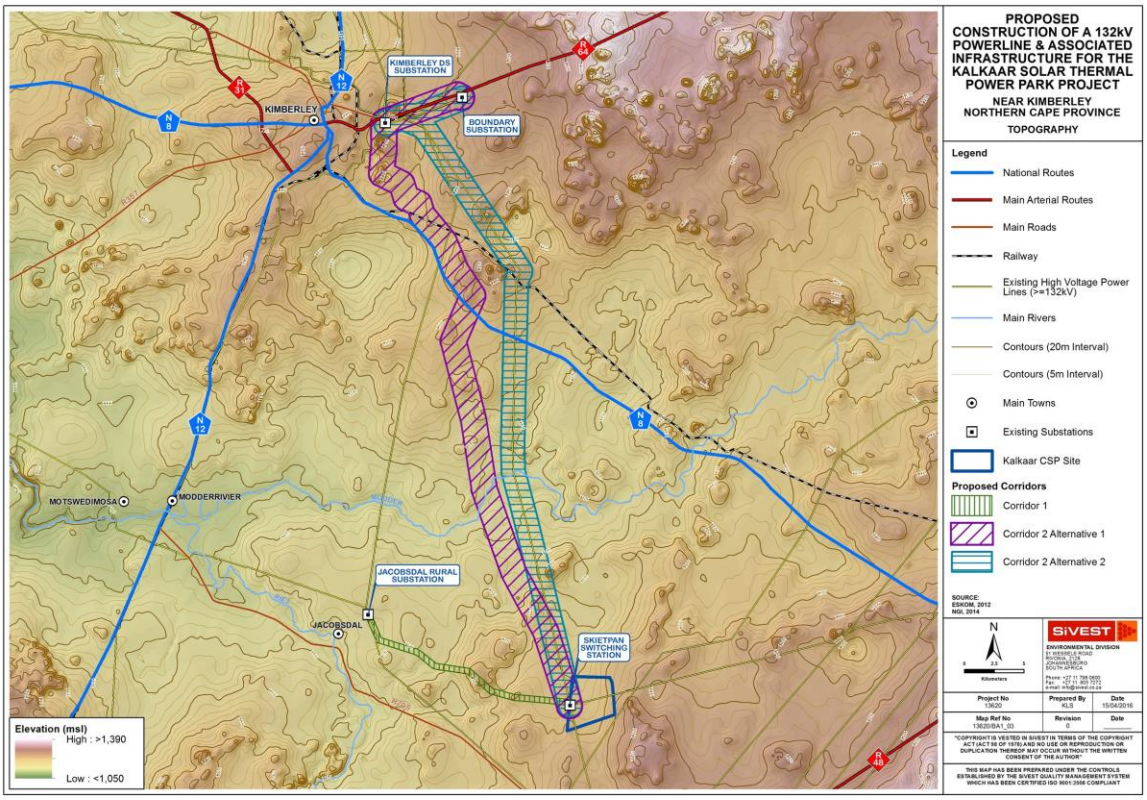

Figure 5: Topography Map

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	✓
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain	✓	2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Corridor 1 Jacobsdal Link (Green – Preferred)		Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple)		Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)	
Shallow water table (less than 1.5m deep)	YES✓		YES✓		YES✓	
Dolomite, sinkhole or doline areas		NO✓		NO✓		NO✓
Seasonally wet soils (often close to water bodies)	YES✓		YES✓		YES✓	
Unstable rocky slopes or steep slopes with loose soil	YES✓		YES✓		YES✓	
Dispersive soils (soils that dissolve in water)		NO✓		NO✓		NO✓
Soils with high clay content (clay fraction more than 40%)		NO✓		NO✓		NO✓
Any other unstable soil or geological feature		NO✓		NO✓		NO✓
An area sensitive to erosion		NO✓		NO✓		NO✓

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

A specialist wetland study was undertaken by Stephen Van Staden, and a soils and agricultural potential study was undertaken by Johann Lanz. These are included in Appendix D.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	**Cultivated land**	Paved surface	Building or other structure	**Bare soil**

If any of the boxes marked with an "E "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

A specialist biodiversity study was undertaken by Simon Todd and is included in Appendix D.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Corridor 1 Jacobsdal Link (Green – Preferred)

Perennial River	YES	**NO**	UNSURE
Non-Perennial River	YES	**NO**	UNSURE
Permanent Wetland	YES	**NO**	UNSURE
Seasonal Wetland	**YES**	NO	UNSURE
Artificial Wetland	**YES – manmade dams**	NO	UNSURE
Estuarine / Lagoonal wetland	YES	**NO**	UNSURE

Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple)

Perennial River	YES	**NO**	UNSURE
Non-Perennial River	**YES – Modder river**	NO	UNSURE
Permanent Wetland	YES	**NO**	UNSURE
Seasonal Wetland	**YES**	NO	UNSURE
Artificial Wetland	**YES – manmade dams**	NO	UNSURE
Estuarine / Lagoonal wetland	YES	**NO**	UNSURE

Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)

Perennial River	YES	**NO**	UNSURE
Non-Perennial River	**YES – Modder river**	NO	UNSURE
Permanent Wetland	YES	**NO**	UNSURE
Seasonal Wetland	**YES**	NO	UNSURE
Artificial Wetland	**YES – Manmade dams**	NO	UNSURE
Estuarine / Lagoonal wetland	YES	**NO**	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

A specialist surface water study was undertaken by Stephen Van Staden from Scientific Aquatic Services and is included in Appendix D.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	**Dam or reservoir**	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	**Agriculture**
Retail commercial & warehousing	Old age home	**River, stream or wetland**
Light industrial	Sewage treatment plant[A]	**Nature conservation area**
Medium industrial [AN]	Train station or shunting yard [N]	**Mountain, koppie or ridge**
Heavy industrial [AN]	**Railway line [N]**	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	**Graveyard**
Spoil heap or slimes dam[A]	Sport facilities	**Archaeological site**
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "[N] "are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Railway line – The proposed Power line Project will need to cross the existing railway line. This will however be done by overhead crossing (as required per wayleave agreement with TRANSNET Freight Rail). As a result, the railway line will only be temporarily affected during the construction phase for the proposed Power line Project crossing point.

If any of the boxes marked with an "[An]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not applicable

If any of the boxes marked with an "[H]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not applicable

An A3 Land Use Map is included in Appendix A.

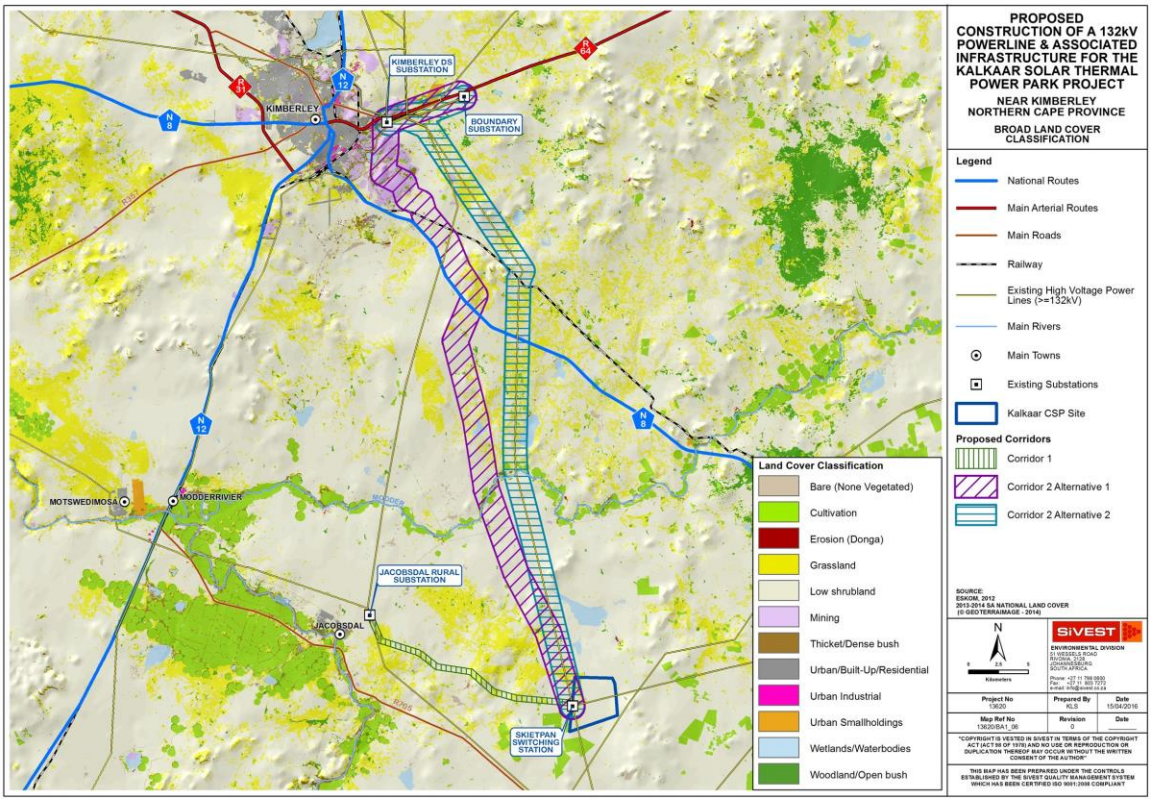

Figure 6: Land Use Map

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		**NO√**
Core area of a protected area?		**NO√**
Buffer area of a protected area?		**NO√**
Planned expansion area of an existing protected area?		**NO√**
Existing offset area associated with a previous Environmental Authorisation?		**NO√**
Buffer area of the SKA?		**NO√**

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

N/a

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	**Uncertain√**

A heritage and an updated heritage study was conducted by PGS Heritage, the author of the report was Wouter Fourie.

A palaeontology study was conducted by Banzai Environmental (Pty) Ltd, the author of this report was Ms. Elize Butler.

Both of the reports are included in Appendix D5.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

The initial heritage study shows that there are a total of twenty seven (27) occurrences of heritage resources were identified within Corridor Alternative 2. Fourteen (14) of these would require mitigation before exhumation (graves) or destruction (historical structures) if development were to come within 20 m. Thirteen (13) occurrences of heritage resources have high significance and should not be disturbed by development within 20 m. It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops.

The updated heritage study identified additional sites including Site Kal1 and Kal2. These must be avoided with a 50 meter buffer.

No other heritage resources were identified within the power line corridors.

The palaeontological study shows that the Power line Project development footprint is completely underlain by lower Permian sediments of the Ecca Group of the Karoo Basin (White Hill and Prince Albert Formations), Late Permian Volksrust Formation, and the Karoo Dolerite Suite and Quaternary deposits. The development footprint as a whole is a fairly flat lying terrain with grassy vegetation cover in places as well as a few thorn trees. The Karoo dolerite Suite is unfossiliferous and the sensitivity in the Quaternary sediments is low. Although the palaeontological sensitivity of the Whitehill, Prince Albert and Volksrust Formations is rated as high to very high, scarcity of fossil-bearing sediments and lack of exposure at the proposed sites indicate that the impact on palaeontological material is negligible and regarded as insignificant.

Will any building or structure older than 60 years be affected in any way?	**No√**

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		**Possibly✓ Should any heritage and/or palaeontological sensitivities be identified that cannot be avoided in the final walk-down before construction commences should environmental authorisation be granted.**

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The Census 2011 data indicates that the Sol Plaatje LM had about 164 394 people in the working-age population. Of these, 93 190 people were economically active; while roughly 43% of the working age population were not economically active (NEA); that is, persons aged 15–64 years who are neither employed nor unemployed at the time of the survey, including discouraged job seekers. The employed labour in the LM was estimated at 63 454; while the unemployed population was estimated at 29 736, reflecting an unemployment rate of 31.9%. This was the highest recorded unemployment rate among the delineated study areas.

In the Kimberley, 31 645 of the working age population were employed, with 9 052 of them unemployed. This means that 22.2% of the labour force in Kimberley was unemployed. On the other hand, 24 944 (38%) of the working age population were not economically active. In Jacobsdal, the unemployment rate was higher, at 27.3%.

Between 54% and 76% of the employed within the delineated study areas were employed in the formal sector. The Letsemeng LM recorded the highest percentage of informal employment opportunities (31.4%). Private households provided for between 11.3% and 22.1% of the employment opportunities in the study areas. In Kimberley, 75.9% of the employment opportunities were provided by the formal sector and only 10.8% came from the informal sector. In Jacobsdal,

60.4% of the population is employed in the formal sector while 18.8% of the employment opportunities come from the informal sector.

In terms of skills levels, about 24.5% of the formally employed population in the Sol Plaatje LM is highly skilled while 45% is skilled, and the remaining 30% is semi-skilled and unskilled. The majority of the employed population in Letsemeng (62.5%) and Tokologo (58.3%) is either semi-skilled or unskilled. Only 12% of the employed population in these areas is highly skilled. As the construction of power lines requires highly skilled personnel, possibly these will be sourced from Sol Plaatje LM.

Economic profile of local municipality:

The Sol Plaatje economy is relatively larger than the other economies under analysis; in 2013 it was valued at R16 532 million in current prices. This translates to a per capita Gross Domestic Product (GDP) of R66 650. The Letsemeng and Tokologo economies were valued at R1 927 million and R986 million in 2013 current prices, respectively. The per capita GDP for these local municipalities is considerably lower than that of the Sol Plaatje LM with R49 885 for Letsemeng LM and R34 015 for Tokologo LM. Over a period of ten years (2003-2013), the SPM economy grew at a Compounded Average Growth Rate (CAGR) of 2.6% per year while that of the LLM grew at 2.5% per year. Although the TLM has the smallest economy, its economy grew at a higher rate of 3.3% over the same period. The comparatively high growth rate in the TLM can be attributed to the growth recorded in the wholesale, trade, and accommodation, utilities and community and personal services sectors (Quantec, 2016). In terms of economic activities, the economy of the SPM depends heavily on the tertiary sector, which made up 84.3% of GDP-R in 2013. The largest single contributing sector is the government services sector.

The economy of Letsemeng is also largely dependent on the tertiary sector; the finance and business services sector makes the most significant contribution to the local economy (19.4%), this sector's GDP generates just more than a quarter of the LM's GDP. The primary sector is also a significant contributor to the LM's economy; in 2013, agriculture contributed 12.7% to Letsemeng's GDP while mining contributed 10.3%. Within the TLM, it is evident from the manufacturing sector's contribution to the GDP of 28.6% that there is a significant amount of processing of the primary commodity output in agriculture and mining that takes place. The secondary sector significantly contributes to the LM's GDP. Other significant contributors to the LM's economy include finance and business services (16.2%), personal services (10.2%) and trade sectors (9.8%) (Quantec, 2016).

Level of education:

The SPM and Kimberley are clear examples of the phenomenon that the higher the percentage of educated people in a given community, the higher the monthly average household income. 9.6% of households in the TLM have no income, while about two thirds have an average monthly income of less than R3 200. This means that these households are unable to afford a basic minimum standard of living and are experiencing relatively low living standards and poor quality of life.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Approx. R 180 million

What is the expected yearly income that will be generated by or as a result of the activity?	Unknown – Eskom owned asset.
Will the activity contribute to service infrastructure?	YES [redacted]
Is the activity a public amenity?	[redacted] NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Approx. 15-30
What is the expected value of the employment opportunities during the development and construction phase?	Unknown – Eskom owned asset.
What percentage of this will accrue to previously disadvantaged individuals?	Approx. 45%
How many permanent new employment opportunities will be created during the operational phase of the activity?	Approx. 45%
What is the expected current value of the employment opportunities during the first 10 years?	Unknown – Eskom owned asset.
What percentage of this will accrue to previously disadvantaged individuals?	Unknown – Eskom owned asset.

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

<table>
<tr><th colspan="4">Systematic Biodiversity Planning Category</th><th>If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan</th></tr>
<tr><td rowspan="3">Critical Biodiversity Area (CBA)</td><td rowspan="3">Ecological Support Area (ESA)</td><td rowspan="3">Other Natural Area (ONA)</td><td>No Natural Area Remaining (NNR)</td><td>N/A</td></tr>
<tr><td></td><td>N/A</td></tr>
<tr><td></td><td>N/A</td></tr>
</table>

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	Approx. 2%	Vaalbos Ricky Shrubland Occurs on numerous small rocky outcrops that are present throughout the study area. These are diverse areas and are also considered important for fauna, especially reptiles and small mammals which find shelter in the rocky habitat. This habitat usually has more trees than the surrounding plains although it is not always the case. Common trees and tall shrubs include *Acacia mellifera, Acacia tortillis, Eherthia rigida, Searsia burchelli, Diospyros lycioides*, *Rhigozum obovatum* and *Euclea crispa*. The grass layer usually consists of species such as *Themeda triandra*, *Heteropogon contortus, Digitaria eriantha* and *Enneapogon scoparius*. Pans There are numerous small to moderate sized pans along the power line routes between CSP Project Site and the Boundary substation. Some of these are not well developed and probably very rarely hold water but rather represent run-on areas where water collects on a reasonably temporary basis. Some of the larger pans are however well developed and clearly hold water on a regular basis and represent ecologically important features of the area that contain a variety of associated temporary water organisms and attract many waders and water birds. Apart from the terrestrial impacts, the presence of numerous birds in these areas increases the potential for avifaunal impacts in the vicinity of these areas and the pans should be avoided as much as possible. The areas around the pans are usually heavily grazed and the vegetation very short and often lawn-like as a result. Common and typical species present include *Cynodon dactylon, Eragrostis bicolor, Hemarthria altissima, Panicum coloratum* and *Sporobolus fimbriatus* and *S.ioclados*. Shrubs present around the fringes of the pans include *Lycium cinereum*, *Atriplex vestita*, *Pentzia globosa* and *Salsola glabrescens*. Modder River Both options to Kimberly traverse the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
		the unique aquatic habitats present here that are not represented elsewhere in the landscape of the area. The river is however heavily impacted by agricultural activities and due to heavy abstraction, it does not flow on a perennial basis. The banks of the river are well vegetated with woody species, mostly *Acacia karoo* with *Salix mucronata* and *Tamarix usneoides*, while there may be large stands of *Phragmites australis* in some reaches. There is also a lot of disturbance and alien invasion along the river, with various *Eucalyptus* species, *Prosopis* spp. and kikuyu being prevalent. Although the river is sensitive, it is not very wide and it is likely that the power line will be able to span the river with little impact on the river itself.
Near Natural (includes areas with low to moderate level of alien invasive plants)	85%	Kimberley Thornveld Although this vegetation unit is mapped as being largely restricted to the north of the Modder River, in practice, it occurs as a mosaic with the Northern Upper Karoo with the latter being prevalent in areas of shallow soils, especially on calcrete, while Kimberly Thornveld is prevalent on deeper sandy and dolerite-derived soils. In sandy areas, *Acacia erioloba* tends to be dominant, while in areas with more clay in the soil, *Acacia tortillis* and *Searsia lancea* tend to be dominant, while other trees species present include *Acacia mellifera*, *Acacia hebeclada*, *Zizyphus mucronata* and *Ehretia alba*. The density of the tree layer is variable and there are some areas that are virtually free of trees and other areas with a very high density. The grass layer is variable and affected to a large extent by the prevailing land use. Dominant and common species include *Schmidtia pappophoroides*, *Cenchrus cilliata*, *Themeda triandra*, *Stipagrostis uniplumis* var. *uniplumis* and *Aristida stipitata*. Common shrubs include *Selago saxatilis*, *Hermannia tomentosa, Lycium cinereum*, *Pentzia globosa* and forbs such as *Hirpicium echinus*, *Monsonia angustifolia* and *Sesamum capense*. Protected trees present in these areas include *Boscia albitrunca* and *Acacia erioloba*. While Acacia erioloba is dense in some areas and are likely to be impacted by the power line servitude, Boscia albitrunca is less common and ccurs as widely scattered individuals. Northern Upper Karoo

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
		In general, this vegetation unit characterised by extensive plains with low shrubby or grassy vegetation. Common and dominant species include shrubs such as *Pentzia globosa*, *Pentzia incana, Eriocephalus spinescens, Rosenia humilis, Lycium cinereum, Aptosimum marlothii, Asparagus glaucus, Salsola calluna, Salsola rabieana* and grasses such as *Aristida adscensionis, Enneapogon desvauxii, Eragrostis lehmanniana and Tragus koelerioides*. Trees are generally rare but may occur along drainage lines and on rocky hills and include *Acacia mellifera, Acacia tortillis* and *Acacia karoo*.
Degraded (includes areas heavily invaded by alien plants)	0%	None
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	Approx. 13%	Roads and power line infrastructure as well as areas of cultivation around the Modder River.

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems				
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)		Estuary		Coastline
	Endangered					
	Vulnerable					
	Least Threatened✓	**YES✓**		**NO✓**		**NO✓**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The majority of the routes to Kimberly are within the Kimberly Thornveld and Northern Upper Karoo vegetation types, while the option to Jacobsdal is limited largely to Northern Upper Karoo. There are however also limited extents of Highveld Salt Pans and Vaalbos Rocky Shrubland within the corridors. These are each described in greater detail below.

Kimberley Thornveld

Although this vegetation unit is mapped as being largely restricted to the north of the Modder River, in practice, it occurs as a mosaic with the Northern Upper Karoo with the latter being prevalent in areas of shallow soils, especially on calcrete, while Kimberly Thornveld is prevalent on deeper sandy and dolerite-derived soils. In sandy areas, *Acacia erioloba* tends to be dominant, while in areas with more clay in the soil, *Acacia tortillis* and *Searsia lancea* tend to be dominant, while other trees present include *Acacia mellifera*, *Acacia hebeclada*, *Zizyphus mucronata* and *Ehretia alba*. The density of the tree layer is variable and there are some areas that are virtually free of trees and other areas with a very high density. The grass layer is variable and affected to a large extent by the prevailing land use. Dominant and common species include *Schmidtia pappophoroides*, *Cenchrus cilliata*, *Themeda triandra*, *Stipagrostis uniplumis* var. *uniplumis* and *Aristida stipitata*. Common shrubs include *Selago saxatilis*, *Hermannia tomentosa, Lycium cinereum*, *Pentzia globosa* and forbs such as *Hirpicium echinus*, *Monsonia angustifolia* and *Sesamum capense*. Protected trees present in these areas include *Boscia albitrunca* and *Acacia erioloba*. While Acacia erioloba is dense in some areas and are likely to be impacted by the power line servitude, Boscia albitrunca is less common and ccurs as widely scattered individuals.

Northern Upper Karoo

In general, this vegetation unit characterised by extensive plains with low shrubby or grassy vegetation. Common and dominant species include shrubs such as *Pentzia globosa*, *Pentzia incana, Eriocephalus spinescens, Rosenia humilis, Lycium cinereum, Aptosimum marlothii, Asparagus glaucus, Salsola calluna, Salsola rabieana* and grasses such as *Aristida adscensionis, Enneapogon desvauxii, Eragrostis lehmanniana and Tragus koelerioides*. Trees are generally rare but may occur along drainage lines and on rocky hills and include *Acacia mellifera, Acacia tortillis* and *Acacia karoo*.

Vaalbos Ricky Shrubland

Occurs on numerous small rocky outcrops that are present throughout the study area. These are diverse areas and are also considered important for fauna, especially reptiles and small mammals which find shelter in the rocky habitat. This habitat usually has more trees than the surrounding plains although it is not always the case. Common trees and tall shrubs include *Acacia mellifera, Acacia tortillis, Eherthia rigida, Searsia burchelli, Diospyros lycioides*, *Rhigozum obovatum* and *Euclea crispa*. The grass layer usually consists of species such as *Themeda triandra*, *Heteropogon contortus, Digitaria eriantha* and *Enneapogon scoparius*.

Pans

There are numerous small to moderate sized pans along the power line corridors between CSP Project Site and the Boundary substation. Some of these are not well developed and probably very rarely hold water but rather represent run-on areas where water collects on a reasonably temporary basis. Some of the larger pans are however well developed and clearly hold water on a regular basis and represent ecologically important features of the area that contain a variety of associated temporary water organisms and attract many waders and water birds. Apart from the terrestrial impacts, the presence of numerous birds in these areas increases the potential for avifaunal impacts in the vicinity of these areas and the pans should be avoided as much as possible. The areas around the pans are usually heavily grazed and the vegetation very short and often lawn-like as a result. Common and typical species present include *Cynodon dactylon, Eragrostis bicolor, Hemarthria*

altissima, Panicum coloratum and *Sporobolus fimbriatus* and *S.ioclados*. Shrubs present around the fringes of the pans include *Lycium cinereum*, *Atriplex vestita*, *Pentzia globosa* and *Salsola glabrescens*.

Modder River

Both options to Kimberly traverse the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as the unique aquatic habitats present here that are not represented elsewhere in the landscape of the area. The river is however heavily impacted by agricultural activities and due to heavy abstraction, it does not flow on a perennial basis. The banks of the river are well vegetated with woody species, mostly *Acacia karoo* with *Salix mucronata* and *Tamarix usneoides*, while there may be large stands of *Phragmites australis* in some reaches. There is also a lot of disturbance and alien invasion along the river, with various *Eucalyptus* species, *Prosopis* spp. and kikuyu being prevalent. Although the river is sensitive, it is not very wide and it is likely that the power line will be able to span the river with little impact on the river itself.

SECTION C: PUBLIC PARTICIPATION

Details of the Public Participation process is included in Appendix E.

1. ADVERTISEMENT AND NOTICE

Publication name	Diamond Fields Advertiser	
Date published	23 June 2016	
Site notice position	Site Notice Position 1 – Boundary Substation	
	Latitude	**Longitude**
	28°43'19.45"S	24°52'36.50"E
	Site Notice Position 2 – Kimberley DS	
	Latitude	**Longitude**
	28°44'27.85"S	24°48'47.22"E
	Site Notice Position 3 – Jacobsdal Substation	
	Latitude	**Longitude**
	29° 7'0.99"S	24°47'53.40"E
Date placed	24 June 2016	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

Proof of the Advertisements and Site notices included in Appendix E1

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

A WinDeed search on all properties potentially be affected by the proposed Power line Project was undertaken to set up an initial database. Contact details were cross checked to see which were relevant.

Background Information Documents (BIDs) and registration forms were distributed either physically on the 23rd & 24th of March 2016 during a site visit or later via email, fax and sms on the 4th of May 2016 once more details were obtained.

Site Notices were erected outside of the three substations where the proposed Power line Project will potentially connect and on either the provincial roads (Kimberley DS and Boundary Substation on R64) or public roads (Jacobsdal Substation) for good public visibility.

Adverts were placed in a local newspaper in "The Diamond Fields Advertiser" on the 23rd of June 2016. Posters were erected at various locations advertising the BA process including the Kimberley Public Library, Sol Plaatje Local Municipality and Tokologo Local Municipality.

The DBAR was compiled and released for a 30 day period (as per the EIA Regulations, 2014) to the public for review and comment from the 24th of June 2016 to the 25th July 2016. Notifications were distributed to all Interest and Affected Parties (I&APs) on the project database on the 23rd of June 2016 via email, sms, post and fax (where applicable).

Cd's of the original DBAR were distributed via mail to Key Stakeholders for a 40 day period for review and comment including the following:

- Sol Plaatje Local Municipality
- Tokologo Local Municipality
- Letsemeng Local Municipality
- Lejweleputswa District Municipality
- Xhariep District Municipality
- Frances Baard District Municipality
- Department of Environmental Affairs Biodiversity
- Agri-SA Northern Cape
- Department of Water and Sanitation
- Northern Cape Department of Agriculture, Forestry and Fisheries
- Northern Cape Department of Agriculture, Land Reform and Rural Development
- Department of Mineral Resources
- Department of Energy
- Northern Cape Department of Environment and Nature Conservation
- Free State Provincial Department of Economic Development, Tourism and Environment
- Northern Cape Department of Sport, Arts and Culture – Heritage Unit
- South African National Roads Agency Limited (SANRAL) – Western Region
- Northern Cape Department of Roads and Public Works
- South African Heritage Resources Agency (SAHRA) – Northern Cape
- Eskom
- Square Kilometre Array (SKA)
- South African Civil Aviation Authority (SA CAA)
- Air Traffic and Navigation Services (ATNS)
- Transnet Freight Rail
- Sentech
- Telkom
- Wildlife and Environment Society of South Africa (WESSA)
- Endangered Wildlife Trust (EWT)
- Birdlife South Africa

A public meeting and focus group meeting was undertaken on the 29th of June 2016. Details of the meetings and minutes of the meetings can be found in Appendix E6.

A second phase of public participation is to be undertaken in accordance with the extension granted by the Department of Environmental Affairs (DEA) on the 24th August 2016, due to the inclusion of new information to the DBAR as a result of an updated Heritage Impact Assessment and field-based Palaeontology Impact Assessment.

An updated version of the DBAR will be printed and distributed to all affected Local and District Municipalities. Additionally, copies of the updated DBAR will be copied to CD and distributed to all Key

Stakeholders as listed above. Moreover, email, fax, letters and sms notifications will be distributed to all I&APs for the additional public review and comment period (to be undertaken). Finally, the Updated DBAR will be placed on the SiVEST website for access by the public and any other potential stakeholders. The additional public review and comment period of an additional 30 days will take place from the 9th December 2016 until the 30th of January 2016 (including December shut-down period from the 14th December 2016 to 5th January 2017).

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr. Myburg Henning	Agri-SA Northern Cape	henning@agrink.co.za
Ms. Nokukhanya Khumalo	SAHRA – Head Office	nkhumalo@sahra.org.za
Mr. John Geeringh	Eskom	GeerinJH@eskom.co.za
Dr. Adriaan Tiplady	SKA	atiplady@ska.ac.za
Ms. Lizell Stroh	SA CAA	strohl@caa.co.za
Ms. Johanna Morobane	ATNS	JohannaM@atns.co.za
Mr. Sam Fiff	Transnet Freight Rail	sam.fiff@transnet.net
Mr. Johan Koegelengberg	Sentech	koegelenbergj@sentech.co.za
Mr. Chris Schutte	Telkom	WayleaCR@telkom.co.za
Mr. Lourens Leeuwner	EWT	lourensl@ewt.org.za
Mr. Morgan Griffiths	WESSA	morgan.griffiths@wessa.co.za
Mr. Simon Gear	Birdlife South Africa	advocacy@birdlife.org.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

Proof that the key stakeholder received written notification of the proposed activities is included in Appendix E2.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
It was stated in a letter emailed	Duncan and Rothman	It is noted that the properties of Mr. H

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
by Duncan and Rothman Attorneys on behalf of Mr. H Van Rooyen that it is their duty to inform you by giving notice that their clients (Heyns Van Rooyen Family Trust, owners of the Remainder of the Farm Uitkyk No. 102 and Portion 2 of the Farm Banksfontein No. 136) will under no circumstances be prepared to agree to the construction of the proposed power line servitude including the negotiation and registration of a servitude on the property of our clients. Furthermore, it was stated that it is their duty to bring to SiVEST's attention that their clients use the property extensively for breeding wildlife including the breeding of rare wildlife species. Finally, it was noted that their client is extremely concerned about the possible aesthetic impact that will be caused by a powerline servitude on the property of their clients.	Attorneys on behalf of Mr. H Van Rooyen Landowner Via Email 22nd June 2016	Van Rooyen (Remainder of the Farm Uitkyk No. 102 and Portion 2 of the Farm Banksfontein No. 136) are situated within Corridor 2 Alternative 1 Kalkaar Concentrated Solar Power (CSP) via Kimberly Distribution Substation (DS) to Boundary Substation alternative option. This item was adequately addressed with the landowner representative stating that the findings that were used in the comparative assessment of alternatives advised against Corridor 2 Alternative 1 Kalkaar CSP via Kimberly DS to Boundary Substation alternative option which potentially affects the above properties mentioned. Subsequently, Corridor 2 Alternative 2 Kalkaar CSP via Kimberly DS to Boundary Substation was selected as the preferred in the Draft Basic Assessment Report (DBAR) which avoids the above mentioned properties. Shaun Taylor ***Sivest Environmental***
It was requested to submit a .kml (Google Earth™) file reflecting the footprint of the proposed overhead Kalkaar 132kV Powerline.	Lizell Stroh South African Civil Aviation Authority Via Email 22nd July 2016	All requested files were provided to the Civil Aviation Authority (CAA). Shaun Taylor ***Sivest Environmental***
I am the owner of Remainder of Uitkyk No. 102 and Portion 1 of the Farm Banksfontein No. 136. The fence between the two farms were removed as a unit operation. Both farms consists of savannah field with Camel thorn trees and Karee (scientifically now known as *Searsia*) trees. Camel thorn trees are a	Mr. H van Rooyen Landowner Via Email 21st April 2016	During the DBAR process, comments received by Mr van Rooyen were acknowledged by SiVEST where it was communicated that there are Camel thorn trees in the study area. The Environmental Assessment Practitioner (EAP) informed the Interested and Affected Party (I&AP) that his concerns would be given to the ecologist to address all the issues

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
protected tree. The construction of a 132 kV powerline with a wide servitude will definitely have an impact on the camel thorn trees and must be taken into account. Furthermore, the proposed powerline is located west passing my house, which is unacceptable aesthetically. Several vultures are found on the farm and should be taken into account. (Contact Beryl Wilson 083 292 2008). There is already a 22kV utility line on the farm. Game farming takes place on the two farms, and except for approximately 16 species plains game, breeding of the following exotic wildlife takes place: Sable, Black Impalas, Golden wildebeest and gemsbok gold. Total value of wildlife is approximately R10 million. My son also operates a hunting safaris with mainly foreign clients. Two ladies from Scientific Aquatic Services (wetland specialists) have visited the property, but only looked at the pans. It is important that an ecological impact assessment be undertaken, and the people responsible should assess the property. If my objections are not accepted		raised by Mr van Rooyen. The relevant ecological studies were undertaken for the corridors. The concern around the aesthetics of the powerline were forwarded to the visual specialists, whom assessed it in the visual impact assessment. With respect to the concern raised about the vultures, the information provided was passed on to the avi-fauna specialist for inclusion in their evaluation. It is known that wildlife farming and hunting activities are undertaken on the mentioned properties. This information was used in the socio-economic assessment. The EAP informed Mr van Rooyen that the wetland study is one of the few specialist studies that will have site specific locations for assessment (the other being heritage). In order to determine the baseline environment and potential impacts of the proposed development an ecological impact assessment was undertaken during the DBAR stages, which is deemed sufficient to the process at hand. Such information was provided to the landowner. Based on the aforementioned, the following conclusions were additionally communicated to the landowner after consultation with the relevant specialists:

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
and the powerline is approved on my farm, what are my options?		1. Corridor 2 Alternative 1 is not the preferred alignment with respect to the findings of the BA process and as such the properties owned by Mr van Rooyen are highly likely not to be directly affected. 2. However in order to address his concerns the outcome of his comments raised are as follows: a. In terms of the comments raised on potential avifaunal impacts with regards to vultures by the land owner, the Avifaunal Specialist (Chris Van Rooyen) contacted Beryl Wilson, (30th April 2016) for her opinion on the proposed power lines in the area. Comments received telephonically from Mrs. Wilson the avifaunal specialist with regards to vulture colonies in the study area were as follows, "To my mind, the Benfontein/Susanna colony has been ailing for the past few years, and I think that this line (in which ever placement

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		position) may be the final death knoll due to the disturbance factor as well as potential collisions/electrocutions that may be expected when a new line appears in their normal foraging and nesting areas. I do think it may offer perching opportunities but since there are so many power lines already in the area, this positive effect is of limited value." These comments were taken into consideration in the avi-faunal specialist assessment as well as with regards to appropriate mitigation measures to minimise potential impacts. The following was concluded in the avifaunal impact assessment: "In the case of the mandatory Corridor 1 (Jacobsdal Link) the impact of displacement due to disturbance and habitat transformation during construction is rated as low - negative to start with, and will remain as such after application of mitigation measures. In the case of Corridor 2 (both alternatives) the impact will be medium - negative, but it can be

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		reduced to low - negative through appropriate mitigation. In the case of the mandatory Corridor 1 (Jacobsdal Link) the proposed 132kV power line will have a medium negative collision impact on avifauna during operation which could be reduced to low-negative through the application of anti-collision mitigation measures. In the case of Corridor 2 (both alternatives) the impact is rated as high-negative which could be reduced to medium negative through the application of anti-collision measures. In the case of the mandatory Corridor 1 (Jacobsdal Link) the proposed 132kV power line will have a medium negative electrocution impact on avifauna during operation which could be reduced to low-negative through the use of the correct pole design. In the case of Corridor 2 (both alternatives) the impact is rated as high-negative which could be reduced to low negative through the use of the correct pole design." b. In terms of visual impact on the properties

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		mentioned, the dwellings on these farms were regarded as potentially sensitive receptor locations and were taken into consideration when determining the zones of visual contrast as part of the visual sensitivity and visual impact analysis (See pages 43-44 & 78-79 Visual Impact Assessment Report dated 30 June 2016). - The findings were used in the comparative assessment of alternatives which advised against Corridor 2 Alternative 1 CSP Project Site via Kimberly DS to Boundary Substation alternative option which potentially affects the properties mentioned. - Subsequently, Corridor 2 Alternative 2 CSP Project Site via Kimberly DS to Boundary Substation was selected as the preferred route

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		based on the outcomes of the specialist reports and the findings presented in the DBAR which avoids the mentioned properties (Remainder of Uitkyk No. 102 and Portion 1 of the Farm Banksfontein No. 136) which are located in within the Corridor 2 Alternative 2 - CSP Project Site via Kimberly DS to Boundary Substation alternative. c. The ecologist addressed the issue of the Camel Thorn Trees on site in the Ecological impact assessment in consultation with the landowner. - The findings were used in the comparative assessment of alternatives which advised against Corridor 2 Alternative 1 CSP Project Site via Kimberly DS to

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Boundary Substation alternative option which potentially affects the properties mentioned. - Subsequently, Corridor 2 Alternative 2 - CSP Project Site via Kimberly DS to Boundary Substation was selected as the preferred route based on the outcomes of the specialist reports and the findings presented in the DBAR which avoids the mentioned properties (Remainder of Uitkyk No. 102 and Portion 1 of the Farm Banksfontein No. 136) which are located in within the Corridor 2 Alternative 2 - CSP Project Site via Kimberly DS to Boundary Substation alternative. In consultation with the landowner through comments received during the DBAR stages, all issues raised by the landowner were adequately addressed.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Shaun Taylor ***Sivest Environmental***
Apart from 2 women (Wetland Specialists from Scientific Aquatic Services), no other specialists were on the Remainder of Uitkyk No. 102 and Portion 1 of the Farm Banksfontein No. 136. This is a concern due to the presence of *Acacia erioloba*, which is a protected species.	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting as follows: Due to the length of the powerline, during the basic assessment, specialists do not walk every metre of the powerline at this stage. They identify habitats that are more sensitive in the area which are marked off and ground truth those areas generally. In the presentation, these sensitive areas are identified on a map, if there are additional sensitive areas that the specialists missed, you are welcome to show us where they are and these can be added to the Basic Assessment (BA) report. Only after a preferred corridor is selected following a positive environmental authorisation will a walk down be undertaken once the servitude is plotted and they know where the powerlines will be located. And then if there are any deviations that need to be made from that point, it can be undertaken due to the width of the corridor that was assessed. In the final walk-down assessment, they will mark each and every tree to identify all species that will require either destruction or relocation permitting before this activity is undertaken. However, for now it is more of a general assessment of the entire area. Shaun Taylor ***Sivest Environmental***
In reference to a reminder email sent on the 22nd July 2016 to all I&APs notifying all of the final date for comment on the DBAR (25th July 2016), the following	Ms. Nicci Faber AH De Villiers Attorney Via Email 24th July 2016	Thank you for your comments – we note that this letter does not constitute as an objection, and appreciate your assistance in finding a suitable alignment on the affected properties.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
response letter was emailed in reply from AH De Villiers attorneys: "I am addressing this letter on behalf of our client, The Faber Family Trust who are the owners of the Farms Kalbas Hoogte 163, Tonning 185, Vergenoegd 243, Middelpunt 367, Uitzoek 35, Biesjes put 57, Rust en Vrede 164, Kuiltjespan 37, Taaibochlaagte 160, Uithoek 164, Rooidam 341 and Fouriena 346, all of which will be affected by the proposed power line. The proposed power line will have a devastating effect on our client's farming activities as a lot of the land is used for game farming and game conservation that includes the breeding of threatened and or endangered game like Roan, Disease Free Buffalo and Tsessebe among other species. Helicopters are of utmost importance in any game farming activity and are used on a very regular basis for capturing, counting, immobilizing for treatment and during the relocation of most of the game species. If the proposed power line runs through any of the mentioned farms, flying and the very necessary use of helicopters in an area of between 250 to 300 meters on either side of the power line will be impossible and therefore rendering the land useless and destroy our client's main source		Firstly, according to our records, only the following farms will be directly affected by the proposed power lines: Kalabas Hoogte 163, Tonning 185, Uitzoek 35, Biesjes put 157, Rust en Vrede 164 and Taaiboschlaagte 160, Bakendam 6 and Bakendam West 330 (see attached Cadastral Map). In terms of your first and second concerns regarding the effect of the proposed development on your client's game farming activities and use of helicopters, we would like to note that a socio-economic assessment was carried out to determine the overall potential negative impact of the proposed development on current business activities (including game farming and the impact of the affected use of helicopters for game farming activities – See Section 5.4 of the Socio-economic Assessment). Initial consultation with landowners was undertaken by the specialists, which informed the assessment of potential impacts. As such, in the context of the proposed development overall, given the relatively limited footprint of the power line (31m wide servitude), the potential impact was assessed to be low. It was identified however, that it is important that consultation with landowners is undertaken for the final power line alignment and establishment of the servitude to avoid game farming activities as far as practically possible. Importantly, also note that an existing power line is present for which the environmentally preferred power line corridor (Alternative 2 Corridor 2) has been proposed in the Final Basic

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
of income, of which income provides for 4 (four) families who have an interest in the Family Trust and 9 (nine) employees, who are the bread winners for their respected families, who are employed on the mentioned farms. There is also a vulture feeding area on the farms that provide food for the vulture population in this area on a regular basis. Vultures have been coming to this feeding are on a regular basis for more than three years. A power line over these farms will be catastrophic for these endangered birds. As our client's farms and the farms of their neighbor to the west Bakendam, Bakendam west and Aanleg are the only farms in this specific area that is mainly used for game farming and on which farms a power line will have a detrimental effect. We request that an alternative route or bypass around the mentioned farms be sought. If an alternative route or bypass is not possible our client wish to be consulted regarding the final route as to have it along a portion of the farms were it will cause the smallest impact. I, myself and my client are more than willing to assist you in identifying an alternative route and we await your kind response."		Assessment Report (FBAR). Hence, the potential impact of a new power line next to an existing power should not impede current game farming activities as significantly as if a new power line was to be proposed in an undeveloped area, since only a 31m servitude will be required as per Eskom. This is one of the main factors which assisted in the selection of Alternative 2 Corridor 2 as the preferred alternative. In terms of the vulture feeding area, an avi-faunal assessment was carried out which has identified the potential impact of the proposed development on vultures (particularly the White-backed Vulture). The assessment stipulated that displacement of avifauna during construction, as well as collisions and electrocution of avifauna during operation could potentially take place. Given this, appropriate mitigation measures were stipulated to minimise potential impacts which have been included in the Environmental Management Programme (EMPr) to which contractors and the Applicant will be legally bound to. With the implementation of mitigation measures, the potential impacts for displacement of avi-fauna for Corridor 1 – Jacobsdal Link (where the affected landowners of concern as listed above are present) were assessed as low. In terms of collisions and electrocution of avi-fauna, the potential impacts after implementation of mitigation measures were also assessed as low. Please refer to the Avi-faunal Specialist Report for details on the stipulated mitigation measures.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Finally, kindly refer to response above with regards to the potential impact on game farming activities and the selection of the final power line alignment in consultation with landowners to avoid game farming activities as far as practically possible. Note that the outcome of the comparative assessment was that Corridor 2 Alternative 2 is the environmentally preferred powerline corridor. Please advise if you see any further issues Shaun Taylor ***Sivest Environmental***
In terms of undertaking a water use license process, it was stated by Mr. Schrader that his office deals in the same manner with Renewable energy projects whereby a Water Use License Application (WULA) is only considered once the applicant is the preferred bidder. It was stated that there is no environmental authorisation (EA) needed before processing of WULA. The two processes can run concurrently.	Mr. Carlo Schrader Department of Water and Sanitation (DWS) Via Email 5th August 2016	The response in terms of the WULA process was noted. Shaun Taylor ***Sivest Environmental***
The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit reviewed the HIA. Corridor 2 Alternative 1, which contains most archaeological heritage resources recorded during the field survey, should be avoided. If this alternative cannot be avoided, mitigation would be	Ms. Ragna Redelstorff South African Heritage Resources Agency (SAHRA) Via Letter 26th July 2016	SolarReserve is committed to the protection of the environment and have acknowledged SAHRA's comments and recommendations in the Interim Comment issued for the aforementioned Project dated 26 July 2016. The final power line routing will only require a 31 meter servitude within the originally assessed 2km area. The

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
required for sites as indicated above and a 30m buffer zone established and to be fenced off to avoid accidental destruction for the sites recommended for conservation (Sites BEZ 001, KLP 002, KLP 007 & JDX 003 - 012). Mitigation permits must be applied for to SAHRA by a qualified archaeologist. A walk-down of the final route, once identified, must be done with a Walk-Down Report to be submitted to SAHRA. The recommendations should be included in the EMPr for implementation. However, the impact on additional sites identified in Corridor 2 Alternatives 1 & 2 (the old Kimberley cemetery, bore siege fortifications and block house alignments) was not assessed in the HIA. The SAHRA APM Unit requires a revised HIA that includes the assessment of the above mentioned sites to be submitted. A field-based Palaeontological Impact Assessment, conducted by a qualified palaeontologist, is required to assess any palaeontological heritage resources. No activities may commence until a PIA and revised HIA have been submitted and SAHRA has issued a final comment.		design of the power line and the associated infrastructure, including but not limited to the pylon/tower foundation footprints, the service roads will be subject to the process defined below. SolarReserve requested committing to the undertaking of the following assessments in response to the conditions provided for in the Interim Comment dated 26 July 2016: 1. Receiving an Environmental Authorisation from the Department of Environmental Affairs (DEA) on the preferred corridor. 2. Detailed Walk-down of the corridor approved by DEA. 3. Preliminary power line designs, alignment and placement. 4. Revised Heritage Impact Assessment (HIA) for Corridor 2 Alternative 1 and 2 with respect to the findings presented, by a qualified independent Heritage Specialist. 5. Field based Palaeontological Assessment (PIA) by a qualified independent Palaeontology Specialist. 6. Final power line design, alignment and placement. 7. Submission of updated HIA and PIA and relevant power

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		line placements to SAHRA. 8. Submission to DEA. This was favorably acknowledged by SAHRA telephonically. *Leanna Rautenbach* ***Solar Reserve***
The letter of commitment by SolarReserve to SAHRA submitted via email on the 16th of August 2016 was acknowledged. The SAHRA Archaeology, Palaeontology and Meteorites Unit internally discussed the request to waive the conditions in the interim comment dating 26th of July 2016 by offering a walk-down, revised HIA for Corridor 2 Alternative 1 and 2, and field-based PIA after Environmental Authorisation (EA) has been granted. The SAHRA APM Unit informed you that they did not accept the offers in the letter of commitment and decided that the conditions in the interim comment from 26 July 2016 stand. This was based on the strong likelihood of heritage resources occurring in the area, which may have to be mitigated. Therefore, assessments should be done as in the interim comment before EA is given.	Ms. Ragna Redelstorff South African Heritage Resources Agency (SAHRA) Via Letter 22nd August 2016	Subsequent to this response, the updated HIA and field based PIA was undertaken after a request for extension to submit the updated DBAR to DEA was granted and formed part of the updated DBAR as required by SAHRA accordingly. Shaun Taylor ***Sivest Environmental***
It was requested whether cattle will need to be removed from the farm during construction of the lines? If not, if livestock on the farm are injured or killed by the construction equipment or workers, what happens then?	Mr. W. Geldenhuys Landowner **Public Meeting** 29th June 2016	This matter was raised and discussed at the Public Meeting; In short, no – landowners do not have to remove livestock when construction commences. It is the landowners' responsibility to ensure his livestock is protected, however.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Contractors who are at fault for the destroying/damaging of fences and gates resulting in livestock loss may be penalised in some form. The Powerline Servitude Agreement will have specific conditions raised by the landowner that deal with these types of issues in detail. It will furthermore stipulate penalties for infringements etc. *Leanna Rautenbach* ***Solar Reserve*** There will be a designated Environmental Control Officer on site to monitor contractor activities and report on them. Additionally, an Environmental Liaison Officer (ELO) will be appointed by the contractor who will be on site at all times during the construction process. The ELO will have a set of procedures for different situations that will be followed to avoid or minimise impacts. They will also be responsible for implementing measures for rectifying those that could not be avoided. Lastly, a reporting mechanism will also be in place for these impacts. The EMPr remains a draft throughout the project to allow for changes that need to be made during the construction phase, updates of the document. Shaun Taylor ***Sivest Environmental***
It was queried whether if the power line would run through a property, will the landowner will be compensated for the sections used by the project?	Mr. W. Geldenhuys **Landowner** Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; Yes, a servitude will be negotiated. The power line will be handed back to Eskom for operations and maintenance, their procurement

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		processes and rates are followed in the compensation negotiations with all affected landowners, as they are the ultimate owners of the powerline. *Leanna Rautenbach* ***SolarReserve***
It was stated that should services need to be constructed over or under the national road, or within 60m measured from the road reserve fence, the service owner must apply for written permission from South African National Roads Agency (SANRAL), before any work may be carried out. An application form for the potential proposed encroachment was attached.	Nicole Abrahams South African National Roads Agency Via Email 24th May 2016	The receipt of the statutory encroachment application form was acknowledged from the SANRAL, and it was replied that it will be used to apply for any permissions should this be required at the appropriate stage (not required at this stage) before construction commences. Shaun Taylor ***Sivest Environmental***
It was requested to indicate on which Eskom properties the applicant would require landowner consent for.	Mr. Dave Lucas Eskom Via Email 4th May 2016	A google .kml filed with the affected farms as well as the proposed power line corridors that overlap the properties were sent to Eskom for review as per an email dated 4th of May 2016. As EAP, we requested that Eskom let us know if any of these properties are owned by Eskom's. The affected farms list (as emailed to Eskom), in the Northern Cape, that could be affected were identified as Portions 4, 7 & 10 of the Farm Dorstfontein 77, and in the Free State on Portion 1 of the Farm Kareeboom 438. It was requested that Eskom please confirm this and also let us know if there are any others. No reply has since been obtained.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Shaun Taylor ***Sivest Environmental***
It was stated that Eskom requirements for work in servitudes must be adhered as per an attached document (Eskom Requirements for work in or near Eskom Servitudes).	Mr. John Geeringh Eskom Via Email 13th May 2016	The Eskom requirements for work in a servitude were noted and included in the updated DBAR. Shaun Taylor ***Sivest Environmental***
Is the project site going to be for a Concentrated Solar Power (CSP) or Photovoltaic (PV)?	Mr. H. van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; SolarReserve uses duel technology (both CSP and PV) in their development approach, thus, leaving options open between the two. Projects are developed in such a manner that SolarReserve can use one of the technology options or both if they are awarded the appropriate approvals from DEA and the Department of Energy. Both technologies were implemented for the Kalkaar Project Site. *Leanna Rautenbach* ***SolarReserve***
In the presentation it was mentioned that the powerlines will have the potential to improve the reliability of electricity in the area. It was asked how this will be done?	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; Through the additional transmission and distribution infrastructure entering the national grid at substation level, it allows the network to stabilize. The added power will furthermore stabilised the grid with respect to generation shortages from the national power provider Eskom. *Leanna Rautenbach* ***SolarReserve***
There is a 22KV rural powerline that gives power to each of the farms and every time lightning hits the area the power on the farms go down. Thus, the addition of the 132KV line will not have any effect on reliability	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; Eskom is currently busy with upgrades on their entire system (Deep and Shallow Network Strengthening). They have started

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
for the farmers?		with the larger lines and are working their way down. This powerline will aim to strengthen the network as a whole. With respect to small/low level voltage lines, we are aware that if the supply substation is hit and shuts down, it is a problem for farmers, which we cannot address directly with this line. But projects like this constructed in the area might prioritise maintenance and could potentially lead to faulty infrastructure being fixed quicker , due to the connection of the CSP Project to the national grid and its associated generation /transmission requirements and revenue cost implications. All in all, the powerline project has the ability to stabilise the power supply in the area thereby improving the capacity. *Leanna Rautenbach* ***SolarReserve***
Was all the information collected (for the BA) done through desktop studies?	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; The various specialist studies start with desktop studies where they look at databases and quarter degrees squared to identify habitats which are then flagged, ground truthed and verified in the field where required. Shaun Taylor ***Sivest Environmental***
A lot of time to address all the comments have not been given if you only have 6 – 7 days to finalise the Final Basic Assessment Report (FBAR), that being 25 July – 01 August 2016.	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; Yes the timeframe may seem relatively short, giving a week to finalise the basic assessment report. However, in our experience, this is enough time to finalise and is general

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		practice in the industry. This timeline excludes the public comment period. Shaun Taylor ***Sivest Environmental***
If the DEA has a 107 days to review the BA, how can the decision be expected by the 17th of November 2016?	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; It was stated that this is more or less three and a half months that the DEA has to review the FBAR once submitted which is expected to take place (1 August 2016). It was furthermore stated that the timeline does take into account public holidays. If you count the days including the provision for public holidays (of which there are two) out, it comes to the 17th of November. Shaun Taylor ***Sivest Environmental***
Is there a website available that we can go take a look at all the information that you have discussed?	Mr. W. Geldenhuys Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; The website (www.sivest.co.za) was provided on the last slide of the PM presentation which was emailed to all attendees along with the draft minutes of this meeting. Shaun Taylor ***Sivest Environmental***
Currently in the Draft Basic Assessment Report (DBAR), Corridor 2 Alternative 2 is the preferred corridor, what are the chances that this will change to be Alternative 1?	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; The chances are very small that the DEA would not select the preferred corridor as environmentally substantiated reasons will have been provided motivating this as an environmentally preferred option. There will have to be substantial and well-motivated reason behind not selecting the preferred corridor and going against all of the specialist findings that have been presented in the report.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		Shaun Taylor ***Sivest Environmental***
There is a 300ha project on Pandamsfontein which runs close to the existing lines that is in the pipeline.	Mr. W. Geldenhuys Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; SolarReserve and SiVEST will look into this project and try and get more information. *Leanna Rautenbach* ***Solar Reserve*** **Post Meeting Note:** The project referred to is for a renewable solar project. It is called the 75MW Backwood Solar Energy Facility on Portion 1 of the Farm Pandamsfontein No. 1593. Fortunately, due to the 4km width of the proposed power line corridor (Corridor 2 Alternative 2 Kalkaar CSP via Kimberley DS to Boundary Substation), should the corridor receive environmental authorisation, the power lines can be routed along the boundaries of the Solar Facility or on an adjacent property (Portion 2 of the Farm Pandamsfontein No. 1593) when a final route is determined. Shaun Taylor ***Sivest Environmental***
How far will the Corridor 2 Alternative 2 run from the existing power lines that run in the same corridor?	Mr. W. Geldenhuys Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; These lines have a 31m servitude (15.5 m on either side of the centre line of the power line). It will be ideal if we can have these lines as close together as possible and thus have the two lines run parallel with one another with a 15.5m buffer between them. This will allow SolarReserve to minimize the impact due to the shared impacts between the lines if this is technically feasible. *Leanna Rautenbach*

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		SolarReserve
Previous concerns and comments that have been sent through via email, have these been incorporated or do these have to be repeated in this meeting for the minutes?	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; For the email questions I will respond to those on email to address the specific points highlighted, which will be incorporated into the Final Comments and Response report. There is therefore no need to repeat the questions here. However, at your request, if you want to address these in the meeting, you are welcome as well. Shaun Taylor ***Sivest Environmental***
With reference to your above-mentioned application, I hereby inform you that our Client (Telkom SA SOC Ltd) approves the proposed work indicated on your drawings in terms of Section 23 of the Electronic Communication Act No. 36 of 2005 as amended. Any changes/deviations from the original planning during or prior to construction must immediately be communicated to this office. Approval is granted, subject to the following conditions, as per attached drawings supplied, our Client (Telkom SA SOC Ltd) infrastructure will be affected as indicated in ORANGE. Our Client (Telkom SA SOC Ltd) infrastructure must be regarded as approximate only. We did our utmost to ensure that we indicate our route as accurate as possible and should you discover any of our cables that is not on the sketch please stop	Mr. Chris Schutte Mvelaphande Trading Via Email 29th July 2016	Your conditional approval is noted and will be included in the Comments and Responses Report (C&RR) of the updated DBAR. However, the Project Proponent requests that the commenting stakeholder provide a formal proof of its affiliation with Telkom. No costs will be repayable due to "existing noise or interference on existing infrastructure" as per your electronic correspondence stated in the left column. The Project Proponent however will take responsibility for all associated costs of NEW infrastructure related to the Power Line Project with relevant proof provided. The Project Proponent will deal directly with Telkom on all matters. Clearance of power lines above overhead communication lines will be adhere to and factored into the final designs. Shaun Taylor

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
and contact us immediately to arrange a site meeting. Please make use of pilot holes in order not too damage our infrastructure. Consequently, the following conditions apply: Aerial Plant – At points of crossing, the overhead power lines should cross above the overhead communication lines in accordance with, and clearances stipulated in the Occupational Health and Safety Act No. 85 of 1993, Machinery Regulations 20 – Crossings, Electrical Machinery Reulations 15 – Clearances of Power Lines. If the specifications could not be met, all deviation costs will be for the applicant's account. We also refer to Section 25 of the Electronic Communications Act 36 of 2005. Calculations have shown that an earth fault on the high voltage Power lines will induce excessive low frequency induction into the Communication lines. As a result of this, the cost to deviate / alter the communication lines to prevent this induction will be for the power provider. Approved on condition that, should it later be found necessary to deviate the existing communication line due to existing noise interference or any other reason whatsoever, the cost of such remedial action shall be repayable.		***Sivest Environmental***

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
Relocations of Telkom SA SOC Ltd plant will be done at customer's request and will be a repayable project. Please notify the office within 21 working days from date of this letter of acceptance and if any alternative proposal is available or if a recoverable work should commence, the liaison officer is Chris Schutte at tel. No. 051 401 6701. As important cables are affected, Mr Bennie Pienaar must be contacted at telephone number 081 411 2515 two weeks prior of commencement on construction work. It would be appreciated if this office can be notified within 30 days on completion of construction work. Confirmation is required on completion of construction as per agreed requirements. On completion of this project, please certify that all requirements as stipulated have been met. Please note that should any of Telkom SA SOC Ltd infrastructure have to be relocated or altered as a result of the proposed activities, the cost for such alterations or relocations will be for your account in terms of Section 25 of the Electronic Communications Act. Should Telkom SA SOC Ltd infrastructure be damaged wile work in undertaken, kindly call the toll free number 0800203951		

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
immediately. All Telkom SA SOC Ltd rights remain reserved. Mr. Bennie Pienaar must be contacted at telephone number 081 411 2515, before any commencement of work.		
A letter was submitted via email as a follow up to the comments submitted on the 29th July 2016 and as a request from the project proponent. The letter submitted by Mvelaphande Trading letter was a copy of a letter that was sent out to a Municipality who also requested proof. It was requested whether the submitted letter would be acceptable? Contents of the letter include the following information: "12 October 2015 Telkom SA SOC Ltd has outsourced their Bloemfontein Wayleave office that deals with Free State and Northern Cape wayleaves. Mvelaphande Trading is now doing all the wayleaves in the above mentioned areas. Contact person at Telkom is the Wayleave Operations Manager Me. Heleen Van Den Heever – 051 401 6829".	Chris Schutte TELKOM Via Email 23 August 2016	Mr. Schutte was thanked. However, it was requested whether a more recent version could be submitted as the submitted letter was dated 12 October 2015 and may be considered outdated as it is over a year old. The requested updated letter has not been submitted nor received to date. *Shaun Taylor* ***Sivest Environmental***

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
It was requested that all comments submitted via emails be incorporated into the meeting minutes.	Mr. H van Rooyen Landowner Public Meeting 29th June 2016	This matter was raised and discussed at the Public Meeting; All submitted queries will be incorporated into the meeting minutes as requested (See **Appendix 1**). Note that additional meetings with the Local Municipalities as Focus Group Meetings, which will raise additional comments and issues. All comments and issues received during the comment period will then be incorporated into the Comments and Response Reports which will address all comments and issues raised by Interested and Affected Parties. This report has an issues trail that shows comments or issues and also the responses given in reply. This will then be incorporated into the FBAR report. All interested and affected parties (I&APs) will be notified and informed of the availability of this report for your review. Shaun Taylor ***Sivest Environmental***
With regards to the DBAR, please note the following: 1. Pg 8 – Biodiversity : Flora The line will have a high impact on the indigenous *Acacia Erioloba* trees on Farm Uitkyk 102. 2. Pg 9/10 – Biodiversity : Fauna The line will have a high impact on the breeding activities of our exotic game on Farm Uitkyk 102 and Banksfontein 136, especially during construction phase. 3. Pg 14 – Agricultural Potential Although predominantly unsuitable for agriculture, Uitkyk	Mr. Heyns Van Rooyen Landowner Via Email 25th July 2016	No technical or supporting documents were provided by the landowner to substantiate any claims, as such no specific solutions could be incorporated to address his concerns. The general response to each query is as follows: 1. As per the response in the minutes of the public meeting, the project team are aware that there are probably hundreds of Acacia trees along the proposed corridors.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
102 and Banksfontein 136 is highly suitable for game farming. The line will have a negative impact on Uitkyk 102, Banksfontein 136 as well as adjoining farms Abonsdam 192, especially during construction phase. 4. Pg 17 – Socio Economic The line may have a low impact on normal commercial livestock farming, but will have a high impact on our hunting business with international hunters as well as the monthly farmers market.		That is why it is only recommended that during the final ecological walk down of the approved powerline route, each individual tree is marked for the necessary permitting processes. The specialists have identified the general habitat where these trees are usually located and marked the general area as sensitive accordingly in the specialist studies to inform the walk-down assessment at a later stage should environmental authorisation be granted. Importantly, trees will only be transplanted, removed "pruned" where the necessary permits are in place. 2. The environmental findings were used in the comparative assessment of alternatives which advised against Corridor 2 Alternative 1 Kalkaar CSP via Kimberly DS to Boundary Substation alternative option which potentially affects the properties mentioned. Subsequently, Corridor 2 Alternative 2 Kalkaar CSP via Kimberly DS to Boundary Substation was selected as the preferred in the DBAR

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		which avoids the mentioned properties and therefore is not expected to have an impact on the breeding activities of exotic game. 3. This is noted. Please see response to point 1 above. 4. Please note that a socio-economic assessment was carried out to determine the overall potential negative impact of the proposed development on current business activities (including game farming and the impact of the affected use of helicopters for game farming activities – See Section 5.4 of the Socio-economic Assessment). Initial consultation with landowners was undertaken by the specialists, which informed the assessment of potential impacts. As such, in the context of the proposed development overall, given the relatively limited footprint of the power line (31m wide servitude), the potential impact was assessed to be low. It was identified however, that it is important that consultation with landowners is undertaken for the final

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		power line alignment and establishment of the servitude to avoid game farming activities as far as practically possible. Importantly, also note that the environmentally preferred power line corridor (Alternative 2 Corridor 2) has been proposed in the Final Basic Assessment Report (BAR) and not Alternative 2 Corridor 1 where the farms Uitkyk 102 and Banksfontein 136 are located. It is therefore not likely that direct impacts will be experienced on these two farms unless Alternative 2 Corridor 1 is authorised by the determining authority (DEA). As per the response in the minutes for the public meeting regarding the same concern, in terms of visual impact on the properties mentioned, the dwellings on these farms were regarded as potentially sensitive receptor locations and were taken into consideration when determining the zones of visual contrast as part of the visual sensitivity and visual impact analysis (See pages 43-44 & 78-79 Visual Impact Assessment Report dated 30 June 2016). Shaun Taylor ***Sivest Environmental***
A letter of objection was submitted via email from Mr. Geldenhuys as the landowner of property Portion 2 of the Farm	Mr. Willie Geldenhuys Landowner Via Email 25th July 2016	The objections were noted for Portion 2 of the Farm Pandamsfontein No. 1593 situated in the environmentally preferred corridor (Corridor 2

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
Pandamsfontein No. 1593 situated in the environmentally preferred corridor (Corridor 2 Alternative 2 Kalkaar CSP via Kimberly DS to Boundary Substation). The contents of the letter as submitted in Afrikaans are as below followed by the English translation: "Aan wie dit mag gaan Hiermee stel ek u in kennis dat ek onder geen omstandighede sal toelaat dat die voorgestelde krag lyn oor my plaas gebou word nie en dat daar ook nie 'n serwituut geregistreer word nie. 1. Die beplande kraglyn sal die waarde van my eiendom nadelig beïnvloed. Daar word met verskeie wildspesies op die betrokke plaas geboer. Daar is ook verskeie natuurlike wildspesies wat voorkom op die plaas nl. erdvarke, die aardwolf, steenbokke, duikers, ystervarke, verskeie jakkalse, wildsbokke, wilde katte en voëlspesies wat ek ten-strengste bewaar. Die bou van 'n kraglyn sal die natuurlike wildlewe nadelig		Alternative 2 Kalkaar CSP via Kimberly DS to Boundary Substation). The response in accordance with the respective numbering for the listed concerns are as follows: 1. In terms of the effect on the value of your property as a result of the proposed development, a socio-economic assessment was carried out to determine the overall potential negative impact of the proposed development on current business activities (including game farming and the impact of the affected use of helicopters for game farming activities – See Section 5.4 of the Socio-economic Assessment). Initial consultation with landowners was undertaken by the specialists, which informed the assessment of potential impacts. As such, in the context of the proposed development overall, given the relatively limited footprint of the power line (31m wide servitude), the potential impact was assessed to be low. It was identified however, that it is important that consultation with landowners is undertaken for the final

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
beïnvloed en veral die wat hoogs beskermd is. 2. Daar is reeds 'n bestaande kraglyn op die plaas, die kraglyn is van geen waarde vir my as eienaar nie, aangesien daar nie 'n krag aftappunt voorsien kan word nie. 3. Ek neem aan dat die persone wat die impakstudie gedoen het, aan u uitgewys het dat daar verskeie arende en aasvoëls broei. Ek teken ook ten-strengste beswaar aan teen die volgende: 1. Ek word deur een van u spesialiste (Jeremy) gebel wat verneem of hy toegang tot een van my eiendom kan kry, aangesien hy voor die hek staan. Dit was die eerste keer dat ek van die moontlike bou van 'n krag lyn verneem. 2. Ek word deur Mnr. R Fourie telefonies gekontak om besonderhede aangaande my finansiële inligting en		power line alignment and establishment of the servitude to avoid game farming activities as far as practically possible. In terms of the ecological impact, it was identified in the ecological assessment that direct impacts to fauna could potentially occur, particularly during the construction phase. However, it was only identified as a low potential impact. Additionally, mitigation measures were stipulated that will be included in the EMPr that need to be complied by contractors and the applicant in order to minimise this potential impact further. Following the relatively brief construction phase disturbance, any affected species may return to the area. 2. The proposed development is viewed as a nationally important project which will aid in addressing the national demand for electricity. From a regional perspective, the power generated and evacuated from the proposed development will aid regional electricity demands. Indirectly, benefits for future electrical local use of electricity as a result of the proposed development may

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
inkomste aangaande die eiendom te verskaf. Ek beskou dit as baie onprofessioneel. Ek besit verskeie eiendomme en kan nie inligting telefonies verskaf nie, inteendeel beskou ek enige inligting wat ek wel verskaf het, nie as bindend nie, en is die navraag in stryd met Wetgewing. Die kortste roete vir die kraglyn is oor Benfontein waar ook 'n bestaande krag lyn is. Na aanleiding van u skrywe van 4 Mei 2016. U kan tog sekerlik nie verwag dat ek 'n dokument moet onderteken wat u al die regte en volmag gee nie, voor u nie baie duidelik alle voorwaardes verskaf waaraan u onderworpe sal wees en ook hoe vergoeding t.o.v. verlies van die waarde van eiendom gaan plaasvind nie. Dan wil ek ook weet hoe bv. toegang beheer toegepas gaan word, moontlik diefstal, verlies en beskadiging van eiendom, besoedeling, rommel strooiing ens. en dus geensins enige toestemming sal verleen tot die toegang van my eiendom nie. Ek behou my die reg voor om hierdie skrywe te verander en ook wysigings aan te bring tot en		be experienced. 3. Red data list avi-faunal species have been identified as per the avi-faunal specialist assessment. These, amongst others include the White-backed Vulture, Martial and Verreaux's Eagle. The assessment stipulated that displacement of avifauna during construction, as well as collisions and electrocution of avifauna during operation could potentially take place. Given this, appropriate mitigation measures were stipulated to minimise potential impacts which have been included in the Environmental Management Programme (EMPr) to which contractors and the applicant will be legally bound to. With the implementation of mitigation measures, the potential impacts for displacement of avi-fauna for Corridor 1 – Jacobsdal Link (where the affected landowners of concern as listed above are present) were assessed as low. In terms of collisions and electrocution of avi-fauna, the potential impacts after

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
met die dokumentasie in my Taal nl. Afrikaans aan my voorsien word, dat daar dan ook 'n redelike tyd gegun sal word om wysigings aan te bring. **English Translation:** I hereby inform you that under no circumstances will I allow the proposed power line to be constructed over my property (Portion 2 of Pandamsfontein No. 1593) and that no servitude will be registered either. 1. The planned power line will negatively affect the value of my property. Farming on the farm in question involves various species of game. There are also various species of natural game that can be found on the farm, namely ant eaters, the maned jackal, steenbok, duiker, porcupines, various jackal, antelope, wildcats and bird species that I am intensely conserving. Constructing a power line will negatively affect the natural wildlife and especially those that are highly protected.		implementation of mitigation measures were assessed as medium and low respectively. Please refer to the Avi-faunal Specialist Report for details on the stipulated mitigation measures. The response in accordance with the second set of numbering for the listed objections are as follows: 1. Please note that where we do not or cannot access any contact details for landowners early in the process, it may be required to visit the various properties directly (as in this case). Here, Jeremy Hollmann (heritage specialist) visited Portion 1 of the Farm Pandamsfontein 1593 in April 2016 in order to gain access to the property to assess possible sensitive heritage resources. Following this interaction, your contact details were added to the project database from which has enabled participation in the Basic Assessment process. This is viewed as a positive outcome of the situation which has enabled the concerns listed to be included in the process. 2. The purpose of Mr. Fourie's

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
2. There is already an existing power line on the farm, which is of no value to me as the owner, since no power tapping point can be provided from it. 3. I presume that the persons who undertook the impact study indicated to you that various eagles and vultures nest there. I also strongly object to the following: 1. I was phoned by one of your specialists (Jeremy) who wanted to know if he could gain access to one of my properties, since he was standing at the gate. This was the first time I was informed of the possible construction of a power line. 2. I was contacted telephonically by Mr R. Fourie to furnish him with details regarding my financial information and income pertaining to the property. I regard this as very		phone call was to include financial details into the Socio-economic Impact Report for the determination of the possible financial impacts of the proposed development on directly affected landowners in consideration of concerns that landowners might have in this respect. This is standard for the methodology for the Socio-economic assessment for the process and all other landowners (as far as possible) were contacted to obtain the same information to inform the baseline of information on affected properties. Note that the information was treated as confidential and no figures obtained during the phone call for the individual properties of concern have been explicitly published in any of the reports that were made publicly accessible. Our length calculations have shown that there is a negligible difference between the proposed power line Corridor 2 alternatives. Alternative 2 Corridor 1 is approximately 61km whilst Alternative 2 Corridor 2 is 62km. Importantly, the final length can also only be determined once the final

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
unprofessional. I own various properties and cannot give information telephonically. In fact, I do not regard any information that I did furnish as binding, and this enquiry was contrary to Legislation. The shortest route for the power line is over Benfontein, where there is also an existing power line. Regarding your letter of 4 May 2016: Surely you cannot expect me to sign a document which gives you all the rights and proxy before you haven't very clearly provided all the conditions you would be subjected to and also how remuneration would take place in respect of the value of property? Then I would also like to know how, for example, access control will be dealt with, possible theft, loss and damage to property, pollution, littering, etc., therefore I will not give any permission for access to my property. I reserve my right to change this letter and also to make amendments to the documentation, and that up until such time as the documentation is given to me in my mother tongue, namely Afrikaans, that I will also be afforded a reasonable time to make		route is established, so to comment on the final length is premature at this stage. In terms of the stated letter dated 4th May 2016 (Letter of Consent), this letter refers merely to consent to permission to undertake the various assessments including the following: ▪ Environmental Impact Assessment (or Basic Assessment) ▪ Environmental Authorisation ▪ Water Use License ▪ National Flora Harvesting Permit ▪ Flora Harvesting Permit in terms of the NEMA: BA ▪ Heritage Permits ▪ Road Permits ▪ Telkom Consent ▪ Civil Aviation Authority Consent ▪ Transnet Approval The stated letter therefore does not give rights or proxy to any properties other than to make you aware and request permission to allow the basic assessment process to be undertaken. The letter also does not include any acceptance in terms of servitude agreements, as would be a related process only to be undertaken after and should environmental authorization be granted, where issues such as remuneration are negotiated. Importantly, it is reiterated and clearly stated that servitude negotiations are not part of the environmental process. This takes

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
amendments.		place outside and only after environmental authorization has been granted (should it be issued). In line with this, if your property is on the selected corridor a servitude will be need to be negotiated. However as the line will be handed back to Eskom for operations and maintenance, their procurement processes and rates are followed in the compensation negotiations with all affected landowners, as they are the ultimate owners of the powerline. To reiterate, the purposes of the landowner consent letter consent is a formalised notification of the environmental process and to request to permission to undertake the various assessments as listed above. Note that where contractors are at fault in instances such transgressions in terms of access control, possible theft, loss and damage to property, pollution and littering, they will be penalised in some form as they need to adhere to and implement the Environmental Management Programme (EMPr) which will have specific sections that deal with these types of issues in detail (See Sections 2.3 and 2.4 of the EMPr). It will stipulate penalties for infringements etc. not only on the environmental side but also Socio-Economic. Additionally, note that there will be a designated Environmental Control Officer on site to monitor contractor activities and report on them. Moreover, an Environmental Liaison Officer (ELO) will be appointed by the contractor who will be on site at all times during the construction process. The ELO will have a set of procedures for different situations that will be

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		followed to avoid or minimise impacts. They will also be responsible for implementing measures for rectifying those that could not be avoided. Lastly, a reporting mechanism will also be in place for these impacts. Finally, the EMPr remains a dynamic document throughout the project to allow for changes that need to be made during the various phases of the proposed development as and where required. Mr. Geldenhuys was emailed on the 7th December 2016 to request what documents specifically were required and it was request that it is confirmed that this be translated in Afrikaans. A response is yet to be obtained. Shaun Taylor ***Sivest Environmental***
Herewith included, again my objection to the construction of the power line as per correspondence 25 July 2016. Objection: Herewith I would like to add that the construction of a potential neighbouring solar project was moved as to ensure minimal impact on eagles and vultures on my property. It seems like selected farming operations are receiving preferential treatment. I would like to inform you that considering per rand invested, I most probably earn more from my property than certain other farming operations. My farming activities (game farming) does not reflect in the property value,	Mr. Willie Geldenhuys Landowner Via Email 28th July 2016	Objections: In terms of avifaunal impacts, these have been assessed in terms of the proposed project. Appropriate mitigation measures were stipulated to minimise potential impacts to acceptable levels, which have been included in the Environmental Management Programme (EMPr) to which contractors and the applicant will be legally bound to. Please refer to the Avi-faunal Specialist Report for details on the stipulated mitigation measures. Please note that no preferential treatment has been afforded to any type of operations. The proposed routes were determined early in the process based on a number of factors including length of the power line, selecting the fewest possible number of farms to be traversed by the proposed power line in order to

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
due to the fact that if I were to sell the game animals tomorrow, my property value would stay the same. By the way some of my neighbours over which the proposed power line will run, also has game farming facilities with exotic wild animals. This should not be the deciding factor for the alignment of the power line. Minutes: In the minutes of the meeting, the question from Mr Van Rooyen, there is reference to his options with regards to objections. The response stated that somewhere in May 2016, meetings will be held with the respective parties. I would like to enquire as to when these meetings will take place in the Jacobsdal district. The majority of the power line crosses properties in this district and the Farm Kalkaar is also situated in this district. Please confirm receipt of this correspondence. With regards to the contact details for my neighbours – I will provide it to you, as soon as I receive their permission in this regard.		minimise potential impacts and cumulative impacts as far as possible, and for avoiding known desktop environmental sensitivities. At present, the determination of the environmentally preferred corridor alternatives was selected purely on environmental merits for the least sensitive route in consideration of the following specialist studies: ▪ Biodiversity ▪ Avi-fauna ▪ Freshwater Resources ▪ Heritage and Palaeontology ▪ Soils and Agricultural Potential ▪ Socio-economic ▪ Visual To reiterate, the selection of the environmental preferred alternative corridor (Corridor 2 Alternative 2) was selected based on environmental merits which were informed by a number of specialist assessments as listed above. Hence, economic and ecological factors were collectively considered in the final selection of the environmentally preferred corridor alternative. Minutes: Note that the response to Mr. Van Rooyen's comments (dated 21 April 2016) predated the PM meetings that were provisionally anticipated in May 2016, which was indicated. However, the meeting only took place later in July 2016 of which Mr. Van Rooyen and your sons attended. In terms of the meeting location, no meetings were held in Jacobsdal. As

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
		a result of the initial public consultation process undertaken at the inception of the project whilst distributing the background information documents, it was found many of the landowners do not reside on the properties where the proposed development will be located, but rather are in Kimberley and/or other nearby surrounding areas. Additionally, it was deemed strategic to hold the meetings at Tokologo Local Municipality since almost half of the proposed development can be found within this municipal area. Correspondence was confirmed of the correspondence received via email on the 1st August 2016. In terms of additional contact information, this is duly noted. Shaun Taylor ***Sivest Environmental***
The proposed 132kV power line is a cross-border line between Free State and Northern Cape provinces. The report confirmed the presence of NFA listed protected trees in the study site, especially in the north close to Kimberley. Please note the application for the Forest Act License (if authorisation is granted) must be submitted to the province in which most protected trees occur. If the majority of protected trees are in the Northern Cape, the application for a license must be submitted to the Forestry Office in Upington; if most protected trees occur in the Free State part of the project, then the license application can be submitted to	Ms. Jacoline Mans Department of Agriculture, Forestry and Fisheries (DAFF) Via Email 5th August 2016	In terms of comment 2.1, it is hereby acknowledged that the Forest Act License will be lodged with the respective Forestry Office where the most protected tree species will require to be permitted should authorisation be granted. It is noted that no trees containing White-back Vulture nests may be removed in line with the avi-faunal specialist recommendations. This condition has been included in the Environmental Management Programme (EMPr) to be adhered to during construction. It is furthermore, acknowledged that a valid Fauna Permit from the relevant authorities will be obtained before any trees containing bird nests are disturbed or cut in the Northern Cape province.

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
the DAFF Office in Bloemfontein. According to the avifauna specialist report, both alternatives in Corridor 2 could have an impact on the breeding sites of White-back Vultures. The avifauna specialist stated that "no trees containing White-back Vulture nests may be removed." The DAFF supports the recommendation and will take it into account when issuing a Forest Act License. In addition, trees with bird nests may not be disturbed or cut in the Northern Cape, unless if the developer obtained a valid Fauna Permit from the provincial Department of Environment and Nature Conservation (DENC) in Kimberley under the Northern Cape Nature Conservation, Act 9 of 2009 (NCNCA). Page 45 of the main report, number 6 refers to land uses that may be impacted on. One of the boxes ticked is 'plantation'. The specialist fauna and flora assessment did not refer to any plantations in the vicinity of the proposed power line. Please provide more information about the location of the plantation, the type of plantation, as well as the anticipated impact thereof.		Lastly, it must be noted that the inclusion of 'plantation' as a land use to be affected by the proposed development is an error in the DBAR. This has been corrected and will be excluded in the FBAR. Shaun Taylor ***Sivest Environmental***

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

The Comments and Response Report (C&RR) is included in Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Please refer to Appendix E5, full contact details can be requested directly from SiVEST (Pty) Ltd					

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

Proof that the Authorities and Organs of State received written notification of the proposed activities are included in Appendix E4.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

A list of registered I&APs is included in Appendix E5. Details of the correspondence and minutes of meetings held are included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Corridor 1 Jacobsdal Link (Green – Preferred)

Activity	Impact summary	Significance	Proposed mitigation
Biodiversity	***Direct impacts:***		
	Impacts on vegetation and protected plant species	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ There should be a pre-construction walk-through of the power line route to identify species of conservation concern that should be avoided or translocated, where possible and practicable. ▪ Areas of dense stands of protected trees should be avoided where possible and practicable. ▪ The minimum amount of woody vegetation should be cleared to conform to Eskom standards, where possible.

Activity	Impact summary	Significance	Proposed mitigation
	Direct faunal impacts	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ The final power line routing should be routed to avoid the pans as much as possible. ▪ The footprint of the power line should be kept as low as possible and construction staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna is harmed during construction.
	Ecological degradation during operation	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Regular erosion and alien plant control along the power line servitude. During operation and maintenance of the power line servitude, alien species especially large woody species such as *Propsopis glandulosa* should be cleared from the power line servitude, but indigenous species such as *Boscia albitunca* and *Boscia foetida*, should not be cleared as they do not pose a fire risk. If any indigenous trees are too tall to comply with safety standards they can be trimmed to an acceptable height and it is not necessary to cut down the trees.
	Decommissioning impacts on fauna	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Disturbance during decommissioning should be kept as low as possible. ▪ Staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna are harmed during decommissioning activities.

Activity	Impact summary	Significance	Proposed mitigation
	Ecological degradation due to decommissioning	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As the pylons are steel structures with concrete foundations, they are not easily removed and so it is likely that decommissioning would result in some disturbance along the power line route, which should be reduced as far as possible. The use various tools to dismantle the pylons may also pose a fire risk if these generate sparks or have open flames.
	Indirect impacts:		
	None identified.	None identified	None identified.
	Cumulative impacts:		
	The density of renewable energy development in the Kimberly area is moderate, with several approved projects currently being built or nearing construction. The main source of habitat loss in the area is however due to agricultural practices with extensive clearing for irrigated croplands along the Modder River as well as dryland cropping scattered across the area. Although many of the dryland cropping areas have been abandoned, the full complement of biodiversity is slow to return to such areas. It is likely that the cumulative impact due to renewable energy development will increase significantly in the future. Due the low footprint of low voltage power lines, the contribution of the Power line Project to the cumulative impact in the area is not considered highly significant in the context of the surrounding landscape and the large-scale impacts on habitat loss resulting from agriculture, mining and renewable energy facilities. Although power lines may generate significant cumulative impact on avifaunal, the long-term interaction with terrestrial biodiversity is low after mitigation and the contribution of the current development to cumulative impact on the area is low and would not generate significant long-term impact.		
Avifauna	***Direct impacts:***		
	Displacement of Red Data species due to disturbance and habitat transformation associated with construction of the 132kV power line	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Construction activity should be restricted to the immediate footprint of the infrastructure, where possible. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry as provided for in the EMPr.

Activity	Impact summary	Significance	Proposed mitigation
			▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum.
	Collisions of Red Data species with the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant collision mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ The power line should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, alternating black and white or as per agreement with independent Avifaunal specialist and Eskom.
	Electrocutions of Red Data species on the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant electrocution mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ All the steel monopoles should be

Activity	Impact summary	Significance	Proposed mitigation
			fitted with bird perches.
	Displacement of Red Data species due to disturbance and habitat transformation associated with de-commissioning of the 132kV power line.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ De-commissioning activity should be restricted to the immediate footprint of the infrastructure, where possible. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	The cumulative impact of disturbance due to disturbance and habitat transformation as a result of the building of the Power line Project, is likely to be insignificant for the majority of Red Data species. The one exception to this statement concerns the White-backed Vulture breeding colonies around Kimberley and specifically the Susanna breeding area. Disturbance of these breeding birds could result in a significant impact on the local population of the species, given the suite of impacts to which the birds are already subjected to. The cumulative impact of disturbance and habitat transformation on Red Data species (in this instance White-backed Vultures) could therefore be potentially major, should Corridor 2 be implemented. The risks that power lines pose, is well researched (Shaw 2013). This transmission line will further increase the already high collision risk to Ludwig's Bustards, Blue Crane, Greater Flamingo, Lesser Flamingo and Kori Bustard that power lines pose throughout their range. The key question therefore is to what extent the proposed sub-transmission line will contribute to this existing and potentially significant mortality factor in the area around Kimberley. All in all, it is envisaged that collisions of Red Data species with the proposed line will have a MODERATE cumulative impact. Electrocutions is a major threat to vultures in South Africa (Van Rooyen 2000). The proposed CSP Project power line could pose an electrocution risk specifically to the population of White-backed Vultures breeding around Kimberley and Jacobsdal. If the steel monopole is used with a bird perch, the risk will be significantly reduced. It is envisaged that the risk of electrocution posed by the proposed power line is		

Activity	Impact summary	Significance	Proposed mitigation
	MINOR, provided the monopole is fitted with a bird perch.		
Wetlands	***Direct impacts:***		
	Large Pans – Loss of habitat and structure (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Loss of habitat and ecological structure	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving

Activity	Impact summary	Significance	Proposed mitigation
			does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; and ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Large Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management

Activity	Impact summary	Significance	Proposed mitigation
			Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by

Activity	Impact summary	Significance	Proposed mitigation
			construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Large Pans – Impacts on hydrological function and sediment balance (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Small Pans – Impacts on hydrological function and	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the

Activity	Impact summary	Significance	Proposed mitigation
	sediment balance (construction phase)		vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	With several current and historical activities occurring within the vicinity of the proposed Power line Project, the potential cumulative impacts of such activities in conjunction with the potential impacts of the proposed Power line Project, were taken into consideration. Historical and existing activities taking place within the zone of influence of the proposed Power line Project, which may have impacts on the freshwater systems, include, but are not limited to: ▪ Urban and Peri-urban development (including the development of infrastructure such as the road and bridge crossings); ▪ Historical and current De Beers mining activities; ▪ Agricultural activities (livestock and game farming, and crop cultivation, particularly surrounding the Modder River); ▪ Solar Renewable Energy Projects in the vicinity of the proposed Power line Project and within close vicinity of the Modder River		

Activity	Impact summary	Significance	Proposed mitigation
	These activities have already resulted in the transformation and loss of riparian habitat within the Eastern Kalahari Bushveld Group 3 and Nama Karoo WetVeg Groups. Whilst both of these WetVeg groups are classified as "Least Threatened" (SANBI, 2013), further alterations and/or losses should be minimised as much as possible. Natural freshwater systems have been artificially impounded, abstraction from the Modder River for agricultural irrigation purposes occurs, and, in the case of pans, vegetation communities have been transformed as a result of grazing and trampling by livestock. Since a significant proportion of the surrounding area is already fenced off, especially for game farming, the Modder River is likely to have decreased capacity to function as part of a movement or migration corridor for fauna, although it was apparent during the site visit that it does still function as such to a degree. The overall impact on the connectivity of the landscape and the further disruption of ecosystem processes associated with freshwater features by the proposed Power line Project would thus be reduced by the proximity to these existing developments and activities. Considering the above, the cumulative impacts on the freshwater ecology by the proposed Power line Project in the region, should adequate mitigation measures be implemented, is considered to be low. However, it is imperative that adequate mitigation be implemented throughout the life of the development in order to minimise the potential impacts of the proposed Power line Project on the receiving environment, and thus minimise the cumulative impacts.		
Soils and Agricultural Potential	***Direct impacts:***		
	Loss of agricultural land use caused by direct occupation of land by the footprint of the power line infrastructure (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ None possible.
	Soil erosion caused by alteration of the surface characteristics (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Implement an effective system of run-off control, where it is required, that collects and safely disseminates all potential accumulations of run-off water and thereby prevents potential down slope erosion. This should be in place and maintained during all phases of the development. ▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site to stabilize the

Activity	Impact summary	Significance	Proposed mitigation
			soil against erosion.
	Loss of topsoil caused by poor topsoil management (burial, erosion, etc) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) and having the effect of loss of soil fertility on disturbed areas after rehabilitation (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Strip and stockpile topsoil from all areas where soil will be disturbed below surface. ▪ After cessation of disturbance, re-spread topsoil over the surface. ▪ Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.
	Degradation of grazing beyond the direct development footprint caused by trampling due to vehicle passage, and deposition of dust.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	There are other proposed developments that will also occupy agricultural land in the area, and because the area is suitable for solar energy developments, there are likely to be more in the future. The potential for cumulative impacts therefore exists. However, because of the low agricultural impact of this development and the low agricultural sensitivity of the area, the cumulative impact is assessed as negligible.		
Heritage and Palaeontology	***Direct impacts:***		
	The possibility of encountering previously unidentified heritage resources. As well as the impact on the identified archaeological sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO.

Activity	Impact summary	Significance	Proposed mitigation
	(Construction phase)		▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously unidentified engravings. As well as the impact on the identified engraving sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously unidentified graves and cemeteries. As well as the impact on the identified archaeological sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of impact on the Palaeontology Heritage (fossils) of the development footprint	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Recommended mitigation of the inevitable damage and destruction of fossil within the proposed development area would involve the surveying, recording, description and collecting of fossils within the development footprint by a professional palaeontologist. This work should take place after initial vegetation clearance has taken place but before the ground is levelled for construction ▪ Impacts on fossil heritage are generally irreversible. Well-documented records and further palaeontological studies of any fossils exposed during construction

Activity	Impact summary	Significance	Proposed mitigation
			would represent a positive impact from a scientific perspective. The possibility of a negative impact on the palaeontological heritage of the area can be reduced by the implementation of adequate damage mitigation procedures. If damage mitigation is properly undertaken the benefit scale for the project will lie within the beneficial category. ▪ Not deemed necessary unless fossils are uncovered during the construction phase.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	An evaluation of the possible cumulative impacts from the combined solar projects in the area on heritage resources has shown that the biggest envisaged impact could be on the graves and engravings of this proposed Power line Project. Most heritage and palaeontological resources are point specific and in general impacts are found to be localised and impacting on the specific resource in a development. As such the cumulative impact on archaeological, historical heritage and palaeontological resources are deemed to be low.		
Visual	***Direct impacts:***		
	Alteration of the natural character of the study area and exposure to visual receptors to visual impacts associated with the construction phase	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Carefully plan in order to reduce the construction period where possible. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the proposed site as far as possible. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads.

Activity	Impact summary	Significance	Proposed mitigation
			▪ Ensure that dust suppression is implemented in all areas where vegetation clearing has taken place, relevant to the project site. ▪ Ensure that dust suppression techniques are implemented on all soil stockpiles. ▪ Route / align the proposed Power line Project to avoid any structures such as farmsteads / homesteads / dwellings.
	Alteration of the natural character of the study area and exposure to visual receptors to visual impacts associated with the operation phase	Medium negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill. ▪ As far as possible, limit the amount of security and operational lighting present at the substations. ▪ If possible, the control room should not be illuminated at night. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the substation site and power line access roads. ▪ The control room should be painted with natural tones that fit with the surrounding environment. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ Align power lines to run parallel to existing power lines and other linear elements, where possible. ▪ Avoid crossing areas of high elevation, especially ridges, koppies or hills, where possible. ▪ Non-reflective surfaces should be utilised where possible.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified for this alternative power line corridor.		
Socio-economic	***Direct impacts:***		
	Stimulation of the economy during	Medium positive impact after	The following mitigation measures would help to enhance positive impacts:

Activity	Impact summary	Significance	Proposed mitigation
	construction	mitigation is expected	▪ Investigate the opportunity to procure services required during construction within the local economy ▪ Where practically possible, procure required services from local businesses
	Impact on employment and household income during construction	Low positive impact after mitigation is expected	The following mitigation measures would help to enhance positive impacts: ▪ Where practically feasible, source workers required to construct the necessary infrastructure from local communities.
	Impact on strengthening national grid capacity	Low positive impact	No mitigation measures could be identified for the Power line Project to enhance the positive impact.
	Impact on current business activities	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Due to nature of the businesses of surrounding landowners, consultation was identified as important with regards to the final power line routing for the project, and consultation will be undertaken with each affected landowner by the Project Proponent.
	Impact on future developments	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Consultation during the design phase is recommended with the developer/owners of the solar energy facility in orderto take into account the layout of the facility planned on the Farm Klipdrift 20. ▪ Consultation with the developers/owners of the solar energy park project is recommended prior the finalisation of the final power line route and tower positions before construction commences.
	Impact on loss of property	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Access to the construction site must be controlled.

Activity	Impact summary	Significance	Proposed mitigation
			▪ Fire prevention measures must be implemented and fire control equipment must be present at strategic locations within the construction site. ▪ Where possible, the contractor should consider recruiting workers from the local community rather than non-local workers. Local workers are better known and more identifiable to the local community, better integrated in the community and more likely to live with their families instead of living alone. All of these factors could significantly reduce the tendency to commit crime (i.e. stock theft and burglaries). ▪ Recruitment of workers should preferably be undertaken off-site. This will reduce the probability of work seekers loitering in the area surrounding the project sites.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	The Power line Project will improve the reliability of electricity supply in the region and could lead to establishing more electricity connections in the area, ultimately improving access to electricity in the municipality. The Power line Project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between R60 million and R144 million, depending on the corridor chosen, is likely to stimulate between R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. One new development has been identified to be located in the zone of influence of the Power line Project. It refers to the Pulida Solar Park that has been approved under Bid Window 3 of the RE IPPPP and is currently awaiting the construction. In light of this and other developments within the RE IPPPP taking place in the country, the Power line Project will create both positive and negative cumulative effects: ▪ On one hand, the investment into the project will increase economic activity in the area and create temporary jobs. However, due to their relatively small scales in light of the greater investment stimulated through the RE IPPPP, this cumulative effect will be negligible. The positive effect on strengthening the grid capacity could though be notable, particularly considering that Pulida Solar Park will also be built in the area and will also assist in strengthening		

Activity	Impact summary	Significance	Proposed mitigation
	the grid capacity in the region. ▪ On the other hand, considering that the project is likely to be built after the Pulida Solar Park is developed, it may extend the duration of some of the negative effects in the zone of influence associated with the presence of construction workers in rural areas and specifically in farming communities (such as livestock theft and loss of personal property). This cumulative effect, though, is envisaged to be minor due to the relatively small number of workers to be present on site at a time.		
No-go option			
	Direct impacts:		
	The job creation and local investment expected for the local area would not occur. The expected capital injection into the LM would be prevented. The electricity generated at the CSP Project would not be connected to the grid and greater electricity security would not be achieved, South Africa would not have the benefit of the CSP Project contributing to the country's renewable energy targets.		
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		

Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple)

Activity	Impact summary	Significance	Proposed mitigation
Biodiversity	***Direct impacts:***		
	Impacts on vegetation and protected plant species	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ There should be a preconstruction walk-through of the power line route to identify species of conservation concern that should be avoided or translocated, where possible and practicable. ▪ Areas of dense stands of protected trees should be avoided where possible and practicable. ▪ The minimum amount of woody vegetation should be cleared to conform to Eskom standards, where possible.

Activity	Impact summary	Significance	Proposed mitigation
	Direct faunal impacts	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ The power line should be routed to avoid the pans as much as possible. ▪ The footprint of the power line should be kept as low as possible and construction staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna is harmed during construction.
	Ecological degradation during operation	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Regular erosion and alien plant control along the power line servitude. During operation and maintenance of the power line servitude, alien species especially large woody species such as *Propsopis glandulosa* should be cleared from the power line servitude, but indigenous species such as *Boscia albitunca* and *Boscia foetida*, should not be cleared as they do not pose a fire risk. If any indigenous trees are too tall to comply with safety standards they can be trimmed to an acceptable height and it is not necessary to cut down the trees.
	Decommissioning impacts on fauna	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Disturbance during decommissioning should be kept as low as possible. ▪ Staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna are harmed during decommissioning activities.

Activity	Impact summary	Significance	Proposed mitigation
	Ecological degradation due to decommissioning	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As the pylons are steel structures with concrete foundations, they are not easily removed and so it is likely that decommissioning would result in some disturbance along the power line route, which should be reduced as far as possible. The use various tools to dismantle the pylons may also pose a fire risk if these generate sparks or have open flames.
	Indirect impacts:		
	None identified.	None identified	None identified.
	Cumulative impacts:		
	The density of renewable energy development in the Kimberly area is moderate, with several approved projects currently being built or nearing construction. The main source of habitat loss in the area is however due to agricultural practices with extensive clearing for irrigated croplands along the Modder River as well as dryland cropping scattered across the area. Although many of the dryland cropping areas have been abandoned, the full complement of biodiversity is slow to return to such areas. It is likely that the cumulative impact due to renewable energy development will increase significantly in the future. Due the low footprint of low voltage power lines, the contribution of the Power line Project to cumulative impact in the area is not considered highly significant in the context of the surrounding landscape and the large-scale impacts on habitat loss resulting from agriculture, mining and renewable energy facilities. Although power lines may generate significant cumulative impact on avifaunal, the long-term interaction with terrestrial biodiversity is low after mitigation and the contribution of the current development to cumulative impact on the area is low and would not generate significant long-term impact.		
Avifauna	***Direct impacts:***		
	Displacement of Red Data species due to disturbance and habitat transformation associated with construction of the 132kV power line	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Construction activity should be restricted to the immediate footprint of the infrastructure. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be

Activity	Impact summary	Significance	Proposed mitigation
			used optimally where possible and the construction of new roads should be kept to a minimum.
	Collisions of Red Data species with the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant collision mortality. Thereafter the frequency of inspections will be informed by the results of the first three years in line with Eskom's monitoring procedures. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ The power line should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, alternating black and white or as per agreement with independent Avifaunal specialist and Eskom.
	Electrocutions of Red Data species on the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant electrocution mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ All the steel monopoles should be

Activity	Impact summary	Significance	Proposed mitigation
			fitted with bird perches.
	Displacement of Red Data species due to disturbance and habitat transformation associated with de-commissioning of the 132kV power line.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ De-commissioning activity should be restricted to the immediate footprint of the infrastructure. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum. ▪ Prior to the de-commissioning of the line, a walk-through must be conducted to ascertain if any White-backed Vulture breeding pairs will be impacted by the de-commissioning activities. If any breeding pairs are potentially at risk, the de-commissioning will have to be timed to fall outside the breeding season (April to July).
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	The cumulative impact of disturbance due to disturbance and habitat transformation as a result of the building of the Power line Project, is likely to be insignificant for the majority of Red Data species. The one exception to this statement concerns the White-backed Vulture breeding colonies around Kimberley and specifically the Susanna breeding area. Disturbance of these breeding birds could result in a significant impact on the local population of the species, given the suite of impacts to which the birds are already subjected to. The cumulative impact of disturbance and habitat transformation on Red Data species (in this instance White-backed Vultures) could therefore be potentially major, should Corridor 2 be implemented. The risks that power lines pose is well researched (Shaw 2013). This transmission line will further increase the already high collision risk to Ludwig's Bustards, Blue Crane, Greater Flamingo, Lesser Flamingo and Kori Bustard that power lines pose throughout their range. The key question therefore is to what extent the proposed power line will contribute to this existing and potentially significant mortality factor in		

Activity	Impact summary	Significance	Proposed mitigation
	the area around Kimberley. All in all, it is envisaged that collisions of Red Data species with the proposed line will have a moderate cumulative impact. Electrocutions is a major threat to vultures in South Africa (Van Rooyen 2000). The proposed CSP Project power line could pose an electrocution risk specifically to the population of White-backed Vultures breeding around Kimberley and Jacobsdal. If the steel monopole is used with a bird perch, the risk will be significantly reduced. It is envisaged that the risk of electrocution posed by the proposed power line is MINOR, provided the monopole is fitted with a bird perch.		
Wetlands	***Direct impacts:***		
	Modder River – Loss of riparian habitat and structure (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Careful planning of the placement of towers, taking into consideration the locality of riparian habitats and as much as possible, avoid placement of towers within riparian habitat, and power lines are preferably to span over the relevant resource. ▪ Where it is impossible to avoid placing infrastructure within riparian habitat, flow connectivity must be retained by preventing fragmentation of the riparian habitat; ▪ Ensure that no canalization or further incision of the riparian resource takes place as a result of the construction activities; ▪ Vegetation clearing prior to construction must be minimized and the area re-seeded following construction with indigenous/endemic species to aid in the natural recovery of vegetation. ▪ Clearing/felling of woody vegetation should be limited to trees/shrubs above the maximum permitted clearance height, and the understory should not be cleared. Where possible, crossing points should be chosen to avoid large riparian trees. ▪ An alien vegetation control

Activity	Impact summary	Significance	Proposed mitigation
			programme should form part of the Environmental Management Programme (EMPr). ▪ Exposed soils to be protected with suitable geotextile coverings, such as hessian sheets, at all times during the construction phase, and no stockpiling of soils is to take place within the riparian zone or associated buffer zone. ▪ Lay down areas should be placed outside the delineated riparian corridors/buffer zones, and construction right of ways may only be created through or across watercourses if proposed for use during operations and no existing right of way exist. However it is recommended that where existing roads / accesses cross watercourses exist these be used as a primary right of way.
	Large Pans – Loss of habitat and structure (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low

Activity	Impact summary	Significance	Proposed mitigation
			flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Loss of habitat and ecological structure	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; and ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to

Activity	Impact summary	Significance	Proposed mitigation
			keep the freshwater resources habitat and its ecological structure in place.
	Modder River – Loss of ecological and sociocultural service provision (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Careful planning of the placement of towers, taking into consideration the locality of riparian habitats and as much as possible, avoid placement of towers within riparian habitat, and power lines are preferably to span over the relevant resource. ▪ During construction, use techniques which support the hydrology and sediment control functions of the freshwater resource; ▪ As much vegetation growth should be promoted within the freshwater resource to protect the soils thereof; ▪ Limit excavations to a limited extent to ensure that drainage patterns within the feature returns to normal as soon as possible after construction; ▪ Restrict construction to the drier winter months if possible to avoid sedimentation of the freshwater feature and to minimize disturbance of the features and its hydraulic function. ▪ Monitor the freshwater resource areas for erosion and incision; and ▪ Implement an alien vegetation control program within freshwater resource and ensure establishment of indigenous species within areas where alien vegetation was identified.
	Large Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and

Activity	Impact summary	Significance	Proposed mitigation
			limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge

Activity	Impact summary	Significance	Proposed mitigation
			effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Modder River – Impacts on hydrological function and sediment balance	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the freshwater resource areas affected by construction

Activity	Impact summary	Significance	Proposed mitigation
			activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Large Pans – Impacts on hydrological function and sediment balance (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Small Pans – Impacts on hydrological function and	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the

Activity	Impact summary	Significance	Proposed mitigation
	sediment balance (construction phase)		vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	With several current and historical activities occurring within the vicinity of the proposed Power line Project, the potential cumulative impacts of such activities in conjunction with the potential impacts of the proposed Power line Project, were taken into consideration. Historical and existing activities taking place within the zone of influence of the proposed Power line Project, which may have impacts on the freshwater systems, include, but are not limited to: ▪ Urban and Peri-urban development (including the development of infrastructure such as the road and bridge crossings); ▪ Historical and current De Beers mining activities; ▪ Agricultural activities (livestock and game farming, and crop cultivation, particularly surrounding the Modder River); ▪ Solar Renewable Energy Projects in the vicinity of the proposed Power line Project and within close vicinity of the Modder River		

Activity	Impact summary	Significance	Proposed mitigation
	These activities have already resulted in the transformation and loss of riparian habitat within the Eastern Kalahari Bushveld Group 3 and Nama Karoo WetVeg Groups. Whilst both of these WetVeg groups are classified as "Least Threatened" (SANBI, 2013), further alterations and/or losses should be minimised as much as possible. Natural freshwater systems have been artificially impounded, abstraction from the Modder River for agricultural irrigation purposes occurs, and, in the case of pans, vegetation communities have been transformed as a result of grazing and trampling by livestock. Since a significant proportion of the surrounding area is already fenced off, especially for game farming, the Modder River is likely to have decreased capacity to function as part of a movement or migration corridor for fauna, although it was apparent during the site visit that it does still function as such to a degree. The overall impact on the connectivity of the landscape and the further disruption of ecosystem processes associated with freshwater features by the proposed Power line Project would thus be reduced by the proximity to these existing developments and activities. Considering the above, the cumulative impacts on the freshwater ecology by the proposed Power line Project in the region, should adequate mitigation measures be implemented, is considered to be low. However, it is imperative that adequate mitigation be implemented throughout the life of the development in order to minimise the potential impacts of the proposed Power line Project on the receiving environment, and thus minimise the cumulative impacts.		
Soils and Agricultural Potential	***Direct impacts:***		
	Loss of agricultural land use caused by direct occupation of land by the footprint of the power line infrastructure (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Implement an effective system of run-off control, where it is required, that collects and safely disseminates all potential accumulations of run-off water and thereby prevents potential down slope erosion. This should be in place and maintained during all phases of the development. ▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site to stabilize the soil against erosion.
	Soil erosion caused by alteration of the surface characteristics (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.

Activity	Impact summary	Significance	Proposed mitigation
	Loss of topsoil caused by poor topsoil management (burial, erosion, etc) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) and having the effect of loss of soil fertility on disturbed areas after rehabilitation (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Strip and stockpile topsoil from all areas where soil will be disturbed below surface. ▪ After cessation of disturbance, re-spread topsoil over the surface. ▪ Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.
	Degradation of grazing beyond the direct development footprint caused by trampling due to vehicle passage, and deposition of dust.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	There are other proposed developments that will also occupy agricultural land in the area, and because the area is suitable for solar energy developments, there are likely to be more in the future. The potential for cumulative impacts therefore exists. However, because of the low agricultural impact of this development and the low agricultural sensitivity of the area, the cumulative impact is assessed as negligible.		
Heritage and Palaeontology	***Direct impacts:***		
	The possibility of encountering previously unidentified heritage resources. As well as the impact on the identified archaeological sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO.

Activity	Impact summary	Significance	Proposed mitigation
	(Construction phase)		▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously unidentified engravings. As well as the impact on the identified engraving sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously unidentified graves and cemeteries. As well as the impact on the identified archaeological sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of impact on the Palaeontology Heritage (fossils) of the development footprint	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Recommended mitigation of the inevitable damage and destruction of fossil within the proposed development area would involve the surveying, recording, description and collecting of fossils within the development footprint by a professional palaeontologist. This work should take place after initial vegetation clearance has taken place but before the ground is levelled for construction ▪ Impacts on fossil heritage are generally irreversible. Well-

Activity	Impact summary	Significance	Proposed mitigation
			documented records and further palaeontological studies of any fossils exposed during construction would represent a positive impact from a scientific perspective. The possibility of a negative impact on the palaeontological heritage of the area can be reduced by the implementation of adequate damage mitigation procedures. If damage mitigation is properly undertaken the benefit scale for the project will lie within the beneficial category. ▪ Not deemed necessary unless fossils are uncovered during the construction phase.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	An evaluation of the possible cumulative impacts from the combined solar projects in the area on heritage resources has shown that the biggest envisaged impact could be on the graves and engravings of this proposed Power line Project. Most heritage and palaeontological resources are point specific and in general impacts are found to be localised and impacting on the specific resource in a development. As such the cumulative impact on archaeological, historical heritage and palaeontological resources area deemed to be low.		
Visual	***Direct impacts:***		
	Alteration of the natural character of the study area and exposure to visual receptors to visual impacts associated with the construction phase	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Carefully plan to reduce the construction period. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the

Activity	Impact summary	Significance	Proposed mitigation
			proposed site. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ Ensure that dust suppression is implemented in all areas where vegetation clearing has taken place. ▪ Ensure that dust suppression techniques are implemented on all soil stockpiles. ▪ Select the alternatives that will have the least impact on visual receptors. ▪ Route / align the proposed Power line Project to completely avoid any structures such as farmsteads / homesteads / dwellings.
	Alteration of the natural character of the study area and exposure to visual receptors to visual impacts associated with the operation phase	Medium negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill. ▪ As far as possible, limit the amount of security and operational lighting present at the substations. ▪ If possible, the control room should not be illuminated at night. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the substation site and power line access roads. ▪ The control room should be painted with natural tones that fit with the surrounding environment. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ Align power lines to run parallel to existing power lines and other linear elements, where possible. ▪ Avoid crossing areas of high elevation, especially ridges, koppies or hills, where possible. ▪ Non-reflective surfaces should be

Activity	Impact summary	Significance	Proposed mitigation
			utilised where possible.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	Planned renewable energy developments and their potential for large scale visual impacts could significantly alter the sense of place and visual character within the study area, once constructed. The cumulative visual impact experienced from each potentially sensitive visual receptor location will depend on the number of proposed renewable energy developments within viewing distance. As mentioned above, the height of the development in combination with distance are critical factors when assessing visual impacts. As such, the proposed solar energy facilities are unlikely to be visible from beyond 5km, and from beyond this distance the degree of visual impact would be considered to be insignificant. As such, only the Pulida Solar Project will be in viewing distance from the potentially sensitive receptor locations identified within the study area. For this reason it is envisaged that the biggest cumulative impact would be the change in the visual character within the southern part of the study area near the Pulida Solar Project. It should also be noted that this facility would reduce the scenic quality of the visual baseline in this part of the study area once constructed, and thereby reduce the visual impact of the proposed Power line Project on surrounding potentially sensitive receptor locations.		
Socio-economic	***Direct impacts:***		
	Stimulation of the economy during construction	Medium positive impact after mitigation is expected	The following mitigation measures would help to enhance positive impacts: ▪ Investigate the opportunity to procure services required during construction within the local economy ▪ Where practically possible, procure required services from local businesses
	Impact on employment and household income during construction	Low positive impact after mitigation is expected	The following mitigation measures would help to enhance positive impacts: ▪ Where practical and feasible, source workers from local communities.
	Impact on strengthening national grid capacity	Low positive impact after mitigation is expected	No mitigation measures could be identified for the Power line Project to enhance the positive impact.
	Impact on current business activities	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Due to nature of the businesses of surrounding landowners, consultation was identified as important with regards to the final power line routing for the project,

Activity	Impact summary	Significance	Proposed mitigation
			and consultation will be undertaken with each affected landowner by the Project Company.
	Impact on future developments	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ It will be imperative to ensure that the design of the power line route takes into account the layout of the solar energy park planned to be built on the Farm Klipdrift 20. ▪ The developers/owners of the solar energy park will also need to be consulted prior the selection of the final power line route and tower positions before construction commences.
	Impact on loss of property	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Access to the construction site must be controlled. ▪ Fire prevention measures must be implemented and fire control equipment must be present at strategic locations within the construction site. ▪ Where necessary, the contractor should consider recruiting workers from the local community rather than non-local workers. Local workers are better known and more identifiable to the local community, better integrated in the community and more likely to live with their families instead of living alone. All of these factors significantly reduce tendency to commit crime (i.e. stock theft and burglaries). ▪ Recruitment of workers should be planned in advance and should not take place on-site. This will reduce the probability of work seekers loitering in the area surrounding the project sites.
	Indirect impacts:		

Activity	Impact summary	Significance	Proposed mitigation
	None identified.		
	Cumulative impacts:		
	The project will improve the reliability of electricity supply in the region and could lead to establishing more electricity connections in the area, ultimately improving access to electricity in the municipality. The project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between R60 million and R144 million, depending on the corridor chosen, is likely to stimulate between R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. One new development has been identified to be located in the zone of influence of the Power line Project. It refers to the Pulida Solar Park that has been approved under Bid Window 3 of the RE IPPPP and is currently awaiting construction. In light of this and other developments within the RE IPPPP taking place in the country, the Power line Project will create both positive and negative cumulative effects: ▪ On one hand, the investment into the project will increase economic activity in the area and create temporary jobs. However, due to their relatively small scales in light of the greater investment stimulated through the RE IPPPP, this cumulative effect will be negligible. The positive effect on strengthening the grid capacity could though be notable, particularly considering that Pulida Solar Park will also be built in the area and will also assist in strengthening the grid capacity in the region. On the other hand, considering that the project is likely to be built after the Pulida Solar Park is developed, it may extend the duration of some of the negative effects in the zone of influence associated with the presence of construction workers in rural areas and specifically in farming communities (such as livestock theft and loss of personal property). This cumulative effect, though, is envisaged to be minor due to the relatively small number of workers to be present on site at a time.		
No-go option			
	Direct impacts:		
	The job creation and local investment expected for the local area would not occur. The expected capital injection into the LM would be prevented. The electricity generated at the CSP Project would not be connected to the grid and greater electricity security would not be achieved, South Africa would not have the benefit of the CSP Project contributing to the country's renewable energy targets.		
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		

Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)

Activity	Impact summary	Significance	Proposed mitigation
Biodiversity	***Direct impacts:***		

Activity	Impact summary	Significance	Proposed mitigation
	Impacts on vegetation and protected plant species	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ There should be a preconstruction walk-through of the power line route to identify species of conservation concern that should be avoided or translocated, where possible and practicable. ▪ Areas of dense stands of protected trees should be avoided where possible and practicable. ▪ The minimum amount of woody vegetation should be cleared to conform to Eskom standards, where possible.
	Direct faunal impacts	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts, but will not affect the extent, probability, reversibility, irreplaceable loss of resources, duration, cumulative effect or intensity: ▪ The power line should be routed to avoid the pans as much as possible. ▪ The footprint of the power line should be kept as low as possible and construction staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna are harmed during construction.
	Ecological degradation during operation	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Regular erosion and alien plant control along the power line servitude. During operation and maintenance of the power line servitude, alien species especially large woody species such as *Propsopis glandulosa* should be cleared from the power line servitude, but indigenous species such as *Boscia albitunca* and

Activity	Impact summary	Significance	Proposed mitigation
			Boscia foetida, should not be cleared as they do not pose a fire risk. If any indigenous trees are too tall to comply with safety standards they can be trimmed to an acceptable height and it is not necessary to cut down the trees.
	Decommissioning impacts on fauna	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Disturbance during decommissioning should be kept as low as possible. ▪ Staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna are harmed during decommissioning activities.
	Ecological degradation due to decommissioning	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As the pylons are steel structures with concrete foundations, they are not easily removed and so it is likely that decommissioning would result in some disturbance along the power line route, which should be reduced as far as possible. The use various tools to dismantle the pylons may also pose a fire risk if these generate sparks or have open flames.
	Indirect impacts:		
	None identified.	None identified	None identified.
	Cumulative impacts:		
	The density of renewable energy development in the Kimberly area is moderate, with several approved projects currently being built or nearing construction. The main source of habitat loss in the area is however due to agricultural practices with extensive clearing for irrigated croplands along the Modder River as well as dryland cropping scattered across the area. Although many of the dryland cropping areas have been abandoned, the full complement of biodiversity is slow to return to such areas. It is likely that the cumulative impact due to renewable energy development will increase significantly in the future. Due the low footprint of low voltage power lines, the contribution of the Power line Project to the cumulative impact in the area is not considered highly significant in the context of the surrounding landscape and the		

Activity	Impact summary	Significance	Proposed mitigation
	large-scale impacts on habitat loss resulting from agriculture, mining and renewable energy facilities. Although power lines may generate significant cumulative impact on avifaunal, the long-term interaction with terrestrial biodiversity is low after mitigation and the contribution of the current development to cumulative impact on the area is low and would not generate significant long-term impact.		
Avifauna	***Direct impacts:***		
	Displacement of Red Data species due to disturbance and habitat transformation associated with construction of the 132kV power line	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Construction activity should be restricted to the immediate footprint of the infrastructure. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum.
	Collisions of Red Data species with the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant collision mortality in line with Eskom's monitoring procedures.. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ The power line should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, alternating black and white or as per agreement with

Activity	Impact summary	Significance	Proposed mitigation
			independent Avifaunal specialist and Eskom.
	Electrocutions of Red Data species on the proposed 132kV line (operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant electrocution mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be informed by the results of the first three years. ▪ The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection. ▪ All the steel monopoles should be fitted with bird perches.
	Displacement of Red Data species due to disturbance and habitat transformation associated with de-commissioning of the 132kV power line.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ De-commissioning activity should be restricted to the immediate footprint of the infrastructure. ▪ Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum. ▪ Prior to the de-commissioning of the line, a walk-through must be conducted to ascertain if any White-backed Vulture breeding pairs will be impacted by the de-commissioning activities. If any breeding pairs are potentially at risk, the de-commissioning will

Activity	Impact summary	Significance	Proposed mitigation
			have to be timed to fall outside the breeding season (April to July).
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	The cumulative impact of disturbance due to disturbance and habitat transformation as a result of the building of the Power line Project, is likely to be insignificant for the majority of Red Data species. The one exception to this statement concerns the White-backed Vulture breeding colonies around Kimberley and specifically the Susanna breeding area. Disturbance of these breeding birds could result in a significant impact on the local population of the species, given the suite of impacts to which the birds are already subjected to. The cumulative impact of disturbance and habitat transformation on Red Data species (in this instance White-backed Vultures) could therefore be potentially major should Corridor 2 be implemented. The risks that power lines pose to well researched (Shaw 2013). This transmission line will further increase the already high collision risk to Ludwig's Bustards, Blue Crane, Greater Flamingo, Lesser Flamingo and Kori Bustard that power lines pose throughout their range. The key question therefore is to what extent the proposed power line will contribute to this existing and potentially significant mortality factor in the area around Kimberley. All in all, it is envisaged that collisions of Red Data species with the proposed line will have a moderate cumulative impact. Electrocutions is a major threat to vultures in South Africa (Van Rooyen 2000). The proposed CSP Project power line could pose an electrocution risk specifically to the population of White-backed Vultures breeding around Kimberley and Jacobsdal. If the steel monopole is used with a bird perch, the risk will be significantly reduced. It is envisaged that the risk of electrocution posed by the proposed power line is MINOR, provided the monopole is fitted with a bird perch.		
Wetlands	***Direct impacts:***		
	Modder River – Loss of riparian habitat and structure (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Careful planning of the placement of towers, taking into consideration the locality of riparian habitats and as much as possible, avoid placement of towers within riparian habitat, and power lines are preferably to span over the relevant resource. ▪ Where it is impossible to avoid placing infrastructure within riparian habitat, flow connectivity must be retained by preventing fragmentation of the riparian habitat;

Activity	Impact summary	Significance	Proposed mitigation
			▪ Ensure that no canalization or further incision of the riparian resource takes place as a result of the construction activities; ▪ Vegetation clearing prior to construction must be minimized and the area re-seeded following construction with indigenous/endemic species to aid in the natural recovery of vegetation. ▪ Clearing/felling of woody vegetation should be limited to trees/shrubs above the maximum permitted clearance height, and the understory should not be cleared. Where possible, crossing points should be chosen to avoid large riparian trees. ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr). ▪ Exposed soils to be protected with suitable geotextile coverings, such as hessian sheets, at all times during the construction phase, and no stockpiling of soils is to take place within the riparian zone or associated buffer zone. ▪ Lay down areas should be placed outside the delineated riparian corridors/buffer zones, and construction right of ways may only be created through or across watercourses if proposed for use during operations and no existing right of way exist. However it is recommended that where existing roads / accesses cross watercourses exist these be used as a primary right of way.
	Large Pans – Loss of habitat and structure	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation

Activity	Impact summary	Significance	Proposed mitigation
	(construction phase)		growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Loss of habitat and ecological structure	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the freshwater resource zones to protect soils; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas; ▪ Minimize construction footprints prior to commencement of the construction and control the edge

Activity	Impact summary	Significance	Proposed mitigation
			effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; ▪ Desilt the pans affected by construction activities; and ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Modder River – Loss of ecological and sociocultural service provision (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Careful planning of the placement of towers, taking into consideration the locality of riparian habitats and as much as possible, avoid placement of towers within riparian habitat, and power lines are preferably to span over the relevant resource. ▪ During construction, use techniques which support the hydrology and sediment control functions of the freshwater resource; ▪ As much vegetation growth should be promoted within the freshwater resource to protect the soils thereof; ▪ Limit excavations to a limited extent to ensure that drainage patterns within the feature returns to normal as soon as possible after

Activity	Impact summary	Significance	Proposed mitigation
			construction; ▪ Restrict construction to the drier winter months if possible to avoid sedimentation of the freshwater feature and to minimize disturbance of the features and its hydraulic function. ▪ Monitor the freshwater resource areas for erosion and incision; and ▪ Implement an alien vegetation control program within freshwater resource and ensure establishment of indigenous species within areas where alien vegetation was identified.
	Large Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to

Activity	Impact summary	Significance	Proposed mitigation
			ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Small Pans – Impact on ecological and sociocultural service provision	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ As much indigenous vegetation growth should be promoted within the large pans to protect soils and limit the possible changes to the sediment balance of the pans; ▪ Ensure that vegetation clearing and indiscriminate vehicle driving does not occur within demarcated areas, as to limit soil compaction; ▪ Minimize construction footprints prior to commencement of the construction and control the edge effects from construction activities; ▪ An alien vegetation control programme should form part of the Environmental Management Programme (EMPr) and ensure establishment of indigenous species within areas where alien vegetation was identified; ▪ As far as possible, all construction activities should occur in the low flow season, during the drier winter months; and ▪ Desilt the pans affected by construction activities; ▪ Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible to keep the freshwater resources habitat and its ecological structure in place.
	Modder River – Impacts on hydrological	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste

Activity	Impact summary	Significance	Proposed mitigation
	function and sediment balance		must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the freshwater resource areas affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Large Pans – Impacts on hydrological function and sediment balance (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage;

Activity	Impact summary	Significance	Proposed mitigation
			▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during maintenance activities to prevent soil compaction.
	Small Pans – Impacts on hydrological function and sediment balance (construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Any construction-related waste must not be placed within or in the vicinity of the large pans, this will minimize possible effects on water flow into the pans; ▪ As much vegetation growth should be promoted within the freshwater resource to protect soils and to encourage water retention and flood attenuation; ▪ Limit the footprint area of the construction activity to what is absolutely essential in order to minimize environmental damage; ▪ Upon completion of the construction phase the disturbed areas and compacted soils should be rehabilitated through reprofiling and revegetation; ▪ Desilt the pans affected by construction activities; ▪ Dumped soil must be removed and the area must be levelled to avoid sedimentation of the pans from runoff; and ▪ Vehicles should not be driven indiscriminately within the freshwater resource areas during

Activity	Impact summary	Significance	Proposed mitigation
			maintenance activities to prevent soil compaction.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	None identified		
Soils and Agricultural Potential	***Direct impacts:***		
	Loss of agricultural land use caused by direct occupation of land by the footprint of the power line infrastructure (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Implement an effective system of run-off control, where it is required, that collects and safely disseminates all potential accumulations of run-off water and thereby prevents potential down slope erosion. This should be in place and maintained during all phases of the development. ▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site to stabilize the soil against erosion.
	Soil erosion caused by alteration of the surface characteristics (construction and operation phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.
	Loss of topsoil caused by poor topsoil management (burial, erosion, etc) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) and having the effect of loss of soil fertility on disturbed areas after rehabilitation	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Strip and stockpile topsoil from all areas where soil will be disturbed below surface. ▪ After cessation of disturbance, re-spread topsoil over the surface. ▪ Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.

Activity	Impact summary	Significance	Proposed mitigation
	(construction phase)		
	Degradation of grazing beyond the direct development footprint caused by trampling due to vehicle passage, and deposition of dust.	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.
	Indirect impacts:		
	None identified	None identified	None identified
	Cumulative impacts:		
	There are other proposed developments that will also occupy agricultural land in the area, and because the area is suitable for solar energy developments, there are likely to be more in the future. The potential for cumulative impacts therefore exists. However, because of the low agricultural impact of this development and the low agricultural sensitivity of the area, the cumulative impact is assessed as negligible.		
Heritage and Palaeontology	***Direct impacts:***		
	The possibility of encountering previously unidentified heritage resources. As well as the impact on the identified archaeological sites (Construction phase)	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously unidentified engravings. As well as the impact on the identified engraving sites	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist - 2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of encountering previously	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Training of ECO by archaeologist -

Activity	Impact summary	Significance	Proposed mitigation
	unidentified graves and cemeteries. As well as the impact on the identified archaeological sites		2 days ▪ Induction of all contractor staff by Archaeologist - 1-2 days ▪ Implementation of chance find procedure when something is identified by the ECO. ▪ Mitigation through archaeological excavations and collection ▪ Walk-down of final power line route
	The possibility of impact on the Palaeontology Heritage (fossils) of the development footprint	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Recommended mitigation of the inevitable damage and destruction of fossil within the proposed development area would involve the surveying, recording, description and collecting of fossils within the development footprint by a professional palaeontologist. This work should take place after initial vegetation clearance has taken place but before the ground is levelled for construction ▪ Impacts on fossil heritage are generally irreversible. Well-documented records and further palaeontological studies of any fossils exposed during construction would represent a positive impact from a scientific perspective. The possibility of a negative impact on the palaeontological heritage of the area can be reduced by the implementation of adequate damage mitigation procedures. If damage mitigation is properly undertaken the benefit scale for the project will lie within the beneficial category. ▪ Not deemed necessary unless fossils are uncovered during the construction phase.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	An evaluation of the possible cumulative impacts from the combined solar projects in		

Activity	Impact summary	Significance	Proposed mitigation
	the area on heritage resources has shown that the biggest envisaged impact could be on the graves of this proposed Power line Project. Most heritage and palaeontological resources are point specific and in general impacts are found to be localised and impacting on the specific resource in a development. As such the cumulative impact on archaeological, historical heritage and palaeontological resources are deemed to be low.		
Visual	***Direct impacts:***		
	Alteration of the natural character of the study area and exposure to visual receptors to visual impacts associated with the construction phase	Low negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Carefully plan to reduce the construction period. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the proposed site. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ Ensure that dust suppression is implemented in all areas where vegetation clearing has taken place. ▪ Ensure that dust suppression techniques are implemented on all soil stockpiles. ▪ Select the alternatives that will have the least impact on visual receptors. ▪ Route / align the proposed Power line Project to completely avoid any structures such as farmsteads / homesteads / dwellings.
	Alteration of the natural character of the study area and exposure to visual receptors to visual	Medium negative impact expected after mitigation	The following mitigation measures would help to limit impacts: ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill.

Activity	Impact summary	Significance	Proposed mitigation
	impacts associated with the operation phase		▪ As far as possible, limit the amount of security and operational lighting present at the substations. ▪ If possible, the control room should not be illuminated at night. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the substation site and power line access roads. ▪ The control room should be painted with natural tones that fit with the surrounding environment. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ Align power lines to run parallel to existing power lines and other linear elements, where possible. ▪ Avoid crossing areas of high elevation, especially ridges, koppies or hills, where possible. ▪ Non-reflective surfaces should be utilised where possible.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	Planned renewable energy developments and their potential for large scale visual impacts could significantly alter the sense of place and visual character within the study area, once constructed. The cumulative visual impact experienced from each potentially sensitive visual receptor location will depend on the number of proposed renewable energy developments within viewing distance. As mentioned above, the height of the development in combination with distance are critical factors when assessing visual impacts. As such, the proposed solar energy facilities are unlikely to be visible from beyond 5km, and from beyond this distance the degree of visual impact would be considered to be insignificant. As such, only the Pulida Solar Project will be in viewing distance from the potentially sensitive receptor locations identified within the study area. For this reason it is envisaged that the biggest cumulative impact would be the change in the visual character within the southern part of the study area near the Pulida Solar Project. It should also be noted that this facility would reduce the scenic quality of the visual baseline in this part of the study area once constructed, and thereby reduce the visual impact of the proposed Power line Project on surrounding potentially sensitive receptor locations.		
Socio-economic	***Direct impacts:***		
	Stimulation of the economy during construction	Medium positive impact after mitigation is	The following mitigation measures would help to enhance positive impacts: ▪ Investigate the opportunity to

Activity	Impact summary	Significance	Proposed mitigation
		expected	procure services required during construction within the local economy ▪ Where practically possible, procure required services from local businesses
	Impact on employment and household income during construction	Low positive impact after mitigation is expected	The following mitigation measures would help to enhance positive impacts: ▪ Where practical and feasible, source workers from local communities.
	Impact on strengthening national grid capacity	Low positive impact after mitigation is expected	No mitigation measures could be identified for the Power line Project to enhance the positive impact.
	Impact on current business activities	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Due to nature of the businesses of surrounding landowners, consultation was identified as important with regards to the final power line routing for the project, and consultation will be undertaken with each affected landowner by the Project Company.
	Impact on future developments	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ It will be imperative to ensure that the design of the power line route takes into account the layout of the solar energy park planned to be built on the Farm Klipdrift 20. ▪ The developers/owners of the solar energy park will also need to be consulted prior the selection of the final power line route and tower positions before construction commences.
	Impact on loss of property	Low negative impact after mitigation is expected	The following mitigation measures would help to reduce negative impacts: ▪ Access to the construction site must be controlled. ▪ Fire prevention measures must be implemented and fire control equipment must be present at strategic locations within the

Activity	Impact summary	Significance	Proposed mitigation
			construction site. ▪ Where necessary, the contractor should consider recruiting workers from the local community rather than non-local workers. Local workers are better known and more identifiable to the local community, better integrated in the community and more likely to live with their families instead of living alone. All of these factors significantly reduce tendency to commit crime (i.e. stock theft and burglaries). ▪ Recruitment of workers should be planned in advance and should not take place on-site. This will reduce the probability of work seekers loitering in the area surrounding the project sites.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	The project will improve the reliability of electricity supply in the region and could lead to establishing more electricity connections in the area, ultimately improving access to electricity in the municipality. The project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between R60 million and R144 million, depending on the corridor chosen, is likely to stimulate between R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. One new development has been identified to be located in the zone of influence of the Power line Project. It refers to the Pulida Solar Park that has been approved under Bid Window 3 of the RE IPPPP and is currently awaiting the construction. In light of this and other developments within the RE IPPPP taking place in the country, the Power line Project will create both positive and negative cumulative effects: On one hand, the investment into the project will increase economic activity in the area and create temporary jobs. However, due to their relatively small scales in light of the greater investment stimulated through the RE IPPPP, this cumulative effect will be negligible. The positive effect on strengthening the grid capacity could though be notable, particularly considering that Pulida Solar Park will also be built in the area and will also assist in strengthening the grid capacity in the region. On the other hand, considering that the project is likely to be built after the Pulida Solar Park is developed, it may extend the duration of some of the negative effects in		

Activity	Impact summary	Significance	Proposed mitigation
	the zone of influence associated with the presence of construction workers in rural areas and specifically in farming communities (such as livestock theft and loss of personal property). This cumulative effect, though, is envisaged to be minor due to the relatively small number of workers to be present on site at a time.		
No-go option			
	Direct impacts:		
	The job creation and local investment expected for the local area would not occur. The expected capital injection into the LM would be prevented. The electricity generated at the CSP Project would not be connected to the grid and greater electricity security would not be achieved, South Africa would not have the benefit of the CSP Project contributing to the country's renewable energy targets.		
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

A complete impact assessment in terms of Regulation 19(3) of GN R.733 is included in Appendix F and a comparison of the alternatives is included in section 2 below.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Corridor 1 Jacobsdal Link (Green – Preferred)

Biodiversity	In terms of flora, within the area affected by the proposed Power line Project, vegetation types that are affected include Kimberly Thornveld and Northern Upper Karoo, Highveld Salt Pans and Vaalbos Rocky Shrubland. Within these vegetation types however, the specific habitats that are actually occurring within the proposed corridor alternatives include the following: ▪ Kimberley Thornveld – Protected and listed species include *Boscia albitrunca and Acacia erioloba*; ▪ Northern Cape Upper Karoo; ▪ Vaalbos Rocky Shrubland; ▪ Pans – Protected and listed species include; ▪ Modder River – the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as the unique aquatic habitats present here that are not represented elsewhere in the

	landscape of the area. There are three (3) species of conservation concern that are listed in terms of the SANBI SIBIS database (quarter degree squares 2824 DB, DD and 2924 BB). Only *Acacia erioloba* can be confirmed present and occurs mostly in the north of the site in the areas of savanna on deeper sands near Kimberly. *Aloinopsis rubrolineata* occurs in areas of exposed calcrete and may occur in the central section of the routes between Kimberly and CSP Project Site where such habitat is present, but was not observed. There are however also additional species present which are either protected under the National Forests Act such as *Boscia albitrunca* and *Acacia erioloba* or protected under the Northern Cape Nature Conservation Act of 2009, which includes *Boscia foetida*, all *Mesembryanthemaceae*, all species within the *Euphorbiaceae*, *Oxalidaceae*, *Iridaceae*, all species within the genera *Nemesia* and *Jamesbrittenia*. In terms of fauna: ▪ 51 mammals have been recorded from the quarter degree squares traversed by the power line options. However, as many as 20 of these are large mammals, introduced or maintained for game farming operations and are not considered relevant to the current study as these are managed populations regulated and confined by landowners. The remaining 30 are free ranging species which occur naturally in the area. ▪ Five listed terrestrial mammals may occur in the area, the Honey Badger *Mellivora capensis* (Endangered), Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed cat *Felis nigripes* (Vulnerable), South African Hedgehog *Atelerix frontalis* (Near Threatened) and the Serval *Leptailurus serval* (Near Threatened). ▪ According to the SARCA database, 31 reptile species are known from the area suggesting that the reptile diversity within the site is likely to be fairly low. Species observed in the area include the Cape Skink *Trachylepis capensis*, Ground Agama *Agama aculeata aculeata*, Spotted Sand Lizard *Pedioplanis lineoocellata* and Leopard Tortoise *Stigmochelys pardalis*. There are no listed species known from the area. ▪ The site lies within the distribution range of 10 amphibian species. The only listed species which may occur in the area is the Giant Bullfrog *Pyxicephalus adspersus* which is listed as Near Threatened. Although it has not been recorded from the affected area, it is common in the wider area on account of the large number of pans in the area, which are the breeding habitat of the Giant Bullfrog.

	The major impacts of the development of the Power line Project would occur during the construction phase, due to the disturbance of largely intact ecosystems that would take place at this time. Construction phase disturbance would however be transient and while impacts on flora are likely to persist for some time, impacts on fauna during operation would be very low. Due to the low overall footprint of the Power line Project and low operational disturbance levels, impacts associated with the construction and operation of the power line would be local in nature and of low overall significance after mitigation. In terms of mitigation, avoidance of the identified sensitive features is considered the most important measure to reduce the impact of the power line to a low level. Overall and with the suggested mitigation measures applied, the impact of the proposed Power line Project would be of local extent and low significance. There are no impacts associated with the development of the power line that are considered to be high and which cannot be mitigated to a low level. As such, there are no significant ecological reasons to oppose the construction of the CSP Project grid connections from the Jacobsdal Substation to the CSP Project Site and the Kimberly-Boundary substations.
Avifauna	An estimated 313 bird species could potentially occur in the study area of which 28 are classified as Red Data species. Three (3) Important Bird Areas (IBAs) in the vicinity including Dronfield Nature Reserve (approx. 5km north Kimberley – SA031), Kamfer's Dam (approx. 6km north of Kimberley – SA032) and Benfontein Nature Reserve (approx. 14km south east of Kimberley – SA033). There is also a vulture breeding area for White-backed Vultures (Susanna Vulture Breeding Area) that can be found covering both Corridor 2 Alternatives 1 and 2, as well as another breeding area approx. 10km outside Jacobsdal. Potential impacts during the construction and decommissioning phase include the displacement of priority species and habitat transformation. Impacts are mainly negative but low. With mitigation, these impacts can be reduced further. For the operation phase, electrocutions and collisions of red data species is the primary potential impact. Potential impacts for collisions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. This can be mitigated to a low level for Corridor 1 Jacobsdal Link and a medium level for Corridor 2 Alternatives 1 and 2. Potential impacts for electrocutions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a

	low level after mitigation. Finally, for the decommissioning phase, displacement of red data species as a result of disturbance is rated as low for Corridor 1 Jacobsdal Link and medium for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Corridor 1 Jacobsdal Link is the shortest power line route and does not transect any vulture breeding areas. All potential impacts can be mitigated to a low level. There is not much difference in preference between Corridor 2 Alternative 1 and 2 as both are relatively the same length and traverse the Susanna White-backed Vulture breeding area.
Wetlands	Two (2) main hydrogeomorphic types were identified including well developed riparian systems (namely the Modder River) and several depression that differ in size (small pans – 0.9ha to 20ha; large pans – larger than 58ha to 401ha). Summary of assessments undertaken applied to riparian resources include the following: ▪ Modder River: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; ▪ Large Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; and ▪ Small Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision. Types of impacts to the riparian systems included: ▪ Loss of riparian habitat and ecological structure; and ▪ Changes to riparian ecological and sociocultural service provision; ▪ Impacts on riparian hydrology and sediment balance. Overall significance after mitigation is a low negative impact after management and mitigation measure implementation. Based on the findings of this study, it is the opinion of the ecologists that the proposed Power line Project is regarded as having low levels of impact on the surrounding freshwater resources identified, even if less than desirable mitigation of impacts occurs. With careful planning of the final layout of the power lines and strict implementation of mitigation measures throughout all phases of the Power line Project, impacts can be reduced to very low significance levels and the Power line Project should, from a freshwater resource point of view, be considered favourably for development. Following the assessment of perceived impacts, consideration was given as to the preferred corridor option from a freshwater ecology perspective. As Corridor 1 was the only option provided for the routing

	of the power line between the Jacobsdal Substation and the CSP Project, this option is considered to be "favourable". Depending on the final layout of the power line within the corridor, with avoidance of most of the freshwater resources, this layout could have minimal impacts on the freshwater resources. Corridor 2, Alternative 2 is considered to be the best routing option for the power line between CSP Project and the KDS to the Boundary Substation, as it traverses over the least amount of freshwater resources identified by this study.
Soils and Agricultural Potential	The Power line Project is can be found on land zoned as and used for agriculture. Soils on the site are predominantly shallow to moderately deep, loamy sands on underlying rock or hard-pan carbonate (Hutton, Mispah and Coega soil forms). The major limitation to agriculture in the study area is the climatic restrictions i.e. moisture/precipitation availability. The limited depth of the soils is a further limitation. As a result, the study area is predominantly unsuitable for cultivation and agricultural land use is limited to grazing, except for some small irrigation areas along the Modder River. The land capability of the site varies according to land type from class 5 to class 7, which is from non-arable, moderate potential grazing land to non-arable, low potential grazing land. The limitations to agriculture are aridity and lack of access to water plus shallow soil depth. Because of these constraints, agricultural land use is mostly restricted to grazing. The natural grazing capacity is predominantly 14-17 hectares per animal unit. The centre pivot lands along the Modder River are considered to be of high agricultural sensitivity. The overhead power lines as well as any infrastructure on the ground must avoid these lands. There are three (3) factors that limit the significance of all potential agricultural impacts. The first is that the actual footprint of disturbance of the proposed Power line Project is very small in relation to available, surrounding properties. The second is that the impact of a power line on the kind of agricultural activity (predominantly grazing) along the Power line Project is very minimal, as this can continue in the presence of a power line with negligible disturbance. The third factor is that the site has very low agricultural potential, limited by severe climatic restrictions and soils with a low carrying capacity i.e. shallow soils. Four (4) potential negative impacts of the Power line Project on

	agricultural resources and productivity were identified as: ▪ Loss of agriculturally zoned land due to the footprint of the power line infrastructure. ▪ Soil erosion caused by alteration of the surface characteristics. ▪ Loss of topsoil in disturbed areas, causing a decline in soil fertility. ▪ Degradation of veld vegetation beyond the direct footprint due to constructional disturbance, dust and vehicle compaction. All impacts were assessed as having low significance. Recommended mitigation measures include implementation of an effective system of storm water run-off control to mitigate erosion; and topsoil stripping and re-spreading to mitigate loss of topsoil. Because of the low agricultural potential of the site and resultant low agricultural impacts, the development should, from an agricultural impact perspective, be authorised. Because of the low impacts and the uniformly low potential of the site, there is no preference between the different corridor options. There are no conditions resulting from this assessment that need to be included in the environmental authorisation.
Heritage and Palaeontology	Heritage Findings: An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history. These desktop studies were followed by a fieldwork component that comprised driving and walking through the study area. A total of twenty seven (27) occurrences of heritage resources were identified within Corridor 2 Alternative 1. Fourteen (14) of these would require mitigation before exhumation (graves) or destruction (historical structures) if development were to come within 20 m. Thirteen (13) occurrences of heritage resources have high significance and should not be disturbed by development within 20 m. Site Kal1 and Kal2 must be avoided with a 50 meter buffer. None were identified within Corridor 1 Jacobsdal Link nor Corridor 2 Alternative 2. It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Palaeontological Findings:

	The Power line Project footprint is completely underlain by lower Permian sediments of the Ecca Group of the Karoo Basin (White Hill and Prince Albert Formations), Late Permian Volksrust Formation, and the Karoo Dolerite Suite and Quaternary deposits. The Power line Project footprint as a whole is a fairly flat lying terrain with grassy vegetation cover in places as well as a few thorn trees. The Karoo dolerite Suite is unfossiliferous and the sensitivity in the Quaternary sediments is low. Overall Impact Statement: Heritage – The overall impact evaluation has shown that the pre-mitigation impact on heritage resources is rated as High negative. However, with the implementation of the recommended mitigation measures, this will reduce the potential impact to a low negative impact. Corridor 1 and Corridor 2 Alternative 2 are viewed as favourable options due to the low potential impact on heritage resources which can be mitigated to address envisaged impacts. Corridor 2 Alternative 1 however, is viewed as not preferred as there is a large amount of heritage resources along this route. Palaeontology – From a palaeontological perspective, although the palaeontological sensitivity of the Whitehill, Prince Albert and Volksrust Formations is rated as high to very high, scarcity of fossil-bearing sediments and lack of exposure at the proposed sites indicate that the impact on palaeontological material is low. The fossil heritage in the development area is low/ negligible. As such, there is no preference between any of the proposed alternative corridors.
Visual	The Visual Impact Assessment (VIA) conducted for the proposed Power line Project has demonstrated that most of the study area has a rural, partially scenic visual character which is transformed in part. The northern and south-western parts of the study area, near Kimberley and Jacobsdal respectively, are characterised by a more visually degraded landscape, which is mostly attributed to the presence of large-scale mining activities, existing electrical infrastructure as well as informal/semi-formal settlements and residential areas/communities. As such, the visual character in these parts of the study area is visually degraded, typical of a peri-urban environment. In addition, the southern and central parts of the study area are characterised by a more natural / scenic visual character due to the prevalence of the natural intact vegetation, limited human habitation and limited transformation and/or development. The visual character in these areas is thus typical of a natural rural environment. Commercial cultivation is concentrated along the Modder River in the southern

	parts of the study area. These areas are dominated by various agricultural activities and other elements typical of a pastoral environment. The study area is not typically valued or utilised for its natural scenic value and therefore relatively few tourism, historically or culturally significant sensitive receptors were identified during the fieldwork. A desktop investigation revealed that several farmsteads are also present within the study area which may perceive the power line to be an unwelcome intrusion, depending on the perception of the viewer. The impact assessment revealed that the significance of the visual impacts resulting from the proposed Power line Project would be low during the construction phase and medium during the operational phase. These potential impacts can be mitigated to acceptable levels provided the recommended mitigation measures are implemented. All the proposed Power line Project corridor alternatives were assessed to determine which alternative would result in the lowest overall visual impact. Based on the assessment, Corridor 1 (Green) is considered to be a favourable alignment for the proposed Power line Project while Corridor 2 Alternative 1 (Purple) is not considered to be a preferred alignment. Corridor 2 Alternative 2 (Turquoise) was considered to be the preferred alignment, due to the presence of existing power lines and lack of visually sensitive and potentially sensitive receptor locations within close proximity.
Socio-economic	The review of the relevant policy documents concluded that the Power line Project falls in line with the national and local government developmental objectives. It may also form part of the SIP10 and SIP8. Furthermore, the Power line Project is not expected to compromise the spatial visions of the three municipalities and two provinces; however, care needs to be taken when the route is chosen as to avoid green areas earmarked by the Sol Plaatje LM. The project will improve the reliability of electricity supply in the region as the CSP Project will augment the national electricity supply, which could lead to establishment of more electricity connections in the region or country as a whole. The Power line Project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between approximately R60 million and R144 million, depending on the corridor approved, is likely to stimulate between approximately R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. All three corridors have been considered. It appears that commercial livestock and game farming is the dominant land use that may be

	impacted by any of these corridor options and alternatives. The agricultural sector is a significant contributor to the economies of Letsemeng and Tokologo and creates approximately 33% and 22% of all job opportunities in the respective municipalities. This emphasises the need to minimise the project's potential negative impact on the dominant activities observed in the zone of influence of the project. Corridor Alternatives received the same average scores for positive and negative impacts for both before and after mitigations measures. Considering the preferences allocated to these two alternatives for each impact, no clear differentiation can be made between the alternatives and all could be equally considered.

Corridor 2 Alternative 1 CSP Project Site via Kimberley DS to Boundary Substation (Purple)

Biodiversity	In terms of flora, within the area affected by the proposed Power line Project, vegetation types that are affected include Kimberly Thornveld and Northern Upper Karoo, Highveld Salt Pans and Vaalbos Rocky Shrubland. Within these vegetation types however, the specific habitats that are actually occurring within the proposed corridor alternatives include the following: ▪ Kimberley Thornveld – Protected and listed species include *Boscia albitrunca and Acacia erioloba*; ▪ Northern Cape Upper Karoo; ▪ Vaalbos Rocky Shrubland; ▪ Pans – Protected and listed species include; ▪ Modder River – the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as the unique aquatic habitats present here that are not represented elsewhere in the landscape of the area. There are three (3) species of conservation concern that are listed in terms of the SANBI SIBIS database (quarter degree squares 2824 DB, DD and 2924 BB). Only *Acacia erioloba* can be confirmed present and occurs mostly in the north of the site in the areas of savanna on deeper sands near Kimberly. *Aloinopsis rubrolineata* occurs in areas of exposed calcrete and may occur in the central section of the routes between Kimberly and CSP Project Site where such habitat is present, but was not observed. There are however also additional species present which are either protected under the National Forests Act such as *Boscia albitrunca* and *Acacia erioloba* or protected under the Northern Cape Nature Conservation Act of 2009, which includes *Boscia foetida*, all *Mesembryanthemaceae*, all species within the *Euphorbiaceae*, *Oxalidaceae*, *Iridaceae*, all species within the genera *Nemesia* and *Jamesbrittenia*. In terms of fauna: ▪ 51 mammals have been recorded from the quarter degree squares traversed by the power line options. However, as many as 20 of these are large mammals, introduced or maintained for game farming operations and are not considered relevant to the current study as these are managed populations regulated and confined by landowners. The remaining 30 are free ranging species which occur naturally in the area. ▪ Five listed terrestrial mammals may occur in the area, the Honey Badger *Mellivora capensis* (Endangered), Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed cat *Felis nigripes* (Vulnerable), South African Hedgehog *Atelerix frontalis* (Near Threatened) and the Serval *Leptailurus serval* (Near Threatened).

	▪ According to the SARCA database, 31 reptile species are known from the area suggesting that the reptile diversity within the site is likely to be fairly low. Species observed in the area include the Cape Skink *Trachylepis capensis*, Ground Agama *Agama aculeata aculeata*, Spotted Sand Lizard *Pedioplanis lineoocellata* and Leopard Tortoise *Stigmochelys pardalis*. There are no listed species known from the area. ▪ The site lies within the distribution range of 10 amphibian species. The only listed species which may occur in the area is the Giant Bullfrog *Pyxicephalus adspersus* which is listed as Near Threatened. Although it has not been recorded from the affected area, it is common in the wider area on account of the large number of pans in the area, which are the breeding habitat of the Giant Bullfrog. The major impacts of the development of the power line would occur during the construction phase, due to the disturbance of largely intact ecosystems that would take place at this time. Construction phase disturbance would however be transient and while impacts on flora are likely to persist for some time, impacts on fauna during operation would be very low. Due to the low overall footprint of the power line and low operational disturbance levels, impacts associated with the construction and operation of the power line would be local in nature and of low overall significance after mitigation. In terms of mitigation, avoidance of the identified sensitive features is considered the most important measure to reduce the impact of the power line to a low level. Overall and with the suggested mitigation measures applied, the impact of the proposed 132 kV power line would be of local extent and low significance. There are no impacts associated with the development of the power line that are considered to be high and which cannot be mitigated to a low level. As such, there are no significant ecological reasons to oppose the construction of the CSP Project grid connections from the Jacobsdal substation via the CSP Project Site to Kimberley-Boundary Substations.
Avifauna	An estimated 313 bird species could potentially occur in the study area of which 28 are classified as Red Data species. Three Important Bird Areas (IBAs) in the vicinity including Dronfield Nature Reserve (approx. 5km north Kimberley – SA031), Kamfer's Dam (approx. 6km north of Kimberley – SA032) and Benfontein Nature Reserve (approx. 14km south east of Kimberley – SA033). There is also a vulture breeding area for White-backed Vultures (Susanna Vulture Breeding Area) that can be found covering both Corridor 2 Alternatives 1 and 2, as well as another breeding area approx. 10km outside Jacobsdal.

	Potential impacts during the construction and decommissioning phase include the displacement of priority species and habitat transformation. Impacts are mainly negative but low. With mitigation, these impacts can be reduced further. For the operation phase, electrocutions and collisions of red data species is the primary potential impact. Potential impacts for collisions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. This can be mitigated to a low level for Corridor 1 Jacobsdal Link and a medium level for Corridor 2 Alternatives 1 and 2. Potential impacts for electrocutions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Finally, for the decommissioning phase, displacement of red data species as a result of disturbance is rated as low for Corridor 1 Jacobsdal Link and medium for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Corridor 1 Jacobsdal Link is the shortest power line route and does not transect any vulture breeding areas. All potential impacts can be mitigated to a low level. There is not much difference in preference between Corridor 2 Alternative 1 and 2 as both are relatively the same length and traverse the Susanna White-backed Vulture breeding area.
Wetlands	Two (2) main hydrogeomorphic types were identified including well developed riparian systems (namely the Modder River) and several depression that differ in size (small pans – 0.9ha to 20ha; large pans – larger than 58ha to 401ha). Summary of assessments undertaken applied to riparian resources include the following: ▪ Modder River: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; ▪ Large Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; and ▪ Small Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision. Types of impacts to the riparian systems included: ▪ Loss of riparian habitat and ecological structure; and ▪ Changes to riparian ecological and sociocultural service provision; ▪ Impacts on riparian hydrology and sediment balance. Overall significance after mitigation is a low negative impact after management and mitigation measure implementation. Based on the findings of this study, it is the opinion of the ecologists that the proposed

	Power line Project is regarded as having low levels of impact on the surrounding freshwater resources identified, even if less than desirable mitigation of impacts occurs. With careful planning of the final layout of the power lines and strict implementation of mitigation measures throughout all phases of the Power line Project, impacts can be reduced to very low significance levels and the Power line Project should, from a freshwater resource point of view, be considered favourably for development. Following the assessment of perceived impacts, consideration was given as to the preferred corridor option from a freshwater ecology perspective. As Corridor 1 was the only option provided for the routing of the power line between the Jacobsdal Substation and the CSP Project Site, this option is considered to be "favourable". Depending on the final layout of the power line within the corridor, with avoidance of most of the freshwater resources, this layout could have minimal impacts on the freshwater resources. Corridor 2, Alternative 2 is considered to be the best routing option for the power line between CSP Project and the KDS to the Boundary Substation, as it traverses over the least amount of freshwater resources identified by this study.
Soils and Agricultural Potential	The Power line Project is can be found on land zoned as and used for agriculture. Soils on the site are predominantly shallow to moderately deep, loamy sands on underlying rock or hard-pan carbonate (Hutton, Mispah and Coega soil forms). The major limitation to agriculture in the study area is the climatic restrictions i.e. moisture/precipitation availability. The limited depth of the soils is a further limitation. As a result, the study area is predominantly unsuitable for cultivation and agricultural land use is limited to grazing, except for some small irrigation areas along the Modder River. The land capability of the site varies according to land type from class 5 to class 7, which is from non-arable, moderate potential grazing land to non-arable, low potential grazing land. The limitations to agriculture are aridity and lack of access to water plus shallow soil depth. Because of these constraints, agricultural land use is mostly restricted to grazing. The natural grazing capacity is predominantly 14-17 hectares per animal unit. The centre pivot lands along the Modder River are considered to be of high agricultural sensitivity. The overhead power lines as well as any infrastructure on the ground must avoid these lands.

	There are three (3) factors that limit the significance of all potential agricultural impacts. The first is that the actual footprint of disturbance of the proposed Power line Project is very small in relation to available, surrounding properties. The second is that the impact of a power line on the kind of agricultural activity (predominantly grazing) along the Power line Project is very minimal, as this can continue in the presence of a power line with negligible disturbance. The third factor is that the site has very low agricultural potential, limited by severe climatic restrictions and soils with a low carrying capacity i.e. shallow soils. Four (4) potential negative impacts of the Power line Project on agricultural resources and productivity were identified as: ▪ Loss of agriculturally zoned land due to the footprint of the power line infrastructure. ▪ Soil erosion caused by alteration of the surface characteristics. ▪ Loss of topsoil in disturbed areas, causing a decline in soil fertility. ▪ Degradation of veld vegetation beyond the direct footprint due to constructional disturbance, dust and vehicle compaction. All impacts were assessed as having low significance. Recommended mitigation measures include implementation of an effective system of storm water run-off control to mitigate erosion; and topsoil stripping and re-spreading to mitigate loss of topsoil. Because of the low agricultural potential of the site and resultant low agricultural impacts, the development should, from an agricultural impact perspective, be authorised. Because of the low impacts and the uniformly low potential of the site, there is no preference between the different corridor options. There are no conditions resulting from this assessment that need to be included in the environmental authorisation proposed Power line Project
Heritage and Palaeontology	Heritage Findings: An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history. These desktop studies were followed by a fieldwork component that comprised driving and walking through the study area. A total of twenty seven (27) occurrences of heritage resources were identified within Corridor 2 Alternative 1. Fourteen (14) of these would require mitigation before exhumation (graves) or destruction (historical structures) if development were to come within 20 m. Thirteen (13) occurrences of

	heritage resources have high significance and should not be disturbed by development within 20 m. Site KaI1 and KaI2 must be avoided with a 50 meter buffer. None were identified within Corridor 1 Jacobsdal Link nor Corridor 2 Alternative 2. It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Palaeontological Findings: The Power line Project footprint is completely underlain by lower Permian sediments of the Ecca Group of the Karoo Basin (White Hill and Prince Albert Formations), Late Permian Volksrust Formation, and the Karoo Dolerite Suite and Quaternary deposits. The Power line Project footprint as a whole is a fairly flat lying terrain with grassy vegetation cover in places as well as a few thorn trees. The Karoo dolerite Suite is unfossiliferous and the sensitivity in the Quaternary sediments is low. Overall Impact Statement: Heritage – The overall impact evaluation has shown that the pre-mitigation impact on heritage resources is rated as High negative. However, with the implementation of the recommended mitigation measures, this will reduce the potential impact to a low negative impact. Corridor 1 and Corridor 2 Alternative 2 are viewed as favourable options due to the low potential impact on heritage resources which can be mitigated to address envisaged impacts. Corridor 2 Alternative 1 however, is viewed as not preferred as there is a large amount of heritage resources along this route. Palaeontology – From a palaeontological perspective, although the palaeontological sensitivity of the Whitehill, Prince Albert and Volksrust Formations is rated as high to very high, scarcity of fossil-bearing sediments and lack of exposure at the proposed sites indicate that the impact on palaeontological material is low. The fossil heritage in the development area is low/ negligible. As such, there is no preference between any of the proposed alternative corridors.
Visual	The Visual Impact Assessment (VIA) conducted for the proposed Power line Project has demonstrated that most of the study area has a rural, partially scenic visual character which is transformed in part. The northern and south-western parts of the study area, near Kimberley and Jacobsdal respectively, are characterised by a more visually degraded landscape, which is mostly attributed to the presence of large-scale mining activities, existing electrical infrastructure as well as

	informal/semi-formal settlements and residential areas/communities. As such, the visual character in these parts of the study area is visually degraded, typical of a peri-urban environment. In addition, the southern and central parts of the study area are characterised by a more natural / scenic visual character due to the prevalence of the natural intact vegetation, limited human habitation and limited transformation and/or development. The visual character in these areas is thus typical of a natural rural environment. Commercial cultivation is concentrated along the Modder River in the southern parts of the study area. These areas are dominated by various agricultural activities and other elements typical of a pastoral environment. The study area is not typically valued or utilised for its natural scenic value and therefore relatively few tourism, historically or culturally significant sensitive receptors were identified during the fieldwork. A desktop investigation revealed that several farmsteads are also present within the study area which may perceive the power line to be an unwelcome intrusion, depending on the perception of the viewer. The impact assessment revealed that the significance of the visual impacts resulting from the proposed Power line Project would be low during the construction phase and medium during the operational phase. These potential impacts can be mitigated to acceptable levels provided the recommended mitigation measures are implemented. All the proposed Power line Project corridor alternatives were assessed to determine which alternative would result in the lowest overall visual impact. Based on the assessment, Corridor 1 (Green) is considered to be a favourable alignment for the proposed Power line Project while Corridor 2 Alternative 1 (Purple) is not considered to be a preferred alignment. Corridor 2 Alternative 2 (Turquoise) was considered to be the preferred alignment, due to the presence of existing power lines and lack of visually sensitive and potentially sensitive receptor locations within close proximity.
Socio-economic	The review of the relevant policy documents concluded that the Power line Project falls in line with the national and local government developmental objectives. It may also form part of the SIP10 and SIP8. Furthermore, the Power line Project is not expected to compromise the spatial visions of the three municipalities and two provinces; however, care needs to be taken when the route is chosen as to avoid green areas earmarked by the Sol Plaatje LM. The project will improve the reliability of electricity supply in the region as the CSP Project will augment the national electricity supply, which could lead to establishment of more electricity connections in the region or country as a whole. The Power line Project will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between

		approximately R60 million and R144 million, depending on the corridor approved, is likely to stimulate between approximately R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. All three corridors have been considered. It appears that commercial livestock and game farming is the dominant land use that may be impacted by any of these corridor options and alternatives. The agricultural sector is a significant contributor to the economies of Letsemeng and Tokologo and creates approximately 33% and 22% of all job opportunities in the respective municipalities. This emphasises the need to minimise the project's potential negative impact on the dominant activities observed in the zone of influence of the project. Corridor Alternatives received the same average scores for positive and negative impacts for both before and after mitigations measures. Considering the preferences allocated to these two alternatives for each impact, no clear differentiation can be made between the alternatives and all could be equally considered.

Corridor 2 Alternative 2 CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)

Biodiversity	In terms of flora, within the area affected by the proposed Power line Project, vegetation types that are affected include Kimberly Thornveld and Northern Upper Karoo, Highveld Salt Pans and Vaalbos Rocky Shrubland. Within these vegetation types however, the specific habitats that are actually occurring within the proposed corridor alternatives include the following: ▪ Kimberley Thornveld – Protected and listed species include *Boscia albitrunca and Acacia erioloba*; ▪ Northern Cape Upper Karoo; ▪ Vaalbos Rocky Shrubland; ▪ Pans – Protected and listed species include; ▪ Modder River – the Modder River which is considered a sensitive feature due to the ecological significance of this area as a corridor for fauna as well as the unique aquatic habitats present here that are not represented elsewhere in the landscape of the area. There are three (3) species of conservation concern that are listed in terms of the SANBI SIBIS database (quarter degree squares 2824 DB, DD and 2924 BB). Only *Acacia erioloba* can be confirmed present and occurs mostly in the north of the site in the areas of savanna on deeper sands near Kimberly. *Aloinopsis rubrolineata* occurs in areas of exposed calcrete and may occur in the central section of the routes between Kimberly and CSP Project Site where such habitat is present, but was not observed. There are however also additional species present which are either protected under the National Forests Act such as *Boscia albitrunca* and *Acacia erioloba* or protected under the Northern Cape Nature Conservation Act of 2009, which includes *Boscia foetida*, all *Mesembryanthemaceae*, all species within the *Euphorbiaceae*, *Oxalidaceae*, *Iridaceae*, all species within the genera *Nemesia* and *Jamesbrittenia*. In terms of fauna: ▪ 51 mammals have been recorded from the quarter degree squares traversed by the power line options. However, as many as 20 of these are large mammals, introduced or maintained for game farming operations and are not considered relevant to the current study as these are managed populations regulated and confined by landowners. The remaining 30 are free ranging species which occur naturally in the area.. ▪ Five listed terrestrial mammals may occur in the area, the Honey Badger *Mellivora capensis* (Endangered), Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed cat *Felis nigripes* (Vulnerable), South African Hedgehog *Atelerix frontalis*

	(Near Threatened) and the Serval *Leptailurus serval* (Near Threatened). ▪ According to the SARCA database, 31 reptile species are known from the area suggesting that the reptile diversity within the site is likely to be fairly low. Species observed in the area include the Cape Skink *Trachylepis capensis*, Ground Agama *Agama aculeata aculeata*, Spotted Sand Lizard *Pedioplanis lineoocellata* and Leopard Tortoise *Stigmochelys pardalis*. There are no listed species known from the area. ▪ The site lies within the distribution range of 10 amphibian species. The only listed species which may occur in the area is the Giant Bullfrog *Pyxicephalus adspersus* which is listed as Near Threatened. Although it has not been recorded from the affected area, it is common in the wider area on account of the large number of pans in the area, which are the breeding habitat of the Giant Bullfrog. The major impacts of the development of the power line would occur during the construction phase, due to the disturbance of largely intact intact ecosystems that would take place at this time. Construction phase disturbance would however be transient and while impacts on flora are likely to persist for some time, impacts on fauna during operation would be very low. Due to the low overall footprint of the power line and low operational disturbance levels, impacts associated with the construction and operation of the power line would be local in nature and of low overall significance after mitigation. In terms of mitigation, avoidance of the idenitified sensitive features is considered the most important measure to reduce the impact of the power line to a low level. Overall and with the suggested mitigation measures applied, the impact of the proposed 132 kV power line would be of local extent and low significance. There are no impacts associated with the development of the power line that are considered to be high and which cannot be mitigated to a low level. As such, there are no significant ecological reasons to oppose the construction of the CSP Project grid connections to Kimberly or to Jacobsdal.
Avifauna	An estimated 313 bird species could potentially occur in the study area of which 28 are classified as Red Data species. Three (3) Important Bird Areas (IBAs) in the vicinity including Dronfield Nature Reserve (approx. 5km north Kimberley – SA031), Kamfer's Dam (approx. 6km north of Kimberley – SA032) and Benfontein Nature Reserve (approx. 14km south east of Kimberley – SA033). There is also a vulture breeding area for White-backed Vultures (Susanna Vulture Breeding Area) that can be found covering both Corridor 2 Alternatives 1 and 2, as well as another breeding area approx. 10km outside

	Jacobsdal. Potential impacts during the construction and decommissioning phase include the displacement of priority species and habitat transformation. Impacts are mainly negative but low. With mitigation, these impacts can be reduced further. For the operation phase, electrocutions and collisions of red data species is the primary potential impact. Potential impacts for collisions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. This can be mitigated to a low level for Corridor 1 Jacobsdal Link and a medium level for Corridor 2 Alternatives 1 and 2. Potential impacts for electrocutions of red data species are rated as medium for Corridor 1 Jacobsdal Link and high for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Finally, for the decommissioning phase, displacement of red data species as a result of disturbance is rated as low for Corridor 1 Jacobsdal Link and medium for Corridor 2 Alternatives 1 and 2. All Corridors can be mitigated to a low level after mitigation. Corridor 1 Jacobsdal Link is the shortest power line route and does not transect any vulture breeding areas. All potential impacts can be mitigated to a low level. There is not much difference in preference between Corridor 2 Alternative 1 and 2 as both are relatively the same length and traverse the Susanna White-backed Vulture breeding area.
Wetlands	Two (2) main hydrogeomorphic types were identified including well developed riparian systems (namely the Modder River) and several depression that differ in size (small pans – 0.9ha to 20ha; large pans – larger than 58ha to 401ha). Summary of assessments undertaken applied to riparian resources include the following: ▪ Modder River: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; ▪ Large Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision; and ▪ Small Pans: PES-C; EI & ES-C; REC-C; Moderately Low Ecological Function and Service Provision. Types of impacts to the riparian systems included: ▪ Loss of riparian habitat and ecological structure; and ▪ Changes to riparian ecological and sociocultural service provision; ▪ Impacts on riparian hydrology and sediment balance. Overall significance after mitigation is a low negative impact after

	management and mitigation measure implementation. Based on the findings of this study, it is the opinion of the ecologists that the proposed Power line Project is regarded as having low levels of impact on the surrounding freshwater resources identified, even if less than desirable mitigation of impacts occurs. With careful planning of the final layout of the power lines and strict implementation of mitigation measures throughout all phases of the Power line Project, impacts can be reduced to very low significance levels and the Power line Project should, from a freshwater resource point of view, be considered favourably for development. Following the assessment of perceived impacts, consideration was given as to the preferred corridor option from a freshwater ecology perspective. As Corridor 1 was the only option provided for the routing of the power line between the Jacobsdal Substation and the CSP Project Site, this option is considered to be "favourable". Depending on the final layout of the power line within the corridor, with avoidance of most of the freshwater resources, this layout could have minimal impacts on the freshwater resources. Corridor 2, Alternative 2 is considered to be the best routing option for the power line between CSP Project and the KDS to the Boundary Substation, as it traverses over the least amount of freshwater resources identified by this study.
Soils and Agricultural Potential	The Power line Project is can be found on land zoned as and used for agriculture. Soils on the site are predominantly shallow to moderately deep, loamy sands on underlying rock or hard-pan carbonate (Hutton, Mispah and Coega soil forms). The major limitation to agriculture in the study area is the climatic restrictions i.e. moisture/precipitation availability. The limited depth of the soils is a further limitation. As a result, the study area is predominantly unsuitable for cultivation and agricultural land use is limited to grazing, except for some small irrigation areas along the Modder River. The land capability of the site varies according to land type from class 5 to class 7, which is from non-arable, moderate potential grazing land to non-arable, low potential grazing land. The limitations to agriculture are aridity and lack of access to water plus shallow soil depth. Because of these constraints, agricultural land use is mostly restricted to grazing. The natural grazing capacity is predominantly 14-17 hectares per animal unit. The centre pivot lands along the Modder River are considered to be of high agricultural sensitivity. The overhead power lines as well as any

	infrastructure on the ground must avoid these lands. There are three (3) factors that limit the significance of all potential agricultural impacts. The first is that the actual footprint of disturbance of the proposed Power line Project is very small in relation to available, surrounding properties. The second is that the impact of a power line on the kind of agricultural activity (predominantly grazing) along the Power line Project is very minimal, as this can continue in the presence of a power line with negligible disturbance. The third factor is that the site has very low agricultural potential, limited by severe climatic restrictions and soils with a low carrying capacity i.e. shallow soils. Four (4) potential negative impacts of the Power line Project on agricultural resources and productivity were identified as: ▪ Loss of agriculturally zoned land due to the footprint of the power line infrastructure. ▪ Soil erosion caused by alteration of the surface characteristics. ▪ Loss of topsoil in disturbed areas, causing a decline in soil fertility. ▪ Degradation of veld vegetation beyond the direct footprint due to constructional disturbance, dust and vehicle compaction. All impacts were assessed as having low significance. Recommended mitigation measures include implementation of an effective system of storm water run-off control to mitigate erosion; and topsoil stripping and re-spreading to mitigate loss of topsoil. Because of the low agricultural potential of the site and resultant low agricultural impacts, the development should, from an agricultural impact perspective, be authorised. Because of the low impacts and the uniformly low potential of the site, there is no preference between the different corridor options. There are no conditions resulting from this assessment that need to be included in the environmental authorisation.
Heritage and Palaeontology	Heritage Findings: An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history. These desktop studies were followed by a fieldwork component that comprised driving and walking through the study area. A total of twenty seven (27) occurrences of heritage resources were identified within Corridor 2 Alternative 1. Fourteen (14) of these would require mitigation

	before exhumation (graves) or destruction (historical structures) if development were to come within 20 m. Thirteen (13) occurrences of heritage resources have high significance and should not be disturbed by development within 20 m. Site KaI1 and KaI2 must be avoided with a 50 meter buffer. None were identified within Corridor 1 Jacobsdal Link nor Corridor 2 Alternative 2. It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Palaeontological Findings: The Power line Project footprint is completely underlain by lower Permian sediments of the Ecca Group of the Karoo Basin (White Hill and Prince Albert Formations), Late Permian Volksrust Formation, and the Karoo Dolerite Suite and Quaternary deposits. The Power line Project footprint as a whole is a fairly flat lying terrain with grassy vegetation cover in places as well as a few thorn trees. The Karoo dolerite Suite is unfossiliferous and the sensitivity in the Quaternary sediments is low. Overall Impact Statement: Heritage – The overall impact evaluation has shown that the pre-mitigation impact on heritage resources is rated as High negative. However, with the implementation of the recommended mitigation measures, this will reduce the potential impact to a low negative impact. Corridor 1 and Corridor 2 Alternative 2 are viewed as favourable options due to the low potential impact on heritage resources which can be mitigated to address envisaged impacts. Corridor 2 Alternative 1 however, is viewed as not preferred as there is a large amount of heritage resources along this route. Palaeontology – From a palaeontological perspective, although the palaeontological sensitivity of the Whitehill, Prince Albert and Volksrust Formations is rated as high to very high, scarcity of fossil-bearing sediments and lack of exposure at the proposed sites indicate that the impact on palaeontological material is low. The fossil heritage in the development area is low/ negligible. As such, there is no preference between any of the proposed alternative corridors.
Visual	The Visual Impact Assessment (VIA) conducted for the proposed Power line Project has demonstrated that most of the study area has a rural, partially scenic visual character which is transformed in part. The northern and south-western parts of the study area, near Kimberley and Jacobsdal respectively, are characterised by a more visually degraded

	landscape, which is mostly attributed to the presence of large-scale mining activities, existing electrical infrastructure as well as informal/semi-formal settlements and residential areas/communities. As such, the visual character in these parts of the study area is visually degraded, typical of a peri-urban environment. In addition, the southern and central parts of the study area are characterised by a more natural / scenic visual character due to the prevalence of the natural intact vegetation, limited human habitation and limited transformation and/or development. The visual character in these areas is thus typical of a natural rural environment. Commercial cultivation is concentrated along the Modder River in the southern parts of the study area. These areas are dominated by various agricultural activities and other elements typical of a pastoral environment. The study area is not typically valued or utilised for its natural scenic value and therefore relatively few tourism, historically or culturally significant sensitive receptors were identified during the fieldwork. A desktop investigation revealed that several farmsteads are also present within the study area which may perceive the power line to be an unwelcome intrusion, depending on the perception of the viewer. The impact assessment revealed that the significance of the visual impacts resulting from the proposed Power line Project would be low during the construction phase and medium during the operational phase. These potential impacts can be mitigated to acceptable levels provided the recommended mitigation measures are implemented. All the proposed Power line Project corridor alternatives were assessed to determine which alternative would result in the lowest overall visual impact. Based on the assessment, Corridor 1 (Green) is considered to be a favourable alignment for the proposed Power line Project while Corridor 2 Alternative 1 (Purple) is not considered to be a preferred alignment. Corridor 2 Alternative 2 (Turquoise) was considered to be the preferred alignment, due to the presence of existing power lines and lack of visually sensitive and potentially sensitive receptor locations within close proximity.
Socio-economic	The review of the relevant policy documents concluded that the Power line Project falls in line with the national and local government developmental objectives. It may also form part of the SIP10 and SIP8. Furthermore, the Power line Project is not expected to compromise the spatial visions of the three municipalities and two provinces; however, care needs to be taken when the route is chosen as to avoid green areas earmarked by the Sol Plaatje LM. The Power line Project will improve the reliability of electricity supply in the region as the CSP Project will augment the national electricity supply, which could lead to establishment of more electricity connections in the region or country as a whole. The Power line Project

	will also have a positive albeit small impact on the national economy and local employment, as expenditure on construction activities to the value of between approximately R60 million and R144 million, depending on the corridor approved, is likely to stimulate between approximately R180 million and R432 million of production revenue in the country and create up to fourteen temporary direct employment opportunities for the local communities. All three corridors have been considered. It appears that commercial livestock and game farming is the dominant land use that may be impacted by any of these corridor options and alternatives. The agricultural sector is a significant contributor to the economies of Letsemeng and Tokologo and creates approximately 33% and 22% of all job opportunities in the respective municipalities. This emphasises the need to minimise the project's potential negative impact on the dominant activities observed in the zone of influence of the project. Corridor Alternatives received the same average scores for positive and negative impacts for both before and after mitigations measures. Considering the preferences allocated to these two alternatives for each impact, no clear differentiation can be made between the alternatives and all could be equally considered.

No-go alternative (compulsory)

The "no-go" alternative assumes that the proposed activity does not go-ahead, implying a continuation of the current situation or the status quo. The "no-go" or "no-action" alternative is regarded as a type of alternative that provides the means to compare the impacts of project alternatives with the scenario of a project not going ahead. In evaluating the "no-go" alternative it is important to take into account the implications of foregoing the benefits of the Power line Project.

In the case of this project, the no-go alternative would result in no power line and associated infrastructure being constructed, and it would therefore not be possible to export the electricity generated at the CSP Project to the national grid. South Africa is under immense pressure to provide electricity generating capacity in order to reduce the current electricity demand in the country. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although solar power is not the only solution to solving the energy crisis in South Africa, it is the best solution for the study area in question and not establishing the proposed Power line Project for the operation of the CSP Project would be detrimental to the mandate that the government has set to promote the implementation of renewable energy.

Although the potential impacts identified (such as visual impacts) would not occur if the project did not go ahead, it must be noted that the socio economic benefit of the Power line Project should equally not be overlooked. The No-Go alternative has thus been eliminated due to the fact that the identified environmental impacts can be suitably mitigated and that by not building the project, the socio-economic benefits would be lost.

Preferred Power Line Alternative Corridor Summary

	Preferred CSP Project Site Power line Corridor Alternative		
Environmental Aspect	**Corridor 2 Alternative 1 – CSP Project Site via Kimberley DS to Boundary Substation (Purple)**	**Corridor 2 Alternative 2 – CSP Project Site via Kimberley DS to Boundary Substation (Turquoise – Preferred)**	**Corridor 1 – Jacobsdal Link to CSP Project Site (Green – Preferred)**
Biodiversity	Favourable	Preferred	Favourable
Avifauna	No preference	No preference	Preferred
Wetlands	Favourable	Preferred	Favourable
Agricultural Potential and Soils	No preference	No preference	No preference
Heritage	Not preferred	Favourable	Favourable
Palaeontology	No preference	No preference	No preference
Socio-economic	No preference	No preference	No preference
Visual	Not preferred	Favourable	Favourable

As per the summary of the preferred power line corridors shown above, the following reasons substantiate the final selection of the following preferred alternatives (**Figure 7**):

Corridor 2 Alternative 2 – CSP Project via Kimberley DS to Boundary Substation (Turquoise – Preferred)

There is not much difference in terms of preference with regards to avifauna, soils and agricultural potential, palaeontology and socio-economic aspects. However, there are reasons against the selection of Corridor 2 Alternative 1 (heritage and visual) as well as reasons motivating for the selection of Corridor 2 Alternative 2 (with regards to wetlands and biodiversity). As such, the selection of the Corridor 2 Alternative 2 –CSP Project via Kimberley DS to Boundary Substation as the preferred option was made taking into account the following:

- Presence of an existing line along this route will decrease the footprint and negative impact of the new line;
- Lower number of freshwater resources to be affected;
- Lowest potential impact on heritage resources and with appropriate mitigation measures, could address envisaged impacts.
- Follows existing power lines; and
- Fewer potential sensitive receptors.

Importantly, Corridor 1 – Jacobsdal link is not an alternative to the above mentioned alternative corridors and therefore did not undergo comparative assessment. This corridor is needed to complete the interconnection solution using Corridor 2 to evacuate the power to the KDS and

Boundary Substations. All sensitivities, potential impacts and required mitigation measures were however determined and included in this report.

Corridor 1 – Jacobsdal Link to CSP Project Site (Green – Preferred)

Ultimately, the following was taken into account for this proposed corridor as being preferred:

- The Jacobsdal link has not very high sensitivity sections along the route;
- Much lower risk of avifauna collision mortality and avoidance of vulture breeding areas;
- Least number of freshwater resources to be affected;
- Lowest potential impact on heritage resources and with appropriate mitigation measures, could address envisaged impacts.
- Shorter route and thus less physical impact (reduced footprint);
- Reduced potential negative socio-economic impacts;
- Lowest visual impact; and
- More economically viable being the shorter route.

From the above, Corridor 2 Alternative 2 (Turquoise) and Corridor 1 – Jacobsdal Link (Green) are both to be environmentally authorized with the implementation of mitigation measures.

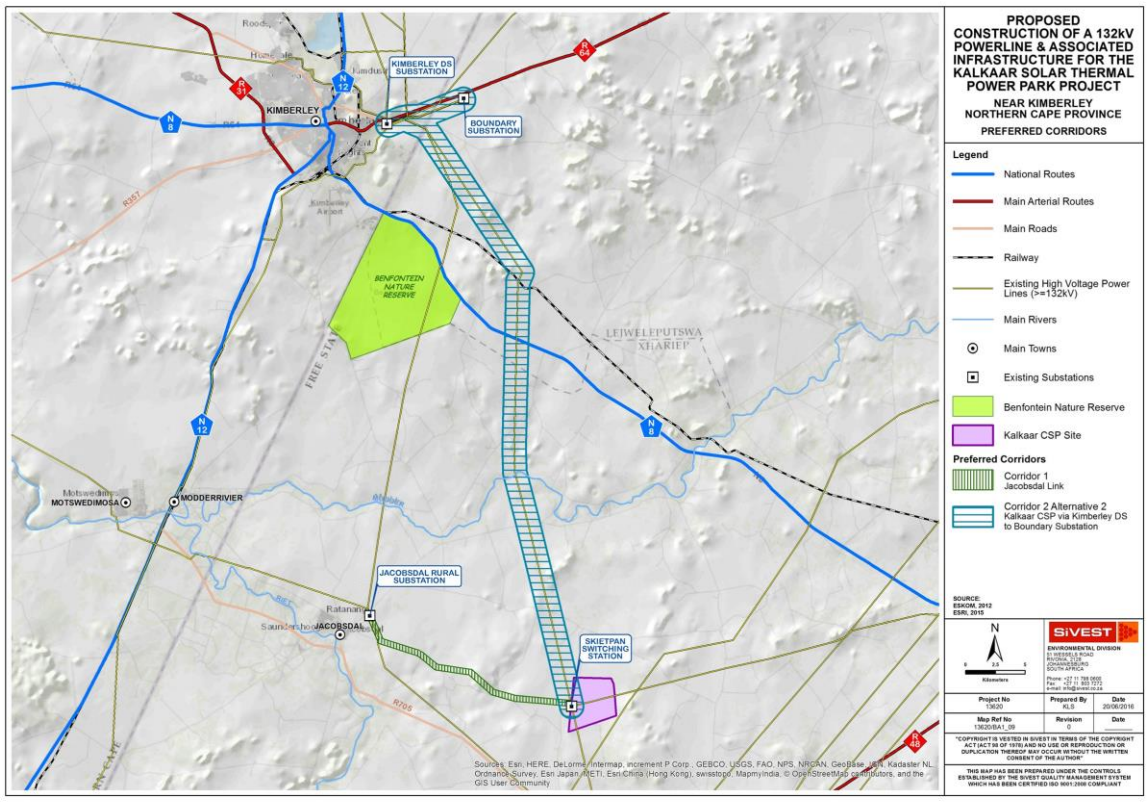

Figure 7. Preferred Power line Corridors – Corridor 1 Jacobsdal Link & Corridor 2 Alternative 2

SECTION E: RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**YES✓**	

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

Recommendations of the Biodiversity Specialist

- Preconstruction walk-through of power line route to identify and locate species of conservation concern that should be avoided or translocated where possible and practicable.
- Affected individuals of protected species which cannot be avoided should be translocated to a safe area on the site prior to construction where possible and practicable.
- Relevant permits (i.e. plant removal permit from NCPG DENC or protected tree permits from the Department of Agriculture, Forestry and Fisheries (DAFF)) should be obtained before translocation/destruction/removal of listed and protected plant or tree species takes place and before construction commences, if required.
- Alien species especially large woody species such as *Propsopis glandulosa* should be cleared from the power line servitude, but indigenous species such as *Boscia albitunca* and *Boscia foetida*, should not be cleared, where possible.
- Where the power line runs adjacent to existing power lines or access roads, the existing roads should be used optimally and any additional permanent roads should be kept to a minimum.

Recommendations of the Avifaunal Specialist

- Construction and de-commissioning activities should be restricted to the immediate footprint of the infrastructure.
- Access to the remainder of the study area should be controlled to prevent unnecessary disturbance of Red Data species.
- Measures to control noise and dust should be applied according to current best practice in the industry.
- Existing access roads should be used optimally where possible and the construction of new roads should be kept to a minimum.
- Prior to the construction of the line, a walk-through must be conducted to ascertain if any White-backed Vulture breeding pairs will be impacted by the construction activities. If any breeding pairs are potentially at risk, the construction will have to be timed to fall outside the breeding season (April to July).
- The 132kV grid connection should be inspected at least once a quarter for a minimum of three years by the avifaunal specialist to establish if there is any significant collision mortality in line with Eskom's monitoring procedures. Thereafter the frequency of inspections will be

informed by the results of the first three years.

- The detailed protocol to be followed for the inspections will be compiled by the avifaunal specialist prior to the first inspection.
- The power line should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, alternating black and white or as per agreement with independent Avifaunal specialist and Eskom.
- All the steel monopoles should be fitted with bird perches.

Recommendations of the Wetlands Specialist

- Ensuring that during the design phase, cognisance is taken of the locality of identified freshwater resources and their associated buffers, and as far as is practicable, to avoid the placement of infrastructure within those zones unnecessarily. It is preferable that no infrastructure is placed within the river nor in the pans, unless permitted;
- Should it be absolutely essential at certain crossings to place infrastructure within the freshwater resources habitat, access to these areas must be limited to essential personnel (and construction vehicles) and the boundaries thereof are to be clearly demarcated on site. No contract laydown areas are to be permitted within the freshwater resources habitat or associated buffer zone;
- Due to the degraded state of the vegetation, especially within the pans, care must be taken to ensure that as little vegetation as possible is removed, and that all exposed soils as a consequence of construction activities must be suitably protected with a geotextile to prevent erosion and sedimentation of the river, and loss of functionality of the pans; and
- Any freshwater resource directly impacted upon during construction activities must be immediately rehabilitated in accordance with the EMPr following the completion of such activities at that specific site.

Recommendations of the Soils and Agriculture Specialist

- Recommended mitigation measures include implementation of an effective system of storm water run-off control to mitigate erosion.
- Topsoil stripping and re-spreading to mitigate loss of topsoil.

Recommendations of the Heritage and Palaeontology Specialist

Heritage recommendations

- It is likely that further survey work in the study area will uncover additional heritage resources, especially graves, ruins and rock art sites on hilltops. Therefore a final walk-down must be undertaken.

Palaeontology recommendations

- Recommended mitigation of the inevitable damage and destruction of fossil within the proposed development area would involve the surveying, recording, description and collecting of fossils within the development footprint by a professional palaeontologist. This work should take place after initial vegetation clearance has taken place but before the ground is levelled for construction
- Impacts on fossil heritage are generally irreversible. Well-documented records and further palaeontological studies of any fossils exposed during construction would represent a positive impact from a scientific perspective. The possibility of a negative impact on the palaeontological heritage of the area can be reduced by the implementation of adequate

damage mitigation procedures. If damage mitigation is properly undertaken the benefit scale for the project will lie within the beneficial category.
- Not deemed necessary unless fossils are uncovered during the construction phase..

Recommendations of the Visual Specialist
- None.

Recommendations of the Socio-Economic Specialist
- Due to nature of the businesses of surrounding landowners, consultation was identified as important with regards to the final power line routing for the project, and consultation will be undertaken with each affected landowner by the Project Proponent.

General Recommendations of the EAP
- It is in the opinion of the EAP that based on the findings of the independent specialist studies, as well as with the implementation of the stipulated mitigation measures, that the identified potential impacts as a result of the environmentally preferred alternative (Corridor 1 (Green) and Corridor 2 Alternative 2 (Turquoise – Preferred)) can be mitigated to acceptable levels and should be granted environmental authorisation by the DEA. Therefore, positive Environmental Authorisation should be issued for the Power line Project.
- All mitigation measures recommended by the various specialist should be implemented, where possible and practical.
- Final EMPr should be approved by DEA prior to construction.

Is an EMPr attached? **YES√**

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

The EMPr is included in Appendix G.
Details of the EAP who compiled the BAR are included in Appendix H.
The declaration of interest for each specialist is included in Appendix I.
Any other information relevant to this application and not previously include is in Appendix J. This includes the following:
- Competent Authority Consultation (Appendix J1)
- A3 Maps (Appendix J2)
- Co-ordinate Spreadsheet (Appendix J3)
- EMF Report (Appendix J4)
- Property Descriptions (Appendix J5)
- Peer Review Letters (Appendix J6)
- Eskom Cost Estimate Letter (Appendix J7)
- DWS Correspondence (Appendix J8)

Through the findings of the BA process and report, it is the opinion of the EAP that the Power line Project should be awarded a positive EA and allowed to proceed provided that the recommended mitigation measures are implemented, and provided the following conditions are adhered to:

- All mitigation measures recommended by the various specialists should be strictly implemented.
- Final Environmental Management Programme (EMPr) should be approved by the Department of Environmental Affairs (DEA) prior to construction.

Conclusion

It is in the opinion of the EAP that based on the findings of the independent specialist studies, as well as with the implementation of the stipulated mitigation measures, that the identified potential impacts as a result of the environmentally preferred alternative (Corridor 1 (Green) and Corridor 2 Alternative 2 (Turquoise – Preferred)) can be mitigated to acceptable levels and should be granted environmental authorisation by the DEA.

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

SECTION F: APPENDICES

The following appendices must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information