APPENDIX F: IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 10MW SKUITDRIFT SOLAR ENERGY FACILITY, NEAR AUGRABIES, NORTHERN CAPE PROVINCE

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INTRODUCTION

Scuitdrift Solar Project (Pty) Ltd is proposing the development of a photovoltaic (PV) solar energy facility on a sub-leased portion of Farm Skuitdrift 426 in the Northern Cape Province. A previous basic assessment application was submitted by CAPE EAPrac Consultants in June 2012. The application was issued an environmental authorisation on 10 October 2012 (DEA ref: 14/12/16/3/3/1/359) however the project was not awarded a preferred bidder status as the Environmental Authorisation dated 10 October 2012 lapsed. As such, Savannah Environmental (Pty) Ltd. have been appointed by **Scuitdrift Solar Project (Pty) Ltd** to obtain an environmental authorisation in terms of the EIA Regulations, 2014.

The development footprint for the solar facility is approximately 19ha in extent, situated within a broader study area of 45ha. Based on the specialist studies and limited field survey undertaken during the basic assessment process, only those sensitivities within the development footprint which could potentially be impacted on by the development of the Skuitdrift Solar Energy Facility were identified.

The proposed project will have a generating capacity of no more than 10MW. The Northern Cape is generally known to be one of the most preferred areas for the generation of solar energy in South Africa due to the abundant solar radiation. The purpose of this project is to generate electricity from a renewable energy source (i.e. solar radiation) to provide power to the national electricity grid. The proposed development site is located within the Kai!-Garib Municipality district, 50km north west of Augrabies, in the Northern Cape Province (refer to **Figure 1**).

The identified ~19ha development footprint is located on the Farm Skuitdrift 426, totalling an extent of 9800ha. The area is located directly adjacent to the existing Schuitdrift 132/33kV Eskom substation with Blouputs and Paulputs 132kV servitudes situated on the same farm. The Skuitdrift Solar Energy Facility is to be developed by **Scuitdrift Solar Project (Pty) Ltd.** and will be bid into the Department of Energy (DoE) Renewable Energy Independent Power Producer Procurement Programme.

The identified development footprint will have permanent infrastructure with an approximate footprint of 2ha, including:

» A small site office (10m x 10m), and storage facility (20m x 10m), including security and ablution facilities (20m x 20m)
» A lay-down area
» 10kL rain water tanks
» Inverter stations (built within transporter containers, 25m² in size)
» A grid connection substation and transformers
» A short overhead 33kV power line of ~ 630m

» Underground cabling to run the length of the arrays and link the arrays to inverters.
» The main re-aligned access road
» Service roads which will run between the rows of arrays
» Parameter fencing around the solar facility.

Additional auxiliary electrical equipment includes:

» Diesel generator sets will supply power to security and monitoring systems in the event of a grid failure;
» Security system, fence and access control;
» Fire detection system;
» Weather monitoring equipment (rainfall, wind speed/direction, solar irradiation, air moisture)
» Plant monitoring equipment and associated telecommunication links;
» Air-conditioning equipment inside inverter/transformer enclosures which will regulate the operating temperature of the inverters.

A 150m wide corridor was investigated for the siting of the proposed 33kV power line (refer to **Appendix A2**) to allow for optimisation of the infrastructure layout, including laydown areas, in order to, inter alia, accommodate specialist findings where necessary. The overhead power line will have associated access tracks (approximately 4m in width) for its construction, operation and maintenance where these are required. This infrastructure will fall within this assessed corridor, the final placement of which will depend on local geotechnical, topographical conditions and potential environmental sensitivities.

A summary of the technical specification of the PV Facility is shown below.

Component	**Description/ Dimensions**
Location of the site	Eskom Sub-leased Portion 0 of Farm Skuitdrift 426
Municipal Jurisdiction	Kai-Garib Local Municipality which falls within the jurisdiction of the ZF Mgcawu District Municipality
Ward number	9
SG Code	C03600000000042600000
Nearest Town	~ 50km north west of Augrabies ~ 75km North East of Pofadder ~ 80km North West of Kakamas
Site Co-ordinates (centre of site)	28°36'51.75"S and 19°46'50.16"E
Installed capacity of the facility	10 MW
Details of the PV infrastructure	Panel dimensions: 1.64 x 1m (7.4kWP) Final Height of installed panels from the ground: 3 – 4 Height of inventers: 2.5m Height of transformers: 2.5m

Component	Description/ Dimensions
Extent of broader study area	~45 ha
Extent of the development footprint	~19 ha
Internal access roads	< 4m wide and will be limited to the construction site only
Site access	Main Eskom access gate at co-ordinates 28°36'28.59"S and 19°48'33.88"E
Services required	» Water will be sourced/from 3 Borehole pumps, 10kL Rain water tanks, and via a pipeline from Southern Farms (as an alternative measure should water become scarce). » Refuse material disposal - all refuse material generated from the proposed development will be collected by a contractor and will be disposed of at a licensed waste disposal site off site. This service will be arranged with the municipality and suitable contractors when required. » Sanitation – all sewage waste will be collected by a contractor and will be disposed of at a licensed waste disposal site during the construction phase. This service will be arranged with the municipality when required during the operational phase.

The PV panels are designed to operate continuously for 25 – 30 years, unattended and with low maintenance.

During the planning phase of the project numerous layouts and technologies were taken into consideration before the preferred proposal was decided upon. Three of the major points which lead to the preferred proposal are:

- Minimal disturbance to water washes and highly sensitive areas
- 20 Hectare area limit
- Minimum distance to the substation

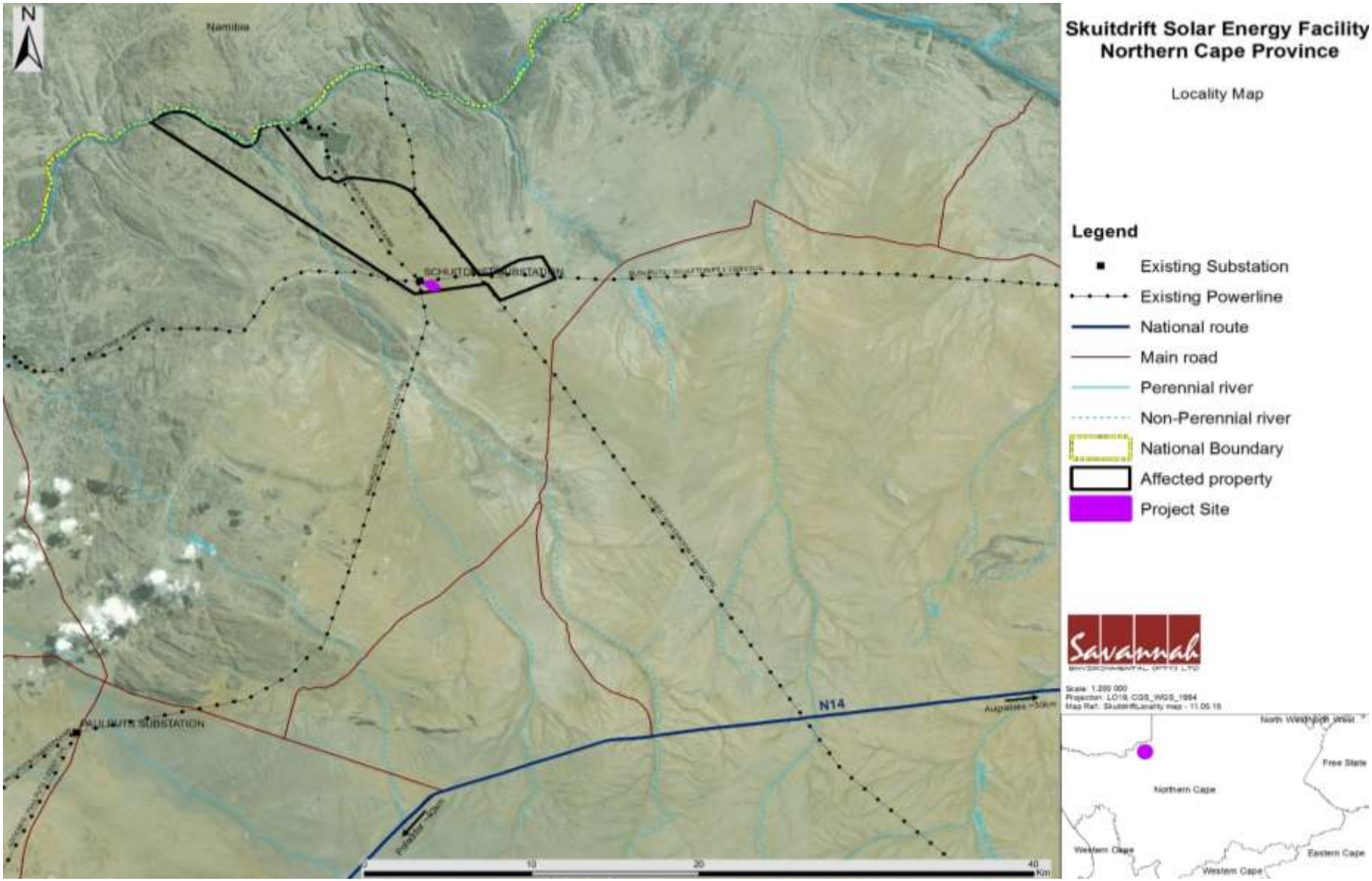

Figure 1: Locality Map of the Skuitdrift Solar Energy Facility with the proposed 19ha development indicated in purple.

Potential impacts associated with the construction of the proposed project are discussed below. The following methodology was used in assessing impacts related to the proposed development. All impacts are assessed according to the following criteria:

- The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
- The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- The **duration**, wherein it is indicated whether:
  - The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - Medium-term (5–15 years) – assigned a score of 3;
  - Long term (> 15 years) - assigned a score of 4; or;
  - Permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on processes;
  - 4 is low and will cause a slight impact on processes;
  - 6 is moderate and will result in processes continuing but in a modified way;
  - 8 is high (processes are altered to the extent that they temporarily cease); and
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely); and
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which is described as positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S= (E+D+M) P; where

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance** weightings for each potential impact are as follows:

- < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **> 60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area)

SECTION A: POTENTIAL IMPACTS ASSOCIATED WITH THE DEVELOPMENT OF THE SKUITDRIFT SOLAR ENERGY FACILITY

The sections below provide an impact assessment of the solar facility as follows:

» Section A: Impacts Associated with the proposed Skuitdrift Solar Energy Facility
» Section B: Assessment of Cumulative Impacts
» Section C: Overall Conclusions

IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE
Alternative (preferred alternative)

No impacts are anticipated that may result from the planning and design phase of the proposed development. Activities associated with the design and pre construction phase pertains mostly to a feasibility assessment which is done mostly at a desktop level. In some cases site visits need to take place but the impact of these visits is negligible, if any, e.g. photographs and field surveys.

IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION, OPERATION AND DECOMISSIONING PHASES

1. Potential impacts on Ecology (Flora & Fauna)

In the case of this project, the ecological impacts can be summarized for the **construction and operational phase** as follows:

» **Loss of plant cover as a result of vegetation clearing** for roads, panel support structures and the other infrastructure of the development. This may impact sensitive plant communities, endangered or protected plant species or result in habitat loss for sensitive fauna.
» **Increased risk of alien plant invasion** resulting from the high levels of disturbance during construction as well as potentially from maintenance activities during the construction phase.
» **Increased erosion risk** as a result of soil disturbance and loss of plant cover, which is particularly a risk on steeper slopes and within areas which receive or channel runoff.
» **Increased levels of noise, pollution, disturbance and human presence** will be detrimental to fauna. Shy mammals would move away from the area particularly during the construction phase as a result of the noise and human activities present. Some mammals and reptiles such as tortoises would be vulnerable to illegal collection or poaching during the construction phase as a result of the large number of construction personnel that are likely to be present.
» **Loss of connectivity of the landscape for fauna** resulting from vegetation clearing as well as security fencing. Furthermore, since most such mammals have home ranges which exceed the extent of the site, any mammals trapped

within the site would probably not have sufficient resources present to be able to support themselves.

» **Direct and indirect impact of the development on avifauna** would result from habitat loss as well as electrocution and collisions with transmission lines, which is a particular problem for many larger birds such as eagles, flamingos, cranes and bustards.

Flora

Both the broader study area and proposed development footprint lie within the Blouputs Karroid Thornveld. This vegetation type is classified as Least Threatened and occurs as a belt of irregular flat areas from the vicinity of Augrabies Falls in the east to Kotie se Laagte and Samoep se Laagte in the west. Within the ~19ha development footprint, the vegetation is classed as homogenous and apart from several small washes, there was little differentiation of the vegetation. Other spatial mapping tools indicate that the study area does not occur in a Critical Biodiversity Area, is not in a Protected Area and does not occur within a National Protected Area Expansion Strategy Area. Within the proposed development area two vegetation communities are recognized, that of the washes and that of the adjacent plains. The plains within the development area are generally open with occasional scattered trees of *Acacia erioloba*, *Acacia mellifera* and *Boscia foetida*. The plains are dominated by the grasses *Stipagrostis uniplumis*, *S.ciliata* and *Schmidtia kalahariensis* with occasional shrubs such as *Rhigozum trichotomum*, *Phaeoptilum spinosum* and *Salsola rabieana*. The washes contained a higher abundance of trees, mostly *Acacia mellifera* and *Boscia foetida* as well as shrubs such as *Phaeoptilum spinosum* and *Monechma spartioides*.

Apart from the washes there were no other specialized habitats within the proposed development footprint. The adjacent rocky outcrops are a sensitive habitat but the development is sufficiently distant from these that they would not be directly impacted by the development. According to the SANBI SIBIS database, only one endangered species *Caesalpinia bracteata* is known from the area, and is classified as Vulnerable. This species has a highly restricted distribution and does not occur within the proposed development area. Within the broader study area, a number of protected species were observed at the site including *Hoodia gordonii, Aloe dichotoma* and *Acacia erioloba.* Within the proposed development area four individuals of *Acacia erioloba* were observed. A permit would be required for the destruction of the trees within the development footprint.

The site was relatively free of alien species and no alien species were observed within the study area. Disturbance at the site would however potentially increase the risk of alien invasion at the site.

Fauna

Birds: A total of only 39 bird species have been recorded in or around the Farm Skuitdrift 426. This information has been extracted from the recent bird atlas data (present on 13 cards). Two collision-prone species were noted from this data, the Verreaux's Eagle *Aquila verreauxii* and African Fish-Eagle *Haliaetus vocifer*. From the larger but older data set from SABAP1 a total of 124 species have been recorded, comprising several wetland species, however these are unlikely to occur regularly over the proposed development footprint which is approximately 12 km from the Orange River. Furthermore, two other red-data species are also likely on site: the collision-prone Ludwig's Bustard *Neotis ludwigii* and Sclater's Lark *Spizocorys sclateri*.

The three red data species (an eagle, a bustard and a lark) are all likely to occur irregularly as ideal habitat is present in the form of open grassy plains for the Sclater's Lark *Spizocorys sclateri* and Ludwig's Bustard, and the presence of small koppies across the landscape is ideal for Verreaux's Eagles (and Jackal Buzzards) for perching and as refugia for their main hyrax prey (Simmons 2005). In summary, a total of 12 collision-prone species potentially occur on the site, of which three are red-listed, and these occurred at a reporting rate above 10% which means they are all likely to be regular on the site

Amphibians and Reptiles: The site lies in or near the distribution range of at least 45 reptile species, indicating that the reptile diversity at the site is likely to be quite high. Given the variety of habitats available for the broader study area, a large proportion of these reptiles are likely to occur at the proposed development site. However, given the paucity of surface water at the site, only those species of amphibians able to persist away from perennial water are likely to occur at the development footprint.

Based on distribution maps and habitat requirements, the composition of the reptile fauna is likely to comprise 1 tortoise, 17 snakes, 18 lizards and skinks, one chameleon, 8 geckos and 6 amphibian species and no listed reptile species are known from the area. All three reptile species are listed as Least Concern on the *Atlas and Red List of the Reptiles of South Africa.* Although no direct loss of habitat will occur for amphibians, they may be affected by the project if the surrounding wetlands and riparian areas that occur outside of the study area are polluted due to negligent activities associated with the project. Mitigation measures are discussed below.

Mammals: The broader study area falls within the distribution range of 46 terrestrial mammals, indicating the mammalian diversity is potentially quite high. Of these only the Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed cat *Felis nigripes* (Vulnerable) and Leopard *Panthera pardus* (Near Threatened) are listed.

Given the agricultural activity that takes place in the area, the abundance of Leopard and Brown Hyaena in the area is likely to be low. The habitat is suitable for the Black-footed Cat which favours a mix of open and more densely vegetated areas. However, this species is widely distributed across the arid and semi-arid areas of South Africa, and the development footprint would not amount to a significant amount of habitat loss for this species, especially given the proximity of the development to areas that are already impacted by human activity. The only issue of concern is the erection of fencing which can prevent the movement of such animals however specific mitigation measures have been formulated to reduce these impacts may be required.

1.1. Construction Phase

The five major impacts identified above are assessed below, before and after mitigation as well as during the construction and operational phases of the project.

- **Impact 1: Loss of general and sensitive vegetation communities**

Natural plant communities are dynamic ecosystems that provide habitats that support all forms of life. Different types of plant communities (and habitats) exist in the study area, and these occur within and around the study area. The current condition of the vegetation communities of the study area can be described as degraded due to livestock grazing. This impact also included the potential loss of plant species of special concern over the entire development footprint.

Nature: Vegetation clearing for the road and PV array construction activities causing loss and disturbance of vegetation and sensitive plant communities.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	Medium (7)	Medium (6)
Probability	Definite (4)	Probable (3)
Significance	**Medium Impact (32)**	**Low Impact (15)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:	• Vegetation clearing to be kept to a minimum. If possible the ground grass layer should be left intact and only the larger woody plants cleared. • All areas to be cleared should be clearly demarcated. • Sensitive areas as demarcated on the sensitivity map should be avoided, and where such areas occur within or near the development area, they should be clearly demarcated as no-go areas. • Only those individuals of protected plant species directly	

	within the development footprint should be cleared. • Sensitive areas with appropriate buffers at the site such as the washes should be demarcated at the site by an ecologist as part of the preconstruction activities for the site
Cumulative impacts: The further loss of habitat from other developments in the immediate area is likely to exacerbate this impact.	
Residual impacts: Even though the rehabilitation of the site will re-introduce biodiversity to the site, it is unlikely to match what was already there previously.	

- **Impact 2: Increased alien plant invasion**

The abundance of alien plant species at the site was very low, which can be ascribed firstly to the aridity of the site, secondly to the nutrient-poor soils and lastly to the unpredictable patterns of rainfall across the province. As a result, the risk of alien plant invasion is relatively low. Alien plants are likely to being a concern if the site is highly disturbed during construction or if water runoff is not properly managed.

Nature: Alien plants are likely to invade the area around the development footprint as a result of the disturbance created during construction. (The construction period is too short to have significant alien invasion within it and the resulting invasion risk will need to be managed during operation)		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Medium (5)	Low (2)
Probability	Probable (3)	Improbable (1)
Significance	**Medium (27)**	**Low (7)**
Status	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	Yes	
Mitigation	• Rehabilitation of cleared areas with indigenous species after construction to reduce alien invasion potential. • If there are any infestations, alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible and should only be used for woody species which re-sprout following manual control. • Soil disturbance and vegetation clearing should be kept to minimum. • Cleared areas must be revegetated with locally-collected seed of indigenous species. • Regular monitoring to ensure that alien plants are not increasing as a result of the disturbance that has taken place	
Cumulative Impacts	Alien invasion would not contribute significantly to the any cumulative habitat degradation in the area, and if alien species are controlled then	

	cumulative impact from alien species would not be significant.
Residual Impacts	If alien species at the site are controlled, then there will be very little residual impact.

- **Impact 3: Potential increased erosion risk during construction**

There are no highly sensitive ecosystems present within the development footprint. The washes however are more sensitive than the surrounding plains as a result of their associated erosion risk. Cover of the ground layer is generally not significantly higher within the washes and is in fact often lower.
As a result, these small washes are not highly significant from an ecological and biodiversity perspective, but should not be impacted as they regulate water movement across the site.

Nature: During construction, the loosening and disturbance of soil will occur. Loose soil at the site will render the area vulnerable to erosion. Given the relatively flat nature of the site and the coarse sandy nature of the substrate, erosion risk is likely to be low and provided that vegetation clearing is kept to a minimum, few measures to combat erosion will need to be implemented.		
	Without mitigation	**With mitigation**
Extent	Local (2)	Local (2)
Duration	Long Term (4)	Long Term (4)
Magnitude	Medium (6)	Low (4)
Probability	Probable (3)	Improbable (2)
Significance	**Medium (39)**	**Low Impact (20)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	• Wherever possible, roads and tracks should be constructed so as to run along the contour. • All roads and tracks running down the slope must have water diversion structures present. • Any extensive cleared areas that are no longer or not required for construction activities should be re-seeded with locally-sourced seed of suitable species. Bare areas can also be packed with brush removed from other parts of the site, encourage natural vegetation regeneration and limit erosion. • All construction vehicles should remain on properly demarcated roads. No construction vehicles should be allowed to drive over the vegetation except where no cleared roads are available. In such cases a single track should be used and multiple paths should not be formed	
Cumulative impacts: The further loss of habitat from other developments such as the existing Schuitdrift Eskom		

Substation and associated infrastructure may exacerbate this impact.
Residual impacts: Residual impacts to population numbers will occur if the impact occurs, which is considered unlikely.

- **Impact 4: Habitat loss and ddisturbance to fauna in the surrounding area**

The proposed development footprint is floristically homogenous and is not locally significant from a faunal perspective as this habitat is widely available in the area. Faunal disturbance during the construction phase is inevitable and cannot be fully mitigated. The impact is however restricted to the construction phase and of a local nature. Fauna are likely to return to the area during the operational phase of the project.

Nature: Increased levels of noise, pollution, disturbance and human presence will be detrimental to fauna. Shy mammals would move away from the area during the construction phase as a result of the noise and human activities present. Some mammals and reptiles such as tortoises would be vulnerable to illegal collection or poaching during the construction phase as a result of the large number of construction personnel that are likely to be present. Furthermore, perimeter fencing has the potential to disrupt movement corridors and may result in faunal fatalities as a result of electrocution.

Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups.

	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	High (7)	Medium (6)
Probability	Definite (5)	Probable (4)
Significance	**Medium Impact (50)**	**Medium Impact (36)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	• Any fauna directly threatened by the construction activities should be removed to a safe location by the ECO. • The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. The rocky outcrops are particularly sensitive in this regard and construction personnel should not be allowed off of the construction site and onto these areas. • Fires should only be allowed within fire-safe demarcated areas. • No fuelwood collection should be allowed on-site. • No dogs should be allowed on site. • All hazardous materials should be stored in the appropriate	

	manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
Cumulative impacts: The further loss of habitat from other developments such will not exacerbate this impact. The increased noise and dust levels in the immediate area however could possibly exacerbate the current impacts.	
Residual impacts: Residual impacts to population numbers will occur if the impact is not effectively mitigated, and this is not likely.	

- **Impact 5: Fragmentation of vegetation and edge effects**

The loss of connectivity of the landscape for fauna will result from vegetation clearing as well as security fencing. Furthermore, since most of the mammals present have home ranges which exceed the extent of the development footprint, any mammals trapped within the development footprint would probably not have sufficient resources present to be able to support themselves. However, the proximity of the development to the existing Eskom substation and powerlines would decrease the cumulative impact of the development on the connectivity of the landscape

Nature: Fragmentation is one of the most important impacts on vegetation, especially when this creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. This impact occurs when areas are cleared for developments or an area is invaded by alien invasive plant species. Fragmentation results in the isolation of functional ecosystems, and results in reduced biodiversity and reduced movement due to the absence of ecological corridors.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short Term (2)	Short Term (1)
Magnitude	Low (5)	Minor (3)
Probability	Probable (4)	Probable (3)
Significance	**Medium Impact (32)**	**Low Impact (15)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	• Vegetation clearing should be kept to a minimum • Should the site need to be fenced, the fencing should be constructed in manner which allows for the passage of small and medium sized mammals. Steel palisade fencing (20 cm gaps min) is a good option in this regard as it allows most medium-sized mammals to pass between the bars, but remains an effective obstacle for humans. Alternatively, the	

	lowest strand or bottom of the fence should be elevated to 15 cm above the ground at least at strategic places to allow for fauna to pass under the fence. • If electrified strands are to be use, there should be no strands within 20 cm of the ground because tortoises retreat into their shells when electrocuted and eventually succumb from repeated shocks.
Cumulative impacts: The limited nature of the current development and the proximity to existing infrastructure and human disturbance suggests that the contribution of the current development to cumulative habitat loss or landscape fragmentation impacts in the area would be low.	
Residual impacts: None	

1.2. Operational Phase

- **Impact 1: Loss of general and sensitive vegetation communities**

Nature: Vegetation clearing for maintenance requirements during operation		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	Minor (3)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	**Low Impact (24)**	**Low Impact (14)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:	• Any vegetation clearing that needs to take place as part of maintenance activities, should be done in an environmentally friendly manner, including avoiding the use of herbicides and using manual clearing methods wherever possible. • If possible the ground grass layer should be left intact and only the larger woody plants cleared. • All areas to be cleared should be clearly demarcated. • Only those individuals of protected plant species directly within the development footprint should be cleared. • Sensitive areas with appropriate buffers at the site such as the washes should be demarcated at the site by an ecologist as part of the preconstruction activities for the site	
Cumulative impacts: The loss of vegetation is unlikely to contribute to the overall cumulative impacts in the area		
Residual impacts: Rehabilitation of the site will re-introduce biodiversity to the site and can have the potential to even increase the biodiversity of the site.		

- **Impact 2: Increased alien plant invasion**

Nature: As with all building operations, the introduction of alien and invader species is inevitable; with disturbance comes the influx of aliens. The operation phase maintenance activities of the proposed development could result in the area being invaded by alien invasive species. Alien invader species need to be consistently managed over the entire operation phase of the project.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Medium (5)	Low (2)
Probability	Probable (3)	Improbable (1)
Significance	**Medium (27)**	**Low (7)**
Status	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	Yes	
Mitigation:	• All alien plants present at the site should be controlled annually using the best practice methods for the species present. • Bare soil should be kept to a minimum, and at least some grass or low shrub cover should be encouraged under the panels. • Mitigation measures to reduce the impact of the introduction of alien invaders, as well as mitigation against alien invaders that have already been recorded on the site should be actively maintained throughout the operation phases. • Removal of existing alien species should be consistently done. • Rehabilitation of disturbed areas after the construction of the Skuitdrift Solar Energy Facility should be done as soon as possible after construction is completed. • An alien invasive plan would need to be properly followed in order to control any further establishment of alien invasive species	
Cumulative impacts:	Alien invasion would not contribute significantly to the any cumulative habitat degradation in the area, and if alien species are controlled then cumulative impact from alien species would not be significant.	
Residual impacts:	These will likely be low if control measures are implemented correctly. If alien species at the site are controlled, then there will be very little residual impact.	

» **Impact 3: Potential increased erosion risk during construction**

Nature: Disturbance created during construction could take several years to fully stabilize and the presence of the washes and extensive area of hardened surface will generate a lot of runoff which will pose a significant erosion risk, if not managed. Erosion is probably one of the greatest risk factors associated with the development, especially regarding where the PV panels and support structures are to be located near the washes. It is therefore critically important that proper erosion control structures are built and maintained over the lifespan of the project.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	Low (4)	Low (3)
Probability	Probable (3)	Improbable (2)
Significance	**Low Impact (27)**	**Low Impact (16)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:	• Wherever possible, roads and tracks need to be maintained so that they run along the contour. • All roads and tracks running down the slope must have water diversion structures present. • Regular monitoring for erosion to take place in order to ensure that no erosion problems are occurring at the site as a result of the roads and other infrastructure. All erosion problems observed should be rectified as soon as possible. • All maintenance vehicles to remain on the demarcated roads. No construction vehicles should be allowed to drive over the vegetation except where no cleared roads are available. In such cases a single track should be used and multiple paths should not be formed • Any extensive cleared areas that are no longer or not required for construction activities should be re-seeded with locally-sourced seed of suitable species. Bare areas can also be packed with brush removed from other parts of the site, encourage natural vegetation regeneration and limit erosion.	
Cumulative impacts: The further loss of habitat from vegetation clearing within the area may exacerbate the impact. However the proximity and nature of the existing Eskom Schuitdrift substation mitigate any further cumulative impacts as a result if the proposed development.		
Residual impacts: Residual impacts to population numbers will occur if the impact occurs, which is considered unlikely.		

- **Impact 4: Habitat loss and disturbance to fauna in the surrounding area**

Nature: Increased levels of noise, pollution, disturbance and human presence will be detrimental to fauna. Shy mammals would move away from the area during the construction phase as a result of the noise and human activities present. Some mammals and reptiles such as tortoises would be vulnerable to illegal collection or poaching during the construction phase as a result of the large number of construction personnel that are likely to be present. Furthermore, perimeter fencing has the potential to disrupt movement corridors and may result in faunal fatalities as a result of electrocution.

Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups.

	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (3)	Short Term (2)
Magnitude	Low (3)	Low (2)
Probability	Highly Probable (4)	Probable (3)
Significance	**Low Impact (28)**	**Low Impact (15)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	• Any fauna directly threatened by the operational activities should be removed to a safe location by the ECO. • The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. The rocky outcrops are particularly sensitive in this regard and operational personnel should not be allowed off of the construction site and onto these areas. • No unauthorized persons should be allowed onto the site. • Staff present during the operational phase should receive environmental education so as to ensure that that no hunting, killing or harvesting of plants and animals occurs. • Fires should only be allowed within fire-safe demarcated areas. • No fuelwood collection should be allowed on-site. • No dogs should be allowed on site. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental	

	chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
Cumulative impacts: The further loss of habitat from other developments such will not exacerbate this impact.	
Residual impacts: Residual impacts to population numbers will occur if the impact is not effectively mitigated, and this is not likely.	

- **Impact 5: Fragmentation of vegetation and edge effects**

Nature: Fragmentation is one of the most important impacts on vegetation, especially when this creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. This impact occurs when areas are cleared for developments or an area is invaded by alien invasive plant species. Fragmentation results in the isolation of functional ecosystems, and results in reduced biodiversity and reduced movement due to the absence of ecological corridors.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (3)	Long Term (2)
Magnitude	Medium (4)	Low (2)
Probability	Definite (4)	Probable (3)
Significance	**Medium Impact (32)**	**Low Impact (15)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	• Vegetation clearing should be kept to a minimum • If electrified fencing is to be used, make sure that the fence is well above ground to allow smaller animals to pass through • Ensure that no larger fauna enter and become trapped within the fenced-off area, either by leaving a gate open so that animals can move freely between the site and the adjacent farm or by keeping all gates closed to ensure that they are excluded.	
Cumulative impacts: The limited nature of the current development and the proximity to existing infrastructure and human disturbance suggests that the contribution of the current development to cumulative habitat loss or landscape fragmentation impacts in the area would be low.		
Residual impacts: None		

1.3. Decommissioning Phase

The impacts during the decommissioning and closure phases will be similar to impacts of the construction phase as discussed in this assessment. Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and

associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

In addition, the social impacts associated with final decommissioning are likely to be limited due to the relatively small number of permanent employees affected.
The potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be low (negative).

1.4. Conclusion

The vegetation within the study area has been impacted on by livestock grazing, has a wide ranging distribution in the general area and is listed as Least Concern by both STEP and Mucina and Rutherford. From a general ecological perspective, the site is not viewed as being highly sensitive. No endangered plant species were observed to occur within the proposed development footprint and there are no listed faunal species with a narrow distribution which occur at the site. As such the impact of the proposed project on the ecology of the area will likely be low.

The site was relatively free of alien species and no alien species were observed within the study area, however, alien invasive species should be managed effectively to prevent them becoming a problem in the study area. It is recommended that an Alien Invasive Management Plan is designed and implemented.

Due to the very nature of the proposed project, many of the impacts will be reduced with effective management of the site as well as rehabilitation after construction.
Any extra land needed for the construction phase of the factory that will not be used during the operation phase should be rehabilitated after construction is completed.

Impacts associated with the Operation Phase are associated with impacts on faunal groups and the infestation of alien species. Faunal groups assessed in this report are unlikely to be fatally impacted by the proposed activity.

Impacts associated with the decommissioning phase are similar to those associated with the construction phase. The study area must be rehabilitated during the decommissioning phase, all structures removed and the lay down areas ripped, topsoil returned and the area must be planted with indigenous seed species found to occur in the general area.

Factors which mitigate the potential negative impacts of the development include the low slope of the site, the localized nature of highly sensitive environments and the proximity

of the site to the existing substation the impacts of the development will be low negative after mitigation measures, mainly due to a loss of vegetation and general biodiversity.

Overall, the site is favourable for the development of a solar PV facility. Specialist studies confirmed that disturbance to fauna will be temporary and the loss of vegetation will amount to less than 20 ha and is not significant at the landscape scale given the overwhelming intact nature of the receiving environment.

2. Potential impacts on Avifauna

The most recent Bird Atlas Data reported 39 avian species recorded in or around the Farm Skuitdrift 426, of which 2 were collision-prone (African Fish-Eagle *Haliaetus vocifer,* and the *Vulnerable* Verreaux's Eagle *Aquila verreauxii).* However, older bird atlas data indicates two other red-data species are also likely on site: the collision-prone Ludwig's Bustard *Neotis ludwigii* and Sclater's Lark *Spizocorys sclateri*.

The major mechanisms causing injuries or fatalities to birds at the development site are disturbance or destruction of habitat and collisions and electrocutions from the associated electricity transmission infrastructure.

The specialist studies conducted showed that the diversity and abundance of resident species was quite low, with few Red Data species being confirmed as resident. From the larger but older data set from SABAP1 a total of 124 species have been recorded, from the same area, comprising several wetland species that are unlikely to occur regularly over the proposed PV site 11.7 km from the Orange River.

The greater species richness was also reflected in the greater number of collision-prone species numbering 12 species of which 3 were red data species. All 12 species occurred at a reporting rate above 10% which means they are all likely to be regular on the site.

Table 1. Red-listed (**in red**) and collision-prone bird species (**in bold**) likely to occur over the proposed development of the Skuitdrift Solar Energy Facility on Farm Skuitdrift 426 drawn from 13 recent (SABAP1 and SABAP2) atlas cards

Common name	Scientific name	Red-list status	Reporting Rate	Collision Rank	Disturbance
Verreaux's Eagle	*Aquila verreauxii*	Vulnerable	15.4%	2	High
Ludwig's Bustard	*Neotis ludwigii*	Endangered	16.7%	8	High
African Fish-Eagle	*Haliaetus vocifer*	-	15.4%	23	medium
Jackal Buzzard	*Buteo rufofuscus*	-	22.2%	44	low
Sclater's	*Spizocorys*	Near	(16-20%)[c]	50	Low

Common name	Scientific name	Red-list status	Reporting Rate	Collision Rank	Disturbance
Lark	*sclateri*	threatened			
Booted Eagle	*Aquila pennatus*	-	11.1%	56	low
White Stork	*Ciconia ciconia*	-	11.1%	58	Low
Karoo Korhaan	*Eupodotis vigorsii*	-	13.3%	78	Low
Northern Black Korhaan	*Afrotis afroides*	-	26.7%	89	Low
Greater Kestrel	*Falco rupicoloides*	-	13.0%	94	Low
Black-shouldered Kite	*Elanus caeruleus*	-	22.2%	96	low
Spotted Eagle Owl	*Bubo africanus*	-	20.0%	100	low

The overall impact rating of the proposed development on avifauna is classified as medium if the requisite mitigations are adequately implemented. There were three possible impacts identified for the construction of the Skuitdrift Solar Energy Facility, these impacts are:

- Habitat loss in terms of destruction, disturbance and displacement
- Collision with the proposed short overhead powerline and PV panels
- Electrocution from the proposed overhead powerline

Habitat loss resulting from activities causing destruction, disturbance and displacement

Some habitat destruction and alteration inevitably takes place during the construction and operation of the PV facility, distribution power lines and associated access roads. Furthermore, the clearing of vegetation for construction and excess vegetation for operational maintenance may have an impact on birds breeding, foraging and roosting in or in close proximity to the servitude. Both the construction and maintenance of the PV panels may cause permanent habitat destruction and disturbance.

In order to quantify these impacts the number of birds potentially lost from the broader ~45ha site with PV development footprint of ~19ha was calculated and the density estimates of important species or individuals per unit area of habitat quantified. The specialist studied concluded that smaller birds are generally more commonly occurring within the broader study area than larger birds as they are able to breed faster, and are less likely to suffer high population reduction. However, where range-restricted species occur at the site ear-marked for development this can have a larger impact.

Collision with the proposed short overhead powerline and PV panels

12 collision-prone species were found to occur within the vicinity of the development footprint. These collision-prone species (refer to **Table 1**) and the reasons for their propensity for collision have been investigated. The specialist avian study extrapolated various critical factors from all South African bird species based on: wing loading, aerial flights, nocturnal activity, red-data status and several other contributing factors.

According to Birdlife South Africa's the most collision-prone species are generally the larger scavenging species such as vultures, but also raptors and bustard species. Furthermore, the specialist studies found noted that birds such as passerine and wetland birds have been recorded colliding with ground-based structure such as the OV panels which are known to cause a 'Lake Effect'. However, it was noted that the lack of knowledge on this particular issue in South Africa is somewhat lacking, however the suite of birds (i.e. wetland and aerial species) are likely to be similar.

Electrocution on power lines

Avian electrocutions occur when a bird attempts to perch on an electrical structure and causes a short circuit by bridging the gap between live components and/or live and earthed components. Electrocution risk is strongly influenced by the voltage and design of the power lines erected – increasing where air gaps are relatively small on low voltage lines. They mainly affect larger, perching species, such as vultures, eagles and storks, capable of spanning the spaces between "live" components.

It must be noted that the pylons (as opposed to the transmission lines they carry) can also be considered positive for the raptors and Sociable Weavers given that they provide perching and nesting sites for them in a tree-less environment

2.1. All Phases of the project life cycle

- **Impact 1: Habitat loss (or avoidance of the area) resulting from PV construction, operation and decommissioning activities.**

Nature: Approximately 19ha of land will be transformed and the associated bird habitat destroyed. Furthermore, sensitive Red-Data species may become displaced due to disturbances during construction, operation and maintenance.

(**BRAP**= Bustards + Raptors, **WB** = Wetland birds):

	Without mitigation		**With mitigation**	
	BRAP	**WB**	**BRAP**	**WB**
Extent	Local (1)		Local (1)	
Duration	Long term (4)		Long term (4)	
Magnitude	Minor (2)	Small (1)	Small (1)	Small (1)
Probability	Improbable	Improbable (1)	Improbable	Improbable

	(2)		(1)	(1)
Significance	**Low Impact (14)**	**Very Low Impact (6)**	**Very Low Impact (6)**	**Very Low Impact (6)**
Status (positive or negative)	Negative		Neutral	
Reversibility	Low		Untested	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes		Yes	
Mitigation	• Vegetation clearing to be kept to a minimum • Minimise construction footprint • Limit movement of people and machinery to and from the site • Regular surveys of large collision-prone species within the study area to determine the relative importance of local populations of priority taxa. • Employ bird-diverters to deter birds mistaking the panels for open water from landing on them. • Conduct a pre-construction Avifaunal walk-through survey to identify the high risk sections of the powerline			
Cumulative impacts: For the PV itself the mortality and displacement impact on birds is poorly known, but several solar farms are now being constructed in the Kalahari/Karoo and more will occur in the future: thus more research and monitoring of the combined impacts is required. See below.				
Residual Impacts: After mitigation, direct mortality through collision or area avoidance by the species identified above may still occur. An environmental management programme will assess the efficacy of the mitigations to reduce direct impacts or any problems with eagles, bustards or larks, and further research and mitigation can then be suggested and tested as the need arises.				

- **Impact 2: Collision with the proposed short overhead powerline and PV panels**

Nature: Direct impact mortality due to collision with the PV panels and new transmission line for the collision-prone bird groups identified as at risk above. Birds may collide with the panels if they mistakenly perceive them as open water; and collision-prone species living around the periphery may collide with the power lines linking the solar development to the substation.

(**BRAP**= Bustards + Raptors, **WB** = Wetland birds):

	Without mitigation		**With mitigation**	
	BRAP	**WB**	**BRAP**	**WB**
Extent	Regional (3)		Local (2)	
Duration	Long term (4)		Long term (4)	
Magnitude	Moderate (7)	Minor (2)	Low (5)	Small (1)
Probability	Highly Probable (4)	Improbable (1)	Probable (3)	Improbable (1)
Significance	**High Impact (56)**	**Very Low Impact (9)**	**Medium Impact (33)**	**Very Low Impact (7)**

Status (positive or negative)	Negative	Neutral
Reversibility	Medium - High	Medium - High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation	• Vegetation clearing to be kept to a minimum • Minimise construction footprint • Limit movement of people and machinery to and from the site • Any electrocution and collision events that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented. • Insulate live components at support structures. • Regular surveys of large collision-prone species within the study area to determine the relative importance of local populations of priority taxa. • Employ bird-diverters to deter birds mistaking the panels for open water from landing on them. • Conduct a pre-construction Avifaunal walk-through survey to identify the high risk sections of the powerline	
Cumulative impacts: Given the proximity and nature of the existing Schuitdrift Eskom Substation and servitudes as well as the small size of the proposed development footprint cumulative impacts will be minimal.		
Residual Impacts: The loss of individual birds.		

- **Impact 3: Assessment of electrocution of birds on the power line**

Nature: Electrocution when perched on or flying into power line infrastructure. The impacts include that experienced for both **BRAP and WB** species combined as both species have an equal tendency to perch and fly.		
	Without mitigation	**With mitigation**
Extent	International (5)	International (5)
Duration	Long term (4)	Long term (4)
Magnitude	Very high (10)	Moderate (6)
Probability	Highly probable (4)	Probable (3)
Significance	**High Impact (76)**	**45 – MEDIUM**
Status (positive or negative)	Negative	Negative
Reversibility	Low – birds are killed	Low – birds are killed
Irreplaceable loss of resources?	Yes – birds are killed	Yes – birds are killed
Can impacts be mitigated?	Yes	
Mitigation: Mark with flappers on the high collision risk sections of the power lines and consider introducing bird diverter devices. The best available anti bird collision line marking device may also be used. This should preferably be a dynamic device, i.e. one that moves, as it is believed that these are		

more effective in reducing collisions. It is important that a durable device be used will be Scuitdrift Solar Energy Facility (Pty) Ltd.'s responsibility to ensure that these line marking devices remain in working order for the full lifespan of the power line. The high risk sections of line should be identified by a site specific avifaunal walk through.
Cumulative impacts: The addition of the power line is not expected to add significantly to the impacts associated with similar project in the region as well as the existing Schuitdrift Eskom Substation.
Residual Impacts: The loss of individual birds.

2.2. Conclusion

Conclusions from the avifaunal specialist study was such that the atlas data of birds occurring within the vicinity of the development footprint suggests that the overall impact will be minimal for the PV development site itself but may be higher for possible collisions and electrocutions along the proposed power lines linking the PV facility to the Schuitdrift substation. Presently there is a lack of information available in South Africa to determine the impacts of solar PV sites, and thus ad hoc, post-construction monitoring at this site is a further recommendation. Furthermore, only preliminary conclusions were made by the specialist study and were based on the low certainty of how often the bustards and eagles occur on site.

Moreover, cumulative impacts could not be assessed no post-construction mortality data or displacement data exists for any of the 12 collision-prone species mentioned above.
Though, if the specialist recommendations are followed and implemented as effective mitigation measures then the Skuitdrift Solar Energy Facility will prove acceptable in terms of avifaunal impacts.

3. Potential impacts on Soil and Agriculture Potential

Overall, it was determined that the proposed development site is too small to house even a single one unit of cattle or more than one sheep. The **proposed solar site does thus not have any significant value in terms of agricultural potential and the proposed development will result in a very low impact affecting agricultural potential.** The lifespan of the project is 25 - 30 years, as such the limited impact is of a medium nature and since the ground cover underneath the solar plant will be maintained, the potential for recovery post decommissioning is high. The general recommendation is that the site should not be used for agricultural production and is completely acceptable for the development of the proposed Skuitdrift Solar Energy Facility.

Impacts identified which may pose a risk to the agricultural potential of the land, despite it being extremely low, include:

» Loss of topsoil

» Soil and land degradation and erosion

» Positive impact in terms of the generation of alternative land use income

3.1. All phases of the projects lifecycle

- **Impact 1: Loss of topsoil**

Nature: Loss of topsoil caused by vegetation clearing and 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.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Small (1)
Probability	Probable (3)	Very improbable (1)
Significance	**Low (21)**	**Low (6)**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:	• Vegetation clearing to be kept to a minimum • Areas to be cleared must be clearly marked on-site to eliminate the potential for unnecessary clearing • Excavated topsoil must be stockpiled in designated areas separate from base material and covered until replaced during rehabilitation. As far as possible, topsoil must not be stored for longer than 3 months. • Ridges and areas which include protected and red data species must be avoided at all costs during construction, unless the necessary permits are obtained. • Topsoil must not be stripped or stockpiled when it is raining or when the soil is wet as compaction will occur. • No-Go areas are to be demarcated with tape and warning signs prohibiting access erected. Plant and vehicle operators must be instructed by the ESA and ECO on where these No-Go sites are. • Strip and stockpile topsoil from all areas where soil will be disturbed. • 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, or where they can be	

	effectively covered with topsoil.
Cumulative impacts: None	
Residual impacts: None	

- **Impact 2: Soil and land degradation and erosion**

Nature: Soil degradation including erosion (by wind and water) and subsequent deposition elsewhere and degradation of the natural soil profile due to excavation, stockpiling, compaction, pollution and other construction activities will affect soil forming processes and associated ecosystems. Degradation of parent rock is considered low as there are no deep excavations envisaged		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short (2)	Short (2)
Magnitude	Minor (2)	Small (1)
Probability	Probable (3)	Improbable (2)
Significance	**Low (15)**	**Low (8)**
Status	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:	• Minimize road footprint beyond construction site and control vehicle access on roads only. • Identify disturbance areas and restrict construction activity to these areas. • During construction the contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas • No goods or equipment shall be stored in the washes (as identified by the biophysical specialist) that may accompany peak rainfall events • Rehabilitate disturbance areas as soon as practicable when construction in an area is complete. • Access roads to be carefully planned and constructed to minimise the impacted area and prevent unnecessary excavation, placement, and compaction of soil. • Minimise removal of vegetation which adds stability to soil. • Erosion and loss of soil must be prevented by minimizing the construction site exposed to surface water run-off. Where necessary erosion stabilizing actions such as gabions or re-vegetation must be implemented to prevent further habitat deterioration.	

	• Protective measures must be installed where there are possibilities of surface water sheet flow causing erosion • Stabilisation of cleared areas to prevent and control erosion shall be actively managed this includes: Brush cut packing, Mulch or chip cover, Straw stabilising, Watering, Planting/sodding, Hand seed-sowing of locally-occurring indigenous species, Hydro seeding of locally-occurring indigenous species, Soil binders and anti-erosion compounds, Gabion bolsters & mattresses for flow attenuation, Geofabric, Hessian cover and Log/ pole fencing • Erosion control measures: Run-off attenuation on slopes (sand bags, logs), silt fences, storm water catch-pits, shade nets, gabions or temporary mulching over denuded area as required. • No soil is to be stripped from areas within the site that the contractor does not require for construction works. • Erosion control measures to be regularly maintained.
Cumulative impacts: None	
Residual impacts: Low	

- **Impact 3: POSITIVE - The Generation of alternative land use income.**

Nature: Generation of alternative land use income caused by the alternative land use of energy facility rental on low productivity agricultural land, in combination with continued farming on the rest of the farm. This is a positive impact providing the land owner with additional income and increased cash flow.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Low (28)**	**Low (28)**
Status	**Positive**	**Positive**
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Cumulative impacts: None		
Residual impacts: None		

4. Potential impacts on Heritage, Archaeological and Paleontological Resources

An Integrated Heritage Impact Assessment (HIA) was submitted to the SAHRA in June 2012, as the competent heritage authority, for consideration. A decision of no objection was received in response, subject to the demarcation of the koppie and grave site as NO-GO areas.

» **Heritage Impacts:**

The Heritage study noted the presence of San and Khoi people in this region when the trekboers arrived there in the late 1700s. The evidence for these people are now limited to their archaeological traces. More recently colonial period remains include the Skuitdrift river fords and German fortifications from 1901 and several historical churches. The study identified historic farm buildings south of the ~19ha development footprint as well as a single recent grave and two disturbed/exhumed graves. The single grave (AP Nel, 1962) and two abandoned graves fall outside of the proposed development site and are therefore not considered to be of cultural significance, and would not be affected through the proposed development.

Secondly, the structures that are considered older than 60 years (farmstead and two associated outbuildings) and are of a moderate to low cultural significance. It is thus concluded that the proposed development footprint will not materially impact on these heritage resources. Third, the proposed new water pipeline from Southern Farms / the Orange River to the solar site was found to have no impact on any heritage resources considered to be of cultural significance. Lastly, since some degree of landscape modification will occur, it will not alter any natural or cultural landscape of cultural significance. Thus no negative impact will occur for any heritage resource, or the spatial relationships and associations between such resources.

Overall, there were no artefacts, resources or sites of heritage significance that were confirmed for the proposed ~19ha development footprint. The heritage study attached as additional information (refer to **Appendix J2**) concluded that the preferred technology and layout to be used will not negatively affect any heritage resources on or within the proximity of the proposed solar development site.

» **Palaeontology impacts:**

The proposed development site is underlain by ancient Precambrian basement rocks (Schuitdrift Gneiss) that are, according to Almond & Pether (2008), approximately two to one billion years old and entirely unfossiliferous. While alluvial gravels of the Orange River of Miocene and younger age are locally highly fossiliferous, these are highly unlikely to be found in the study area. The palaeontological sensitivity of the proposed study area is considered very low. As such, it is recommended that no further palaeontological studies be required in this instance.

» **Archaeological impacts:**

The archeologically report found a scatter of quartz chips and flakes covering an area of approximately 75 x 130m in the northern section of the proposed development footprint, however they are considered of low significance. It has been determined that the road to the Southern Farms would be the preferred route of a water pipeline from the Orange

River. No archaeological occurrences considered to be of cultural significance were noted along this pipeline route.

Lastly, it was found that the artefacts seen across the open veld constitute a low archaeological potential. The more sensitive areas are below the koppies that lie immediately outside the footprint of the solar facility. None the solar layout alternatives would affect these archaeological sensitivities, and thus there would appear to be no inhibitors to the solar installation from an archaeological perspective.

4.1. Construction Phase but monitored throughout the project life cycle.

Should any heritage remains be exposed during excavations, these must be immediately reported to the Provincial Heritage Resource Authority of the Northern Cape, in terms of the national Heritage Resources Act (Act No. 25 of 1999). Heritage remains uncovered or disturbed during earthworks may not be disturbed further until the necessary guidance and approval have been obtained from the relevant Heritage Authority.

The main cause of impacts is to that of any archaeological sites should they be exposed by the physical disturbance of construction activities. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose archaeological artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. Large-scale excavations for foundations will damage archaeological sites, as will road construction activities.

- **Impact 1: Heritage objects or artefacts found on site are inappropriately managed or destroyed**

Nature: The potential impact of activities the construction and associated infrastructure on Heritage objects or artefacts if they are found on site and are inappropriately managed or destroyed		
	Without Mitigation	**With Mitigation**
	Local (1)	Local (1)
Extent	Permanent (5)	Permanent (5)
Duration	Minor (1)	Minor (1)
Magnitude	Unlikely (2)	Unlikely (2)
Probability	**Low (14)**	**Low (14)**
Significance	Negative	Neutral
Status (positive or negative)	Negative	Negative
Reversibility	No, but in some cases, yes	No
Irreplaceable loss of resources?	Yes	
Can impacts be mitigated?	Yes	
Mitigation:	• Areas required to be cleared during construction must be clearly marked in the field to avoid unnecessary disturbance	

	of adjacent areas (which will not be surveyed in detail by a heritage specialist). • Contractors must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. All staff should also be familiarised with procedures for dealing with heritage objects/sites. • Familiarise all staff and contractors with procedures for dealing with heritage objects/sites. • Project employees and any contract staff must maintain, at all times, a high level of awareness of the possibility of discovering heritage sites. • If a heritage object is found, work in that area must be stopped immediately, and appropriate specialists brought in to assess to site, notify the administering authority (SAHRA) of the item/site, and undertake due/required processes. • In the event that fossils resources are discovered during excavations, immediately stop excavation in the vicinity of the potential material. Mark (flag) the position and also spoil that may contain fossils. Inform the site foreman and the ECO. ECO to inform the developer, the developer contacts the standby archaeologist and/or palaeontologist. ECO to describe the occurrence and provide images by email.
Cumulative impacts: None	
Residual Impacts: None	

4.2. Conclusion

A Phase 1 Archaeological Assessment was conducted to assess the proposed project development. Specialist assessment concluded that the artefacts seen across the open veld constitute a low heritage potential. The more sensitive areas are below the koppies, these lie immediately outside the footprint of the solar facility, thus there would appear to be no inhibitors to the solar installation from an archaeological perspective, but construction of the solar panels should stay within the footprint area to avoid any damage to the denser scatters of white quartz, which are clearly visible below the koppies.

No buildings older than 60 years and heritage significance were identified within the solar development site.

No significant archaeological occurrences were found on the site, however dense scattered quartz pieces were found outside the development site around the nearby ridgeline / koppie and these are to be demarcated as NO-GO and avoided by the solar installation.

The Grave that is present within the broader study area is not located within 20m of the development footprint and is therefore not considered to be of cultural significance

5. Potential Visual Impacts

The proposed PV facility and associated infrastructure has the potential to impact the sense of place of the area as well as impose a visual intrusion for the landowner. However, the significance of the impact is expected to be limited due to the nature of the existing Eskom Schuitdrift Substation associated infrastructure adjacent to the proposed development footprint.

5.1. Construction Phase

- **Impact 1: Visual intrusion for the landowner only**

Nature: Visual intrusion.		
	Without mitigation	**With mitigation**
Extent	Local (3)	Local (3)
Duration	Short-term (1)	Short-term (1)
Magnitude	Low (4)	Low (2)
Probability	Probable (3)	Improbable (2)
Significance	**Low (24)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:	• Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint following completion of construction. • Ensure that vegetation is not unnecessarily removed during the construction period. • Reduce the construction period as far as practically possible through careful logistical planning and productive implementation of resources. • Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever practically possible. • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads where practically possible. • Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed of regularly at appropriately licensed waste facilities.	

	• Reduce and control construction dust using approved dust suppression techniques as and when required. • Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. Rehabilitate all disturbed areas immediately after the completion of construction works.
Cumulative impacts: » The addition of the PV facility, substation, distribution powerlines and lay-down area is not expected to add significantly to the impacts associated with the existing Eskom Schuitdrift Substation.	
Residual impacts: » None. The visual impacts will be removed after construction and operation is completed.	

5.2. Operational Phase

- **Impact 1: Visual intrusion for the landowner only**

Nature: Visual intrusion		
	Without mitigation	**With mitigation**
Extent	Local (3)	Local (3)
Duration	Short-term (1)	Short-term (1)
Magnitude	Low (4)	Low (2)
Probability	Probable (3)	Improbable (2)
Significance	**Low (24)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation	• Ensure appropriate maintenance of the site to minimise visual impacts. If parts of the site must be lit at night for security purposes, this should be done with low-UV type lights (such as most LEDs), which do not attract insects.	
Cumulative impacts: » The addition of the temporary concrete tower plant and lay-down area is not expected to add significantly to the impacts associated with the existing Eskom Schuitdrift substation and associated infrastructure.		
Residual impacts: » None. The visual impacts will be removed after construction and operation is completed.		

5.3. Decommissioning Phase

Activities associated with the decommissioning phase pertain mostly to the removal of infrastructure and the re-vegetation (rehabilitation) of the footprint for the temporary concrete tower plant and lay-down area. Impacts associated with the decommissioning of the proposed infrastructure will be similar to those described and assessed for the

construction and operational phase. Assessment of the impacts is not repeated in this report.

5.4. Conclusions

The degree to which the development of the Skuitdrift Solar Energy Facility will substantiate a visual intrusion is negligible. The landowner has already authorised the development of the Eskom Schuitdrift substation, servitudes and associated infrastructure approximately 700m east of the proposed development footprint, thus does not have any issue with further development causing a visual intrusion. Furthermore, the proposed ~19ha development site is isolated to the southernmost part of the 9800ha Farm Skuitdrift 426 and thus does not pose a visual intrusion for any adjacent farms, towns, settlements or homesteads.

6. Potential Social Impacts

During construction of the Skuitdrift Solar Energy Facility, a small number of temporary jobs will be created. Negative impacts associated with the construction relate to noise, dust, and traffic. Negative social impacts can be avoided by implementation of appropriate construction site management measures. In terms of the overall significance of the impacts of the proposed establishment of the Skuitdrift Solar Energy Facility, a medium to high positive impact is envisaged for the potential social and economic impacts in terms of potential increased revenue for the landowner, potential construction and operational phase job creation, and the generation of much-needed electricity (from a sustainable carbon-free natural resource), which will feed into the National Grid.

6.1. Construction Phase

- **Direct employment opportunities and skills development**

Nature: The creation of employment opportunities and skills development opportunities during the construction phase for the country and local economy.		
	Without enhancement	**With enhancement**
Extent	Local- Regional (3)	Local- Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Highly probable (4)
Significance	**Medium (33)**	**Medium (44)**
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Enhancement measures:	• If possible, efforts should be made to employ local	

	contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. • It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force (sourced from nearest towns/settlements within the local municipalities). • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. • Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase. • A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge • Complaints are set out in order for the local community to express any complaints or grievances with the construction process.
Cumulative impacts » Opportunity to upgrade and improve skills levels in the area. » Opportunity for local employment opportunities.	
Residual impacts » Improved pool of skills and experience in the local area. » Economic growth for small-scale entrepreneurs. » Temporarily employment during construction phase will result in jobs losses and struggles for construction workers to find new employment opportunities.	

- **Assessment of nuisance impacts (noise and dust)**

Nature: Nuisance impacts in terms of a temporary increase in noise and dust		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)
Magnitude	Minor (2)	Small (1)
Probability	Probable (3)	Probable (3)
Significance	**Low (15)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation:	• Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. • Ensure all vehicles are roadworthy, drivers are qualified and are made aware of the potential noise and dust issues.	

	• A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
Cumulative impacts: » Opportunity to upgrade and improve skills levels in the area; » Opportunity for local employment opportunities; and » Other construction activities in area will heighten the nuisance impacts, such as noise, dust and wear and tear on roads.	
Residual impact: » Only damage to roads that are not fixed could affect road users.	

6.2. Operational Phase

- **Employment opportunities and skills development**

Nature: The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy.		
	Without enhancement	**With enhancement**
Extent	Local- Regional (2)	Local- Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Highly probable (4)
Significance	**Low (24)**	**Medium (32)**
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Enhancement:	• It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. • Vocational training programs for employees should be established to promote the development of skills.	
Cumulative impact: » The creation of employment opportunities and skills development opportunities during the operation phase.		
Residual impact: » Improved pool of skills and experience in the local area.		

The impact is therefore assessed to be positive, local and regional in extent, temporary in duration, of moderate intensity, and highly probable with enhancement measures

implemented. The impact is assessed to be of medium significance to the decision making process.

6.3. Decommissioning Phase

The impacts during the decommissioning and closure phases will be similar to impacts of the construction phase as discussed in this assessment. Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

In addition, the social impacts associated with final decommissioned are likely to be limited due to the relatively small number of permanent employees affected. The potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be low (negative).

6.4. Conclusion

From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning.

7. No-Go Alternative

This is the option of not constructing the proposed Skuitdrift Solar Energy Facility. This option will result in limited or no impacts occurring on the environment or socially. However, this will result in the situation where the proposed project cannot supplement the authorised Eskom Schuitdrift Substation and thus will not connect to the national electricity grid resulting in a loss of additional power generation capacity from a renewable generation source. This would result in negative impacts at a local, regional and national scale from a socio-economic and economic perspective and is not considered desirable. The negative impacts of the no go alternative are considered to outweigh the positive impacts of this alternative.

Moreover, this option will result in the continuation of the current land use where there is some level of grazing and natural grassland vegetation, however this option is undesirable and is considered to be negative a negative impacts since this will result in

the natural vegetation being further disturbed with further loss of indigenous species and thus biodiversity and the loss of suitable habitat for faunal species.

The 'No-Go' alterative is an undesirable option for the project as it will pose negative impacts on the Skuitdrift Solar Energy Facility and it will result in a lost opportunity for renewable energy production within the country, and will impact on the local community as no employment would be generated. **The 'No-Go' alternative is, therefore, not a preferred alternative.**

SECTION B: ASSESSMENT OF CUMULATIVE IMPACTS

This Basic Assessment includes an assessment of the cumulative impacts associated with the proposed construction of the Skuitdrift Solar Energy Facility which will connect the authorised Eskom Schuitdrift Substation approximately 700m east of the proposed development site.

Cumulative impacts from the preferred development alternative will result from impacts arising from multiple power lines being traversing the landscape as well as being constructed in the area (from other project phases). The contribution of the Scuitdrift Solar Project (Pty) Ltd and associated infrastructure to the cumulative impacts in the area is considered to be **low** as the proposed development footprint is located within such close proximity to the authorised Eskom Schuitdrift Substation boundary.

The only major cumulative impacts relate to those associated with ecological processes, which are small but if combined may become significant. The limited nature of the current development and the proximity to existing infrastructure and human disturbance suggests that the contribution of the current development to cumulative habitat loss or landscape fragmentation impacts would be low (refer to **Figure 2**)

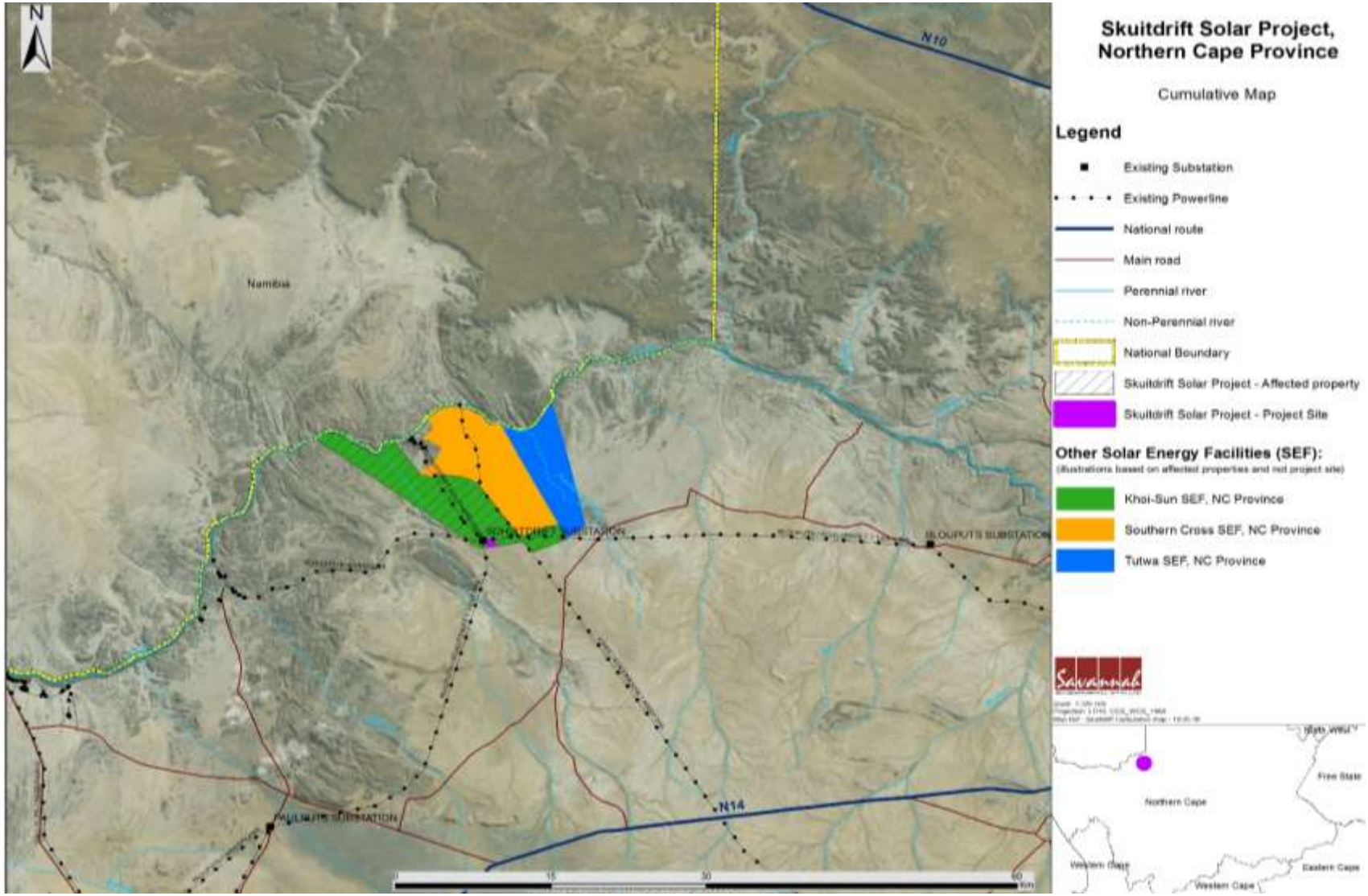

Figure 2: Map depicting similar renewable energy projects in the vicinity which may contribute to the projects cumulative impacts

SECTION C: OVERALL CONCLUSIONS

This Basic Assessment includes an assessment of the cumulative impacts associated with all components of the Skuitdrift Solar Energy Facility.

The following conclusions regarding the proposed power line and switchyard station have been made:

Ecology: Overall, the site is not viewed as being highly ecologically sensitive, and with standard mitigation measures in place, the risk of significant environmental impact or degradation as a result of the development is very low. The final layout as proposed by the developer takes sufficient cognizance of the site sensitivities and the non-invasive construction approach proposed by the developer is viewed as a positive contributing factor to mitigating potential impacts at the site. As a result, **the project is considered acceptable from an ecological perspective.**

Avifauna: Recent bird atlas data reveals only 39 avian species recorded in or around development footprint, of which 2 were collision-prone (African Fish-Eagle *Haliaetus vocifer,* and the *Vulnerable* Verreaux's Eagle *Aquila verreauxii).* However, older bird atlas data indicates two other red-data species are also likely on site: the collision-prone Ludwig's Bustard *Neotis ludwigii* and Sclater's Lark *Spizocorys sclateri*.

Due to the size of the development footprint, the site is likely to be of a low risk to the birds present. If appropriate mitigation measures are followed to minimize any impacts to threatened species, then the preferred development footprint is **considered acceptable from an avifaunal perspective**.

Heritage, Archaeology and Palaeontology: No archival references referring to these historic themes, which include the possibility of grave sites/ burial ground on proposed development site and/ or lands directly contiguous to it could be located. There was however a single grave (not older than 60 years) and at least two empty graves were noted just off a narrow track, directly north of the proposed development site, however they are not considered to be of cultural significance, are situated outside the proposed development footprint and would not be affected through the proposed development.

In terms of palaeontology, the overall impact significance of the proposed development on fossil heritage is considered to be very low since most of the study area is underlain by unfossiliferous metamorphic basement rocks (granite-gneisses etc.) or mantled by superficial sediments of low palaeontological sensitivity, and no extensive, deep excavations are unlikely to be undertaken during the project. No significant archaeological occurrences were found on the site, however dense scattered quartz pieces were found outside the development site around the nearby ridgeline / koppie – to be demarcated as NO-GO and avoided by the solar installation.

If mitigation measures are implemented, the proposed development footprint **is considered acceptable from a heritage perspective**.

Agricultural Potential: Overall, the proposed development footprint does not have any agricultural value and has not for many years been utilized for any extensive agricultural purposes. The site is too small to generate noteworthy financial benefit from agricultural activities. Furthermore, the combination of poor soil quality, water scarcity and distance from the market hinders the possibility of the commercial production of grain, vegetables and horticultural products. Moreover, irrigation on this dry and arid area is excluded due to low availability of water.

The low agricultural potential of the site can be ascribed to a combination of the geology, climate and vegetation. Therefore, the development site is not economically productive, mainly due to the extreme nature of the climate and the low potential of the soil. As a result, **the project is considered acceptable from an ecological perspective.**

Visual Impacts: The proposed Skuitdrift Solar Energy Facility as assessed in this Basic Assessment Report is not likely to contribute significantly to the potential visual impacts associated with the authorised Eskom Schuitdrift substation and associated infrastructure. Furthermore, the isolated nature of the development is not a visual intrusion for the day-to-day life of the landowner and his family. Therefore, the potential visual impacts associated with the proposed development are expected to have a **low significance** and should not alter/influence the outcome of the project decision-making.

Social Impact: Social impacts are expected during all phases of the development and are expected to be both positive and negative. Impacts are expected to be of **medium-low significance** for the various issues. Impacts can be minimised or enhanced through the implementation of the recommended management measures. From a social perspective, the proposed construction of the proposed Skuitdrift Solar Energy Facility are considered acceptable.

Overall conclusion

From the specialist studies undertaken, the preferred development footprint for the Skuitdrift Solar Energy Facility is considered to be acceptable from an environmental perspective. The proposed power line corridor and substation location is also considered technically and financially feasible.

Based on the findings of the studies undertaken, in terms of environmental constraints and opportunities identified through the Environmental Basic Assessment process, no environmental fatal flaws were identified to be associated with the construction of the proposed power line and substation.

Impacts are expected to be **medium - low** after the implementation of the mitigation and monitoring measures which would allow for the minimisation and management of potential environmental impacts associated with the proposed development. These have been incorporated into the EMPr for the project which will be further developed during the detailed planning and design phase of the project. It is therefore recommended that the proposed development can be implemented. With reference to the information available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable.

It is the conclusion of the Environmental Assessment Practitioner that the establishment of the Skuitdrift Solar Energy Facility is considered acceptable from an environmental perspective. The technically preferred Skuitdrift Solar Energy Facility should be authorised, provided that the recommended mitigation measures are implemented.