

EIA REPORT



CHAPTER 16: Conclusions and Recommendations

Scoping and Environmental Impact Assessment for the Proposed Development of a 75 MW Solar Photovoltaic Facility (KENHARDT PV 3) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province

contents

16 CONCLUSIONS AND RECOMMENDATIONS	16-3
16.1 SUMMARY OF IMPACT SIGNIFICANCE: MAIN IMPACTS AND KEY RECOMMENDATIONS	16-3
16.1.1 <i>Ecological Impact Assessment</i>	16-4
16.1.2 <i>Visual Impact Assessment</i>	16-6
16.1.3 <i>Heritage Impact Assessment (Archaeology and Cultural Landscape)</i>	16-7
16.1.4 <i>Desktop Palaeontological Impact Assessment</i>	16-7
16.1.5 <i>Geohydrological Assessment</i>	16-8
16.1.6 <i>Soils and Agricultural Potential Assessment</i>	16-9
16.1.7 <i>Social Impact Assessment</i>	16-10
16.1.8 <i>Traffic Impact Statement</i>	16-11
16.1.9 <i>Cumulative Topographical Analysis of the proposed PV projects in the Astronomy Geographic Advantage Area</i>	16-12
16.2 SUMMARY: COMPARATIVE ASSESSMENT OF POSITIVE AND NEGATIVE DIRECT AND INDIRECT IMPACTS	16-12
16.3 SUMMARY OF CUMULATIVE IMPACTS	16-13
16.4 CONSIDERATION OF ALTERNATIVES	16-14
16.4.1 <i>No-go Alternative</i>	16-14
16.4.2 <i>Land-Use Alternative</i>	16-16
16.4.3 <i>Site and Location Alternatives</i>	16-16
16.4.4 <i>Layout Alternatives</i>	16-17
16.4.5 <i>Technology Alternatives</i>	16-17
16.5 DEVELOPMENT ENVELOPE AND LAYOUT OF THE PROPOSED KENHARDT PV 3 FACILITY	16-17
16.6 PERMITS AND LICENSES REQUIRED	16-23
16.6.1 <i>NEMA and 2014 NEMA EIA Regulations</i>	16-23
16.6.2 <i>Permit in terms of the National Water Act (Act 36 of 1998)</i>	16-23
16.6.3 <i>Permit in terms of the National Forest Act (Act 84 of 1998)</i>	16-23
16.6.4 <i>Permit in terms of the Northern Cape Nature Conservation Act (Act 9 of 2009)</i>	16-24
16.6.5 <i>Permit in terms of the National Heritage Resources Act (Act 25 of 1999) (NHRA)</i>	16-24
16.6.6 <i>Astronomy Geographic Advantage (Act 21 of 2007)</i>	16-24
16.7 OVERALL EVALUATION OF IMPACTS BY THE EAP	16-25

tables

Table 16.1: Specialist Studies	16-3
Table 16.2: Summary of Ecological Impacts	16-4
Table 16.3: Summary of Visual Impacts	16-6
Table 16.4: Summary of Heritage Impacts	16-7
Table 16.5: Summary of Palaeontological Impacts	16-8
Table 16.6: Summary of Geohydrological Impacts	16-9
Table 16.7: Summary of Soils and Agricultural Potential Impacts	16-10
Table 16.8: Summary of Social Impacts	16-10
Table 16.9: Comparative Assessment of Positive and Negative Direct and Indirect Impacts	16-12
Table 16.10: Comparative Assessment of Cumulative Impacts	16-13

figures

Figure 16.1: Map indicating the approximately 1341 ha site assessed for the Kenhardt PV 3 facility (and the Electrical Infrastructure Corridor (which is assessed as part of separate BA Processes)).	16-18
Figure 16.2: Environmental Sensitivity Map for the Proposed Kenhardt PV 3 Facility	16-21
Figure 16.3: Preliminary Site Layout Plan	16-22

16 CONCLUSIONS AND RECOMMENDATIONS

This chapter contains the main conclusions and recommendations from the EIA Process, provides the key findings of the specialist studies (i.e. outlines the most significant impacts identified, together with the key management actions required to avoid or mitigate the negative impacts or enhance positive benefits), an integrated summary of impacts that will influence decision-making by the Competent Authority (i.e. the DEA) and the associated management actions. In addition, the chapter also includes the EAP's opinion on the environmental suitability of the project and whether the project should receive EA.

16.1 SUMMARY OF IMPACT SIGNIFICANCE: MAIN IMPACTS AND KEY RECOMMENDATIONS

The 2014 NEMA EIA Regulations define a significant impact as “*an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence*”.

Based on the definition above, this section provides a summary of significant impacts identified and assessed by the specialists in Chapters 7 to 13 of this EIA Report (as noted in Table 16.1 below). The significant impacts and corresponding impact significance ratings before and after mitigation and associated mitigation and management measures are summarised in this section.

Table 16.1: Specialist Studies

Name	Organisation	Specialist Study Undertaken	Chapter in this EIA Report
Simon Bundy	Sustainable Development Projects cc	Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna)	Chapter 7
Henry Holland	Private	Visual Impact Assessment	Chapter 8
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)	Chapter 9
Dr. John Almond	Natura Viva cc	Desktop Palaeontological Impact Assessment	Chapter 10
Julian Conrad	GEOSS	Geohydrological Assessment	Chapter 11
Johann Lanz	Private	Soils and Agricultural Potential Assessment	Chapter 12
Rudolph du Toit	CSIR	Social Impact Assessment	Chapter 13
Surina Laurie	CSIR	Traffic Impact Statement <i>(Refer to the explanation provided below)</i>	Chapter 14
P. S. van der Merwe and A. J. Otto	MESA Solutions (PTY) Ltd	Electro Magnetic Interference and Radio Frequency Interference Surveys <i>(Refer to the explanation provided below)</i>	Chapter 15

It must be reiterated that the Social Impact Assessment specialist study (included in Chapter 13 of this EIA Report) was subject to a peer review process by an external reviewer (Ms. Liza van der Merwe, a private consultant), as requested by the DEA. This external review report is included as an appendix to the Social Impact Assessment.

A Traffic Impact Statement was also compiled by the EAP and is included in Chapter 14 of this EIA Report, however it serves as a general description of the existing and predicted traffic associated with the proposed project and does not classify as a specialist study in terms of Appendix 6 of the 2014 NEMA EIA Regulations. Furthermore, this statement considered the full development (i.e. the development of the three Solar PV Facilities (i.e. Kenhardt PV 1, 2 and 3) and the associated electrical infrastructure (which are the subjects of separate BA Processes).

In addition, an Electro Magnetic Interference (EMI) and Radio Frequency Interference (RFI) Survey Technical Study was commissioned by the Project Applicant to determine the impact of the proposed project on the SKA, as requested by the SKA Project Office. This report is not a standard specialist study in terms of Appendix 6 of the 2014 NEMA EIA Regulations, as it is a detailed, technical report which provides a cumulative topographical analysis of the proposed PV projects in the Astronomy Geographic Advantage Area and was undertaken to determine appropriate mitigation and management measures to reduce the risk of a detrimental impact on the SKA project.

It should be noted that all the mitigation and management measures proposed by the specialists, including those additional impacts and management measures identified by the EAP (such as impacts on traffic, air quality, stockpiling recommendations, waste management and the management of dangerous goods on site) have been included in the EMPr (Part B of this EIA Report).

16.1.1 Ecological Impact Assessment

As noted above, an Ecological Impact Assessment (Chapter 7 of this EIA Report) has been undertaken in order to provide supporting information (relating to ecological features and associated impacts) in terms of the proposed construction of the Kenhardt PV 3 Solar Facility and associated infrastructure. The assessment included desktop evaluations, as well as site evaluations.

Table 16.2 illustrates a summary of the total number of impacts identified in the Ecological Impact Assessment.

Table 16.2: Summary of Ecological Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase - Direct Impacts	8	4	3	1	0	6	2	0	0
Construction Phase - Indirect Impacts	6	4	1	1	0	5	1	0	0
Construction Phase - Cumulative Impacts	7	2	2	3	0	3	4	0	0
Operational Phase - Direct Impacts	6	3	2	1	0	4	2	0	0
Operational Phase - Indirect Impacts	3	1	0	2	0	1	2	0	0
Operational Phase - Cumulative Impacts	5	1	2	1	1	2	2	1	0
Decommissioning Phase - Direct Impacts	4	0	3	1	0	0	4	0	0
TOTAL IMPACTS	39								

It is important to note that in most cases, where the impacts have been rated with a low or very low significance before the implementation of mitigation measures, mitigation in this case has not been provided in the Ecological Impact Assessment.

The majority of the impacts in the Ecological Impact Assessment were rated with a negative status. No positive impacts have been identified in the assessment. Overall, as indicated in Table 16.2, the impacts identified in the Ecological Impact Assessment (Chapter 7 of this EIA Report) are predicted to be of a **moderate to very low** significance without the implementation of mitigation measures. Overall, as derived from Table 16.2 above, no impacts were assessed as being of high significance after the implementation of mitigation measures.

The Ecological Impact Assessment concludes that based on the consideration of the site and its present ecological state, as well as the nature of the proposed development, it is in the specialists' opinion that the development cannot be precluded from the site on ecological grounds, provided that suitable measures, as noted in the study (Chapter 7 of this EIA Report) are implemented. The following main mitigation measures were identified in the Ecological Impact Assessment specialist study and noted in the EMPr (Part B of the EIA Report):

Pre-Construction and Construction Phases:

- Carry out a second assessment of the site in or around February to March (subsequent to the issuing of an EA and the completion of the detailed engineering) in order to identify any additional plant specimens of significance that may be evident on site. Such specimens may be relocated/removed (i.e. search and rescue) or avoided (with the relevant permits and approvals in place) prior to the commencement of construction.
- The detailed design of the laydown footprint of the arrays should take consideration of the minor drainage lines present on site and any additional significant plant species that may be identified prior to the commencement of construction. Other features of the site should be incorporated into the PV array design.
- Major drainage lines must be excluded from the development footprint.
- An initial pre-construction clearance of all exotic vegetation on site should be undertaken to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented during the construction phase and may be incorporated into an exotic weed control plan for the site.

Operational Phase:

- Provision of critter paths within the fencing should be considered in the design.
- Promote and support faunal presence and activities within the proposed PV facility, where applicable.
- Adopt "dry" cleaning methods, such as dusting and sweeping the site before washing down.
- Conduct regular (daily) inspections of the fence line to address any animals that may be affected by the electric fence (i.e. tortoise).

Decommissioning Phase:

- Conduct monitoring of the land conditions and redress of exotic weeds found present on site.
- Implement the stabilisation of disturbed lands immediately after the clearance of the land (for the arrays and related infrastructure).

16.1.2 Visual Impact Assessment

As noted above, a Visual Impact Assessment specialist study was conducted (included in Chapter 8 of this EIA Report) for the proposed construction of the Kenhardt PV 3 Solar PV facility. The assessment concluded that the landscape surrounding the proposed site has a rural agricultural character which has been transformed by extensive stock farming and large scale infrastructure in the form of the Sishen-Saldanha ore railway line and Eskom Nieuwehoop Substation (currently being constructed).

Table 16.3 illustrates a summary of the total number of impacts identified in the Visual Impact Assessment.

Table 16.3: Summary of Visual Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	1	0	0	1	0	0	1	0	0
Operational Phase: Direct Impacts	3	2	0	1	0	2	1	0	0
Decommissioning Phase: Direct Impacts	1	0	0	1	0	0	1	0	0
Cumulative Impacts	2	1	1	0	0	1	1	0	0
TOTAL IMPACTS	7								

It is important to note that in some cases, where the impacts have been rated with a low or very low significance before the implementation of mitigation measures, mitigation has not been provided in the Visual Impact Assessment. No indirect or positive impacts were identified in the Visual Impact Assessment. The majority of the impacts identified in the Visual Impact Assessment were rated with a negative status.

Overall, as indicated in Table 16.3, the impacts identified in the Visual Impact Assessment (Chapter 8 of this EIA Report) are predicted to be of a **moderate to very low** significance without the implementation of mitigation measures.

The following main mitigation measures were identified in the Visual Impact Assessment specialist study:

Construction Phase:

- Preparation of the solar field area (i.e. clearance of vegetation, grading, contouring and compacting) and solar field construction should be phased in a way that makes practical sense in order to minimise the area of soil exposed and duration of exposure.

Operational Phase:

- The project developer should maintain re-vegetated surfaces until a self-sustaining stand of vegetation is established and visually adapted to the undisturbed surrounding vegetation. No new disturbance should be created during operations without approval by the Environmental Officer;
- Restoration of disturbed land should commence as soon after disturbance as possible;
- A lighting plan that documents the design, layout and technology used for lighting purposes should be prepared, indicating how nightscape impacts will be minimised.

Decommissioning Phase:

- Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast with the existing landscapes.

16.1.3 Heritage Impact Assessment (Archaeology and Cultural Landscape)

A Heritage Impact Assessment (HIA) was undertaken as part of the EIA Process (included in Chapter 9 of this EIA Report).

Table 16.4 illustrates a summary of the total number of impacts identified in the HIA.

Table 16.4: Summary of Heritage Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	3	0	2	0	1	2	1	0	0
Operational Phase: Direct Impacts	1	0	1	0	0	0	1	0	0
Decommissioning Phase: Direct Impacts	1	0	1	0	0	0	1	0	0
Cumulative Impacts	3	0	3	0	0	2	1	0	0
TOTAL IMPACTS	8								

All the above impacts were rated with a negative status. Overall, the above impacts are predicted to be of a **low significance** without the implementation of mitigation measures. No impacts were assessed as being of high significance with the implementation of mitigation.

The HIA concluded that because the potential impacts are few and entirely manageable, it is recommended that the proposed project be allowed to continue, however subject to the following conditions:

- If they cannot be avoided with a buffer of at least 25 m, the two significant archaeological sites should be excavated;
- The potential grave should be avoided with a buffer of at least 5 m or else tested and, if necessary, exhumed prior to construction;
- The construction team should be made aware of the potential to locate more graves and instructed to report any suspicious stone features prior to disturbance;
- The built elements of the facility should be painted in an earthy colour to minimise visual contrast in the landscape; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

An additional management measure includes ensuring that all works occur inside the approved development footprint.

16.1.4 Desktop Palaeontological Impact Assessment

A desktop Palaeontological Impact Assessment was undertaken as part of the EIA Process (included in Chapter 10 of this EIA Report) to provide an assessment of potential impacts on local palaeontological (i.e. fossil) heritage within the proposed Kenhardt PV 3 facility area.

Table 16.5 illustrates a summary of the total number of impacts identified in the Palaeontological Impact Assessment.

Table 16.5: Summary of Palaeontological Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	1	1	0	0	0	1	0	0	0
Cumulative Impacts	1	1	0	0	0	1	0	0	0
TOTAL IMPACTS	2								

No significant impacts on palaeontological heritage are anticipated during the operational and decommissioning phases of the proposed development. The above impacts were rated with a negative status. It is clear from Table 16.5 above that the impacts were assessed as being of **very low** significance without and with the implementation of mitigation.

The following main mitigation measures were identified in the Palaeontological Impact Assessment:

Construction Phase:

- All substantial bedrock excavations (into sedimentary rocks) should be monitored for fossil material by the responsible ECO. Should significant fossil remains - such as vertebrate bones and teeth, plant-rich fossil lenses, petrified wood or dense fossil burrow assemblages - be exposed during construction, the responsible ECO should safeguard these, preferably in situ. The SAHRA should be alerted as soon as possible, so that appropriate action can be taken by a professional palaeontologist.
- Appoint a professional palaeontologist to record and sample any chance fossil finds. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist. The palaeontologist concerned with mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection).

The Palaeontological Impact Assessment concludes that there are no fatal flaws in the proposed development, nor are there objections to its authorisation as far as fossil heritage conservation is concerned, since significant impacts on scientifically valuable fossils or fossil sites are not anticipated.

16.1.5 Geohydrological Assessment

A Geohydrological Assessment (Chapter 11 of this EIA Report) was conducted as part of the EIA Process in order to identify and assess impacts associated with the construction and operation of the proposed project on the groundwater and geohydrological resources.

Table 16.6 illustrates a summary of the total number of impacts identified in the Geohydrological Assessment.

Table 16.6: Summary of Geohydrological Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	3	3	0	0	0	3	0	0	0
Construction Phase: Indirect Impacts	3	3	0	0	0	3	0	0	0
Operational Phase: Direct Impacts	2	2	0	0	0	2	0	0	0
Operational Phase: Indirect Impacts	2	2	0	0	0	2	0	0	0
Decommissioning Phase: Direct Impacts	1	1	0	0	0	1	0	0	0
Decommissioning Phase: Indirect Impacts	1	1	0	0	0	1	0	0	0
TOTAL IMPACTS	12								

As derived from Table 16.6 above, it is clear that all impacts were identified with a **very low significance** without and with the implementation of mitigation measures. The impacts identified above are all rated with a neutral status.

The following main mitigation measures were identified in the Geohydrological Assessment:

Construction, Operational and Decommissioning Phases:

- All reasonable measures must be taken to prevent soil, storm water outflows and groundwater contamination.
- Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.
- Vehicle and washing areas must also be on paved surfaces and the by-products correctly managed.
- If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.

The Geohydrological Assessment concludes that from a groundwater perspective the proposed activity can be authorised and no specific measures are applicable other than all measures to prevent soil and groundwater contamination, especially by hydrocarbons, must be in place.

16.1.6 Soils and Agricultural Potential Assessment

A Soils and Agricultural Potential Assessment (Chapter 12 of this EIA Report) was conducted as part of the EIA Process in order to identify and assess all potential impacts of the proposed development on agricultural resources including soils and agricultural production potential, and to provide recommended mitigation measures, monitoring requirements, and rehabilitation guidelines for all identified impacts.

Table 16.7 illustrates a summary of the total number of impacts identified in the Soils and Agricultural Potential Assessment.

Table 16.7: Summary of Soils and Agricultural Potential Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	5	4	1	0	0	5	0	0	0
Operational Phase: Direct Impacts	3	2	1	0	0	3	0	0	0
Decommissioning Phase: Direct Impacts	5	4	1	0	0	5	0	0	0
Cumulative Impacts	1	0	0	1	0	0	0	1	0
TOTAL IMPACTS	14								

It is important to note that in some cases, where the impacts have been rated with a low or very low significance before the implementation of mitigation measures, mitigation has not been suggested in the Soils and Agricultural Potential Assessment. No indirect impacts were identified. All of the above impacts were rated with a negative status, except for the impact relating to the generation of additional land use income through the rental of the land for the proposed solar energy facility, which was rated with a positive status.

All impacts apart from the cumulative impact were assessed as having a **very low or low significance**, and the overall agricultural impact for all phases of the development was assessed as being of a **low significance**.

The following main mitigation measures were identified in the Soils and Agricultural Potential Assessment:

Construction, Operational and Decommissioning Phases:

- Implement an effective system of stormwater run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.

The study concludes that because of the low agricultural potential of the site, the development should, from an agricultural impact perspective, be authorised.

16.1.7 Social Impact Assessment

A Social Impact Assessment (included in Chapter 13 of this EIA Report) was undertaken as part of the EIA Process to investigate the potential social disruptors and associated social impacts likely to result from the proposed project.

Table 16.8 below illustrates a summary of the total number of impacts identified in the Social Impact Assessment.

Table 16.8: Summary of Social Impacts

	Total Impacts	Significance Before Mitigation				Significance After Mitigation			
		Very Low	Low	Moderate	High	Very Low	Low	Moderate	High
Construction Phase: Direct Impacts	6	0	2	4	0	1	3	2	0
Operational Phase: Direct Impacts	6	0	2	4	0	1	3	2	0
Decommissioning Phase: Direct Impacts	1	0	0	1	0	0	1	0	0
Cumulative Impacts	1	0	0	0	0	0	1	0	0
TOTAL IMPACTS	14								

No indirect or cumulative impacts have been identified in the specialist study. It is clear from Table 16.8 that no impacts were assessed as being of high significance with or without the implementation of mitigation. The overall significance rating of the negative socio-economic impacts associated with the proposed project is low to moderate; whereas the overall significance rating of the positive socio-economic impacts associated with the proposed development is moderate.

The following main mitigation measures were identified in the Social Impact Assessment:

Construction and Operational Phases:

- Develop and implement a Workforce Recruitment Plan;
- Clearly define and agree upon the Project Affected People (PAP);
- Develop a database of PAP and their relevant skills and experience, or use an existing legitimate database of skills and expertise;
- Develop and implement a Stakeholder Engagement Plan;
- Delivery on the Economic Development Plan must be contractually binding on the proponent;
- Procure goods and services, where practical, within the study area;
- The proponent should engage with local NGOs, CBOs and local government structures in the Kenhardt community to identify and agree upon relevant skills and competencies required;
- Such skills and competencies should then be included in the Economic Development Plan; and
- Where possible, align the Economic Development Plan with Local Municipality's IDP.

Decommissioning Phase:

- Scatec should also consider appropriate succession training of locally employed staff earmarked for retrenchment during decommissioning; and
- All project infrastructures should be decommissioned appropriately and thoroughly to avoid misuse.

16.1.8 Traffic Impact Statement

As noted above and included in Chapter 14 of the EIA Report, the Traffic Impact Statement (TIS) was produced by the CSIR to show the amount of traffic that can be expected during the construction and operational phase of the proposed development of the proposed Kenhardt PV 1, Kenhardt PV 2, and Kenhardt PV 3 solar energy projects (i.e. separate EIA Processes), as well as the proposed Kenhardt PV 1 - Transmission Line, Kenhardt PV 2 - Transmission Line, and Kenhardt PV 3 - Transmission Line projects (assessed as part of separate BA Processes). The TIS focuses on the regional setting in which these projects are proposed and the roads that will be utilised for these projects.

Overall, the above impacts identified as part of the TIS are predicted to be of a **moderate to low significance** without and with the implementation of mitigation measures. No impacts were assessed as being of high significance after the implementation of mitigation.

The following main mitigation measures were identified in the TIS:

Construction, Operational and Decommissioning Phases:

- Should abnormal loads have to be transported by road to the site, a permit needs to be obtained from the Provincial Government Northern Cape (PGNC) Department of Public Works, Roads and Transport.

- A Road Maintenance Plan should be developed for the section of the Transnet Service Road.

16.1.9 Cumulative Topographical Analysis of the proposed PV projects in the Astronomy Geographic Advantage Area

As noted above, MESA Solutions (Pty) Ltd (MESA Solutions) was appointed by the Scatec Solar to undertake a topographical analysis of the terrain profiles between various PV projects locations (assessed separately as part of EIA Processes) in the Astronomy Geographic Advantage (AGA) area and the closest and core-site SKA telescopes.

It is strongly recommended that the following mitigation practises be incorporated into the plants design:

- The inverter units, transformers, communication and control units for an array of panels all be housed in a single shielded environment.
- For shielding of such an environment ensure RFI gasketting be placed on all seams and doors and RFI Honeycomb filtering be placed on all ventilation openings.
- Cables to be laid directly in soil or properly grounded cable trays (not plastic sleeves).
- The use of bare copper directly in soil for earthing is recommended.
- Assuming a tracking PV plant design, care will have to be taken to shield the noise associated with the relays, contactors and hydraulic pumps of the tracking units.
- All data communications to and from the plant to be via fibre optic.

16.2 SUMMARY: COMPARATIVE ASSESSMENT OF POSITIVE AND NEGATIVE DIRECT AND INDIRECT IMPACTS

Section 16.1 provides a summary of the findings of the specialist studies (or inputs) that were sourced as part of this EIA Process. Table 16.9 summarises the overall significance of these impacts following the implementation of the recommended mitigation and management measures. From this table it can be seen that no negative impacts of high significance are predicted to occur as a result of this project provided the stipulated management actions are implemented effectively. The positive impacts generated by the project are associated with the economic benefits from employment opportunities, and the additional source of income from the rental of the land for the construction and operation of the PV facility. Considering that all the negative impacts would be appropriately managed and the positive impacts enhanced through mitigation measures and management actions via the EMPr (Part B of the EIA Report), the potential negative impacts associated with the proposed project are not anticipated to be significant.

Table 16.9: Comparative Assessment of Positive and Negative Direct and Indirect Impacts

Specialist Study	Overall Impact Significance Before Mitigation or Enhancement	Overall Impact Significance After Mitigation or Enhancement
Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna)	Negative: Moderate-Very Low	Negative: Very Low-Low
Visual Impact Assessment	Neutral: Moderate-Very Low	Neutral: Low-Very Low
Heritage Impact Assessment (Archaeology and Cultural Landscape)	Negative: High-Very Low	Negative: Low-Very Low
Desktop Palaeontological Impact Assessment	Negative: Very Low	Negative: Very Low
Geohydrological Assessment	Neutral: Very Low	Neutral: Very Low

Specialist Study	Overall Impact Significance Before Mitigation or Enhancement	Overall Impact Significance After Mitigation or Enhancement
Soils and Agricultural Potential Assessment	Negative: Very Low-Low	Negative: Very Low
	Positive: Very Low	Positive: Very Low
Social Impact Assessment	Negative: Moderate-Low	Negative: Low-Very Low
	Positive: Moderate-Low	Positive: Moderate-Low
Traffic Impact Statement	Negative: High-Low	Negative: Moderate-Low

16.3 SUMMARY OF CUMULATIVE IMPACTS

Table 16.10 below provides a summary of the cumulative impacts that the proposed Kenhardt PV 3 project (in conjunction with other proposed projects noted in Chapter 4, including those proposed by Scatec Solar) will have on the receiving environment. The mitigation and management measures to be implemented for the cumulative impacts are detailed in the relevant specialist chapters.

Table 16.10: Comparative Assessment of Cumulative Impacts

Specialist Study	Impact Description	Cumulative Impact Significance
Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna)	<ul style="list-style-type: none"> ▪ Extensive alteration of habitat structure and composition over an extensive and wide area; ▪ Changes in fauna through exclusion of certain species and beneficiation of others over an extensive and wide area; ▪ Increased change in the geomorphological state of drainage lines on account of long term and extensive change in the nature of the catchment; ▪ The continued and cumulative loss of habitat at a landscape to regional level, with a particular impact on avifaunal behaviour; ▪ Changes in water resources and surface water in terms of water quality (i.e. impact on water chemistry) on account of extensive changes in the catchment; and ▪ Exotic weed invasion as a consequence of regular and continued disturbance across an extensive area of site. 	<p>Before Mitigation: High to Very Low After Mitigation: Very Low to Moderate</p>
Visual Impact Assessment	<ul style="list-style-type: none"> ▪ Cumulative impact of solar energy generation projects and large scale electrical infrastructure on the existing rural-agricultural landscape. 	<p>Before Mitigation: Very Low After Mitigation: No mitigation applicable</p>
	<ul style="list-style-type: none"> ▪ Cumulative visual impact of solar energy generation projects and large scale electrical infrastructure on existing views of sensitive visual receptors in the surrounding landscape. 	<p>Before Mitigation: Low After Mitigation: No mitigation applicable</p>
Heritage Impact Assessment (Archaeology and Cultural Landscape)	<ul style="list-style-type: none"> ▪ Damage to or destruction of archaeological resources. 	<p>Before Mitigation: Very Low After Mitigation: No mitigation applicable</p>
	<ul style="list-style-type: none"> ▪ Damage to or destruction of graves 	<p>Before Mitigation: Low After Mitigation: Very Low</p>

Specialist Study	Impact Description	Cumulative Impact Significance
	<ul style="list-style-type: none"> Impacts to the cultural and natural landscape 	<p>Before Mitigation: Low After Mitigation: Low</p>
Desktop Palaeontological Impact Assessment	<ul style="list-style-type: none"> Potential cumulative loss of palaeontological heritage resources through disturbance, damage or destruction of fossils and fossil sites (including associated geological contextual data) through surface clearance and excavation activities during the construction phase of several alternative energy facilities within the broader Kenhardt region and other key electrical infrastructure developments within a 20 km radius of the proposed project site. 	<p>Before Mitigation: Very Low After Mitigation: Very Low</p>
Geohydrological Assessment	<ul style="list-style-type: none"> As it is not recommended (based on the findings of the Geohydrological Assessment) to make use of the groundwater, the proposed development will have no cumulative impacts on groundwater. 	Not Applicable
Soils and Agricultural Potential Assessment	<ul style="list-style-type: none"> Occupation of the land by the infrastructure of multiple projects 	<p>Before Mitigation: Moderate After Mitigation: No mitigation applicable</p>
Social Impact Assessment	<ul style="list-style-type: none"> Exacerbated in-migration 	<p>Before Mitigation: Moderate After Mitigation: No mitigation applicable</p>
Traffic Impact Statement	<ul style="list-style-type: none"> Increased traffic generation 	<p>Before Mitigation: Low After Mitigation: No mitigation applicable</p>

16.4 CONSIDERATION OF ALTERNATIVES

The alternatives that were considered as part of the EIA Phase for the Kenhardt PV 3 facility are included in Chapter 5 of this EIA Report.

16.4.1 No-go Alternative

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Kenhardt PV 3 project. This alternative would result in no environmental impacts on the site or surrounding local area. The following implications will occur if the “no-go” alternative is implemented:

- No benefits will be derived from the implementation of an additional land-use;
- No additional power will be generated or supplied through means of renewable energy resources by this project at this location. The proposed 75 MW facility is predicted to generate approximately 200 GW/h per year which could power 20 000 households;
- The “no go” alternative will not contribute to and assist the government in achieving its proposed renewable energy target of 17 800 MW by 2030;
- Additional power to the local grid will need to be provided via the Eskom grid, with approximately 90% coal-based power generation with associated high levels of CO₂ emissions and water consumption;
- Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified;

- Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital;
- There will be no opportunity for additional employment in an area where job creation is identified as a key priority. Between 90 and 150 skilled and 400 and 460 unskilled employment opportunities are expected to be created during the construction phase. Approximately 20 skilled and 40 unskilled employment opportunities will be created over the 20 year lifespan of the proposed facility;
- There will be lost opportunity for skills transfer and education/training of local communities;
- The positive socio-economic impacts likely to result from the project such as increased local spending, the proposed implementation of an Economic Development Plan and the creation of local employment opportunities will not be realised; and
- The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised.

Converse to the above, the following benefits could occur if the "no-go" alternative is implemented:

- There will be no development of solar energy facilities at the proposed location;
- Only the agricultural land use will remain;
- No threatened vegetation will be removed or disturbed during the development of these facilities;
- No change to the current landscape will occur i.e. the existing landscape will remain as is, without the visual impact of the proposed PV facility, but noting that the existing landscape would still change as Eskom plan to construct the Nieuwehoop substation and high voltage transmission lines for which an EA has been issued;
- No additional transmission lines and additional electrical infrastructure will be constructed, as a result of the proposed project (and associated transmission line which is assessed as part of a separate BA Process), which may cause bird collisions or fences/infrastructure that may restrict animal movement and create habitat fragmentation, but noting that Eskom will construct high voltage lines within the region;
- No additional water use during the construction phase and the cleaning of panels during the operational phase;
- No additional traffic would be generated from this project in this area; and
- No increase in social deviance and influx of job seekers into the Kenhardt area.

It is important to take into account that the country is facing serious power and water shortages due to its heavy dependency on fossil fuels such as coal. There is therefore a need for additional electricity generation options to be developed throughout the country. As discussed in Chapter 1 of this EIA Report, the purpose of the proposed Kenhardt PV 3 project is to feed electricity generated by a renewable energy resource into the national electricity grid. Many other socio-economic and environmental benefits will result from the development of this project such as development of renewable energy resources in the country and contribution to the increase of energy security, employment creation and local economic development (as noted above).

In addition, the Soils and Agricultural Potential Assessment (Chapter 12 of this EIA Report) notes that the land on which the proposed project will be constructed is of low agricultural potential and is not suitable for cultivation. Therefore, the current land-use (i.e. agricultural use) is not deemed as the preferred alternative and can still continue around the site for the lifetime of the project.

Hence, while the "no-go" alternative will not result in any negative environmental impacts; it will also not result in any positive community development or socio-economic benefits, nor will it generate an alternative land-use income from the solar energy facility. It will also not assist government in addressing climate change, reaching its set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. Hence the "no-go" alternative is not a preferred alternative.

16.4.2 Land-Use Alternative

As discussed above, the sole use of the land for agriculture is not a preferred alternative.

Where the “activity” is the generation of electricity, possible reasonable and feasible land-use alternatives for the proposed properties include Biomass, Hydro Energy and Wind Energy. However, based on the preliminary investigations undertaken by the Project Applicant, no other renewable energy technologies are deemed to be appropriate or suitable for the site. Furthermore, from an impact and risk assessment perspective, the implementation of a solar PV project on the remaining extent of Onder Rugzeer Farm 168 will result in fewer risks and low significance impacts in comparison to the implementation of wind energy, hydro power and biomass.

As previously noted, the proposed solar facility currently falls within the REDZ 7. The proposed project is therefore in line with the criteria of the SEA and located in an area of strategic importance for Solar PV development. It should be noted that even if a project falls within a REDZ, the proposed development still requires site specific assessments as per the site protocol (still in development and not yet promulgated) in order to determine the potential impacts of a project at a local and site specific level.

Therefore, the implementation of a solar energy facility at the proposed project site is more favourable and feasible than other alternative energy facilities (i.e. for generating 20 MW or more from a renewable resource). Therefore in terms of project and location compatibility, the proposed solar facility is considered to be the most feasible renewable energy land use alternative. Furthermore, it is important to note that solar energy development (i.e. not wind energy, hydro power and biomass) is the Project Applicant’s core business area and focus. The experience that the Project Applicant has within the solar energy development industry will positively benefit the proposed project.

16.4.3 Site and Location Alternatives

As discussed in Chapter 5 of this EIA Report, an alternative site was considered during the Scoping Phase, however only the preferred site for the Kenhardt PV 3 facility has been assessed in this EIA. From an impact and risk assessment perspective, the implementation of a solar PV project on the remaining extent of Onder Rugzeer Farm 168 will result in fewer risks in comparison to its implementation at the alternate sites (that were considered during the Scoping Phase) within the Northern Cape (i.e. regions with similar irradiation levels). The following risks and impacts will be likely in this case:

- There is no guarantee that suitable land will be available for development of a solar PV facility. Site geotechnical conditions, topography, fire potential and ready access to a site might not be suitable, thus resulting in negative environmental implications and reduced financial viability.
- There is no guarantee that the current land use of alternative sites (that were considered during the Scoping Phase) will be flexible in terms of development potential, for example the agricultural potential for alternative sites might be higher and of greater significance.
- There is no guarantee of the willingness of other landowners to allow the implementation of a solar facility on their land and if the landowners strongly object, then the project will not be feasible.
- There is no guarantee that other sites within the Northern Cape will be located close to existing or proposed electrical infrastructure to enable connection to the national grid. The further away a project is from the grid, the higher the potential for significant environmental and economic impacts.

As previously noted, the proposed Kenhardt PV 3 facility is one part of a bigger project by Scatec Solar to develop three Solar PV Facilities in total. The main determining points for Scatec Solar was to find suitable, developable land in one contiguous block to optimise design, minimise costs, and

minimise sprawling development and impact footprints. In addition, the proximity to the Eskom Nieuwehoop Substation was a major determinant for identifying suitable sites for the proposed development.

Given the site selection requirements associated with solar energy facilities and the suitability of the land available on the remaining extent of Onder Rugzeer Farm 168, no other site alternatives were considered in the EIA Phase.

16.4.4 Layout Alternatives

Refer to Section 16.5 of this chapter which describes the Development Envelope approach which was used to select the location for the proposed PV facility.

16.4.5 Technology Alternatives

As discussed in Chapter 2 and Chapter 5 of the EIA Report, only the PV solar panel technology type has been considered in the EIA Phase.

In addition, four main mounting systems have been included in the proposed project description namely: single axis tracking systems; fixed axis tracking systems; dual axis tracking systems; and fixed tilt mounting structures. The type of mounting system will be confirmed during the detailed engineering phase and whichever mounting system is selected would have no impact on any aspect assessed within the EIA.

16.5 DEVELOPMENT ENVELOPE AND LAYOUT OF THE PROPOSED KENHARDT PV 3 FACILITY

As noted in Chapter 5 of this EIA Report, the Rochdale Envelope Approach¹ was applied to determine the preferred Development Envelope for the proposed PV facility. This entailed assessing a larger 450 ha area as part of the EIA. This 450 ha is shown in green in Figure 16.1 below.

¹ Infrastructure Planning Commission (IPC), Using the 'Rochdale Envelope'. February 2011

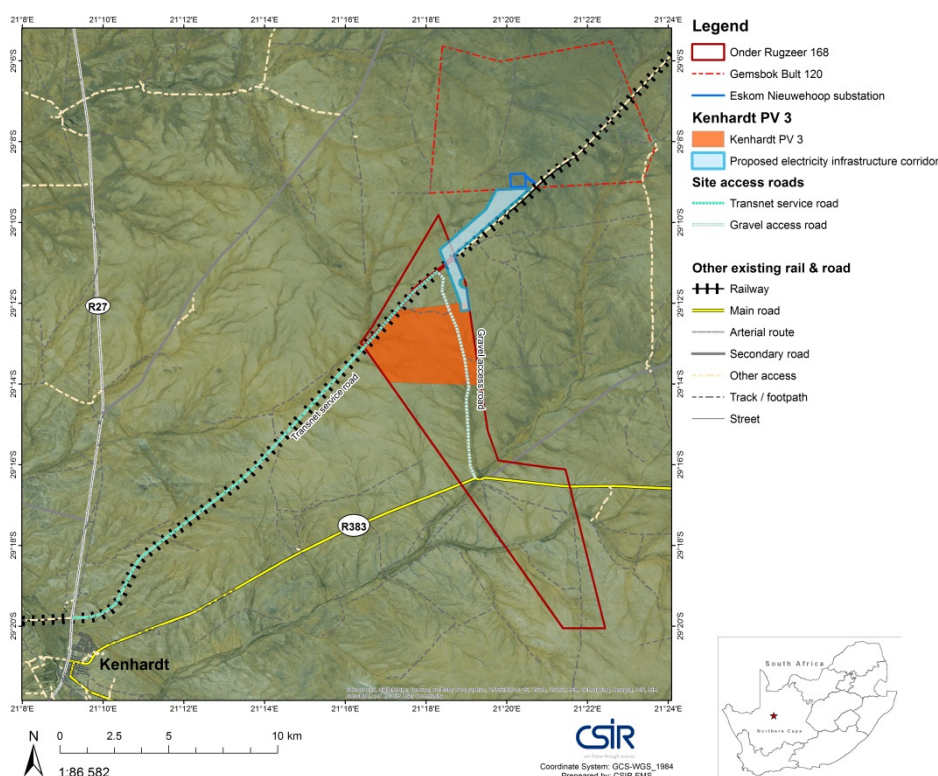


Figure 16.1: Map indicating the approximately 1341 ha site assessed for the Kenhardt PV 3 facility (and the Electrical Infrastructure Corridor (which is assessed as part of separate BA Processes)).

The Development Envelope was determined based on the environmental sensitivities present on the site, as identified by the specialists. The following sensitive areas were identified by the specialists for consideration in the Development Envelope and site layout:

▪ **Ecological Sensitivities:**

- The zones that should be subject to exclusion from development within the study area include:
 - The major drainage features present towards the west and south of the Kenhardt PV 3 site. In terms of aquatic ecology and drainage features, the Wolfkopseloop drainage feature and its associated drainage lines, lying to the north and west of the Kenhardt PV 3 site, is considered a major hydrogeomorphic feature (as shown in blue in Figure 16.2 below). Three major drainage features serve the Wolfkopseloop drainage line (as shown in blue in Figure 16.2 below). The Rugseers River also occurs towards the south of the site (as shown in blue in Figure 16.2 below). A 32 m “buffer” or “setback” around the major drainage lines has been established and recommended by the specialist (as shown in Figure 16.2 below). As noted in the Ecological Impact Assessment, this buffer is understood to be the indicative norm recommended by the various authorities and is considered acceptable in light of the fact that hydrogeomorphic features are the primary dictate in the identification and delineation of the major drainage lines, rather than other functional features such as geohydromorphic soil conditions or botanical species diversity and compositional variation. The “minor” drainage features (shown in black in Figure 16.2 below) are not considered to require exclusion (as explained in the Ecological Impact Assessment included in Chapter 7 of the EIA Report).
 - The two identified quartzite kopjies towards the west of the Kenhardt PV 3 site, which are the most elevated portions of the site and show some habitat variation, comparative to the calcrete dominated flat lands that predominate on the site. These

quartzite kopjies are distinct topographic anomalies within the site and, in line with their geological divergence; they offer some variability to the prevailing habitat form. The kopjies are considered to be worthy of exclusion from the development footprint on account of the variation in habitat that these geological formations bestow upon a generally uniform landscape. A 250 m buffer from the highest point of these quartzite kopjies has been recommended, as indicated in Figure 16.2.

- An association which includes *Aloe claviflora* and *A dichotoma* is associated with those areas proximal to the two quartzite kopjies. As such the aloes found on and around the two quartzite kopjies in the Kenhardt PV 3 area (as shown in Figure 16.2 below), will be excluded from the development footprint, as the kopjies themselves require exclusion on the grounds of habitat preservation. It will be best practice for the laydown area to be located to the east of these quartzite areas and that the kopjies remain outside of the proposed PV facility.

▪ **Heritage Sensitivities:**

- A flaked quartz outcrop with a few artefacts around it towards the west of the Kenhardt PV 3 site. This is part of a larger quartz hill/ridge. The HIA notes that on the crest of this quartz ridge there is a natural hollow of about 2.5 m by 1.5 m. Within this space is a pile of quartz blocks and in the hollow there are artefacts and many quartz flakes. To the northeast, just below the quartz outcrop, a semi-circular 'clearing' was found amongst the quartz rocks and gravel, however artefacts were not current. The hollow occurs within the Kenhardt PV 3 study area at waypoint 224, as explained in Chapter 9 of this EIA Report, at co-ordinates S 29° 13 11.5 and E 21° 17 23.5. This should be avoided with a buffer of at least 25 m (which has been included in Figure 16.2 below). If it cannot be avoided, archaeological excavations in the hollow need to be conducted to rescue artefacts and data. If necessary, conduct a test excavation and expand in the 'clearing' and map the whole site.
- A large scatter of quartz artefacts was found in a sandy area along a river within the Kenhardt PV 3 study area at waypoint 229, as explained in Chapter 9 of this EIA Report, at co-ordinates S 29° 13 36.5 and E 21° 17 33.5. Nothing diagnostic seen but presumably it is LSA. This feature should be avoided with a buffer of at least 25 m. If it cannot be avoided with this 25 m buffer (which has been included in Figure 16.2 below), this archaeological site should be excavated to rescue artefacts and data.
- A likely grave was found to be located within the Kenhardt PV 3 study area at waypoint 739, as explained in Chapter 9 of this EIA Report, at co-ordinates S 29° 13 15.9 and E 21° 16 44.5. The likely grave should be avoided with a buffer of at least 5 m (which has been included in Figure 16.2 below). If the grave cannot be avoided then a test excavation must be conducted to verify the presence of human remains. If it is determined to be a grave, then a decision needs to be made to avoid or exhume prior to construction in line with required process. As noted in the HIA, the likely grave is two loose 'mounds' of quartz in a sandy area but close to a quartz gravel patch.

As noted in Chapters 8, 10, 11, 12 and 13 of this EIA Report, no other sensitive areas or sensitive receptors, that require exclusion, were highlighted in the Visual Impact Assessment, Palaeontological Impact Assessment, Geohydrological Assessment, Soils and Agricultural Potential Assessment and Social Impact Assessment.

Based on the findings of the Ecological and Heritage Impact Assessments, an environmental sensitivity map has been produced, which is shown in Figure 16.2 below (and included Appendix J of this EIA Report). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the larger 1341 ha buildable area that was assessed.

Based on the boundaries of the Development Envelope and the constraints of the environmental sensitivities, a site layout has also been preliminary determined which is shown in Figure 16.3 (and Appendix J of this EIA Report). It is important to note that should the layout change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout or revisions to the layout occurring within the boundaries of the Development Envelope would not be regarded as

a change to the scope of work or the findings of the impact assessments undertaken during the EIA Phase. This is based on the understanding that the specialists have assessed the larger area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The Development Envelope is considered to be a “box” in which the project components can be constructed at whichever location without requiring an additional assessment or change in impact significance. Any changes to the layout within the boundaries of the Development Envelope following the issuing of the EA (should it be granted) will therefore be considered to be non-substantive.

Therefore, the findings of the specialist studies have been used to inform the layout of the proposed facility within the preferred site, Kenhardt PV 3.

It is important to note that the sensitive features highlighted above (i.e. Aloes, two quartzite kopjies, major drainage lines, two archaeological sites and possible grave site) have been excluded from the proposed development footprint with the required buffers as the features are located towards the western edge of the Development Envelope (i.e. 1341 ha site), as indicated in Figures 16.2 and 16.3

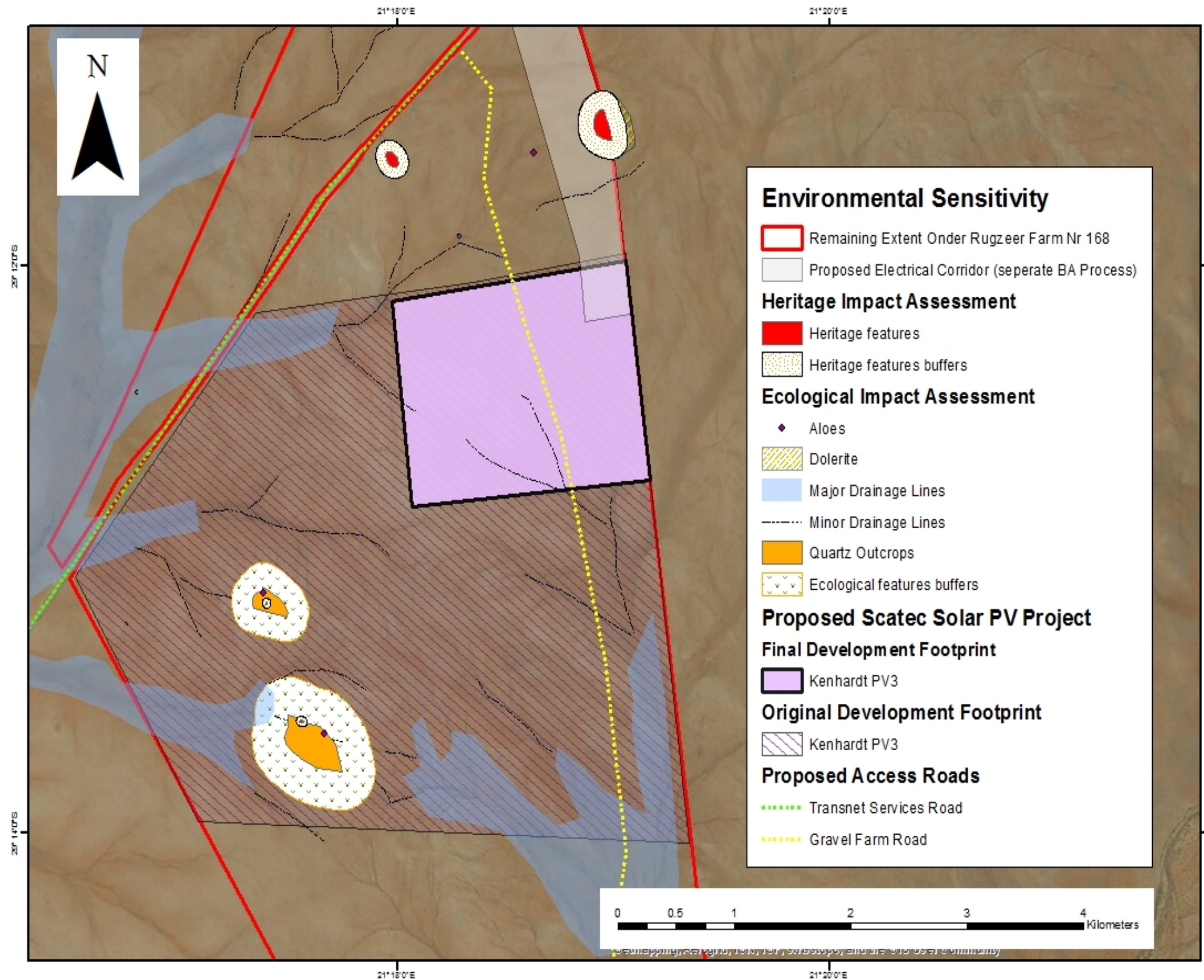


Figure 16.2: Environmental Sensitivity Map for the Proposed Kenhardt PV 3 Facility

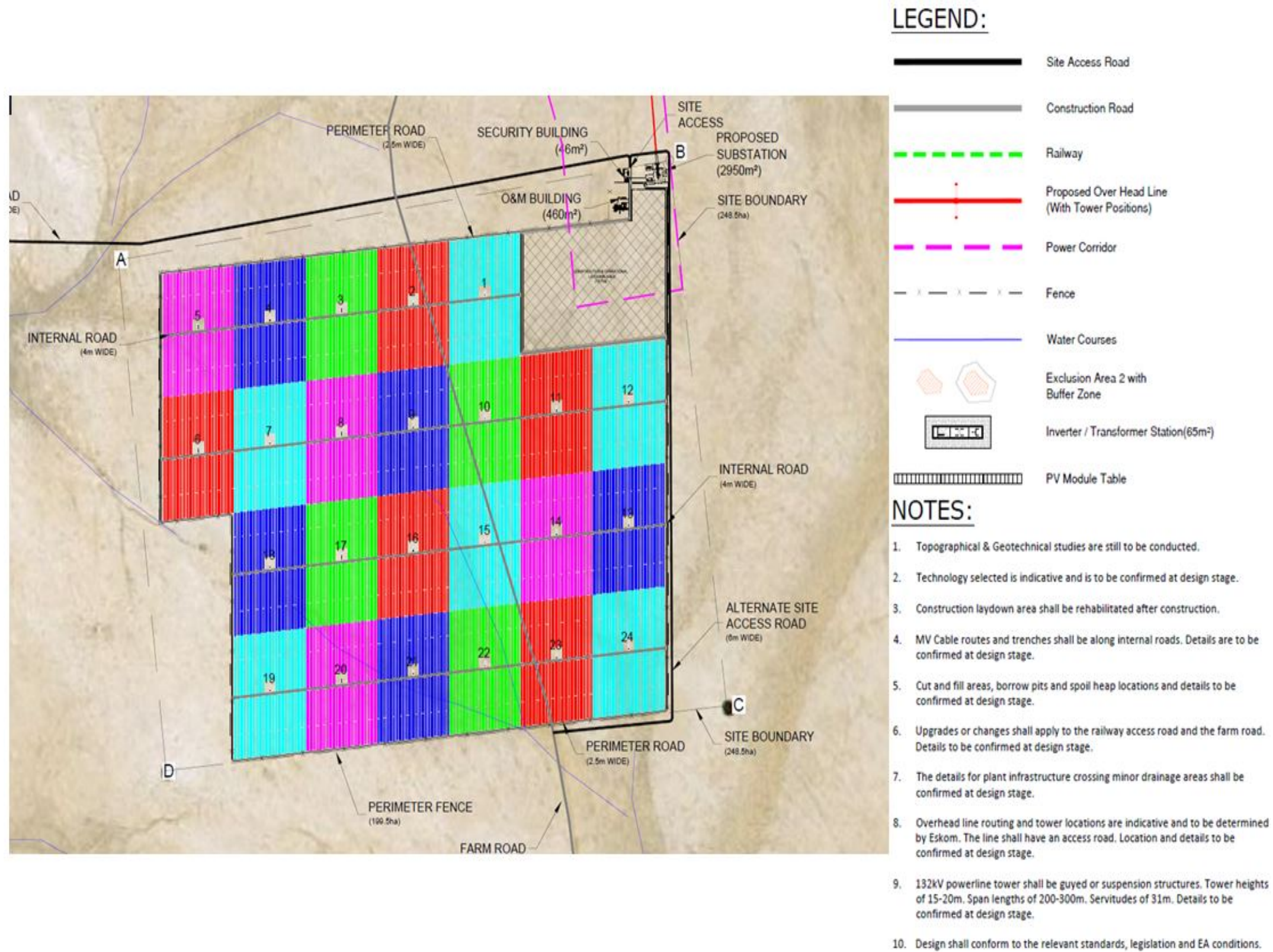


Figure 16.3: Preliminary Site Layout Plan

16.6 PERMITS AND LICENSES REQUIRED

16.6.1 NEMA and 2014 NEMA EIA Regulations

Before clearing of the proposed site is initiated, an EA must be granted by the DEA in terms of the NEMA and associated 2014 NEMA EIA Regulations. This report has been compiled to provide the DEA with the information required in order to make an informed decision on whether to grant or reject EA.

16.6.2 Permit in terms of the National Water Act (Act 36 of 1998)

The National Water Act (Act 36 of 1998) controls activities in and around water resources, as well as the general management of water resources, including abstraction of groundwater and disposal of water. As noted in Chapter 4 of this EIA Report, Section 21 of the Act lists the following water uses that need to be licensed:

- a) taking water from a water resource;
- b) storing water;
- c) impeding or diverting the flow of water in a watercourse;
- d) engaging in a stream flow reduction activity contemplated in section 36;
- e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- g) disposing of waste in a manner which may detrimentally impact on a water resource;
- h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) altering the bed, banks, course or characteristics of a watercourse;
- j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) using water for recreational purposes.

The Ecological Impact Assessment states that authorisation for changes in land use up to 500 m from a defined water resource/wetland system will require an application for a Water Use Licence from the DWS. A Water Use Licence will be required in respect of the proposed development under Section 21 (c) and (i) of the Act, however such licence should not preclude this development. The DWS will be consulted with during the EIA Process to confirm the need for a WUL, as well as to seek comment on the proposed project.

16.6.3 Permit in terms of the National Forest Act (Act 84 of 1998)

The Ecological Impact Assessment notes that the National Forest Act (Act 84 of 1998) governs the removal, disturbance, cutting or damage and destruction of identified “protected trees”. Listed species that may be encountered with the site include *Boscia* spp and possibly *Acacia erioloba*. The assessment also notes that it is unlikely that an application for the “clearing of a natural forest”, as defined within the Act, will be required on the site.

The absence or presence of these species will be confirmed as part of the plant rescue and protection plan and should any species be present and determined that they will be impacted on, permits will be obtained from DAFF.

16.6.4 Permit in terms of the Northern Cape Nature Conservation Act (Act 9 of 2009)

The Ecological Impact Assessment notes that the Northern Cape Conservation Act (Act 9 of 2009) under its pertinent regulation governs the disturbance of species, or possibly other species not yet identified on site. A permit from the Provincial Department of Environment and Nature Conservation (DENC) will be required in order to disturb or translocate such species. The absence or presence of these species will be confirmed as part of the plant rescue and protection plan and should any species be present and determined that they will be impacted on, permits will be obtained from DENC.

16.6.5 Permit in terms of the National Heritage Resources Act (Act 25 of 1999) (NHRA)

Neither the Heritage Impact Assessment nor the Palaeontological Impact Assessment indicated that permits would be required at this stage.

As noted in the Heritage Impact Assessment (Chapter 9 of the EIA Report), the NHRA does not require the developer to obtain permits prior to construction. However, any archaeological mitigation work (i.e. test excavations, sampling etc.) that may be required (in the event of archaeological resources or graves of significance being found within the development footprint during construction) would need to be conducted under a permit issued to, and in the name of, the appointed archaeologist. The permit application process allows the heritage authorities to ensure that a suitably qualified and experienced archaeologist undertakes the work and that the proposed excavation/sampling methodology is acceptable. It should be noted that at this stage, a permit is not required as the grave identified within the larger 450 ha surveyed area is excluded from the development footprint and proposed layout.

In terms of palaeontology (as noted in the Palaeontological Impact Assessment (Chapter 10 of the EIA Report)), where palaeontological mitigation is required in the event of any fossil material found on site during construction, the palaeontologist concerned with mitigation work would need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection). All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies recently developed by SAHRA (2013).

16.6.6 Astronomy Geographic Advantage (Act 21 of 2007)

As mentioned previously EMI and RFI studies have been undertaken and commissioned by the Project Applicant to determine appropriate mitigation and management measures to reduce the risk of a detrimental impact on the SKA project. This technical report, compiled by MESA Solutions (PTY) Ltd, is included in Appendix K of this EIA Report, with a summary provided in Chapter 15. The SKA Project Office will review this report during the 30 day review period and will provide any recommendations. The mitigation of all risk associated with RFI on the SKA must be confirmed by measurement following construction to the satisfaction of the SKA Office. Should the risk of radio interference still exist, based on measurements, further mitigation methods must be implemented to remove outstanding risk of radio frequency interference. Scatec has confirmed that this will be undertaken, should this project receive preferred bidder status.

16.7 OVERALL EVALUATION OF IMPACTS BY THE EAP

Based on the findings of the specialist studies, which all recommend that the proposed project can proceed and should be authorised by the DEA, the proposed project is considered to have an overall low negative environmental impact and an overall moderate positive socio-economic impact (with the implementation of respective mitigation and enhancement measures).

The proposed project will take place within the Development Envelope, as discussed in Section 16.5 of this chapter. The location of the approximately 250 ha PV facility within the assessed Development Envelope, as shown in Figure 16.3, will avoid the sensitive ecological and heritage features identified by the respective specialists.

In accordance with the Guideline on Need and Desirability (GN 891 of 2014), this EIA considered the nature, scale and location of the development as well as the wise use of land (i.e. is this the right time and place for the development of this proposed project). When considering the timing of this project, the IRP2010 proposes to secure 17 800 MW of renewable energy capacity by 2030. As noted in the preceding chapters of this EIA Report, in August 2011, the DOE launched the REIPPPP and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of various renewable energy project (including solar and wind) and it is the Project Applicant's intention to bid this project (along with Kenhardt PV 1 and PV 2) in the Round 5 bidding process.

On a provincial level, the Northern Cape Province is currently facing considerable constraints in the availability and stability of electricity supply. This is a consequence of South Africa's electricity generation and supply system being overstretched, and the reliance of the Northern Cape, as many other South African provinces, on the import of power to service its energy needs. The development of solar energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability. On a municipal planning level, the proposed project does not go against any of the objectives set within the !Kheis Municipality draft IDP 2012-2017. The proposed project will be in line with and will be supportive of the IDP's objective of creating more job opportunities. The proposed solar energy facility will assist in local job creation during the construction and operation phases of the project (if approved by the DEA). It should however be noted that employment during construction phase will be temporary. During the operational phase of the project (estimated to be more 20 years), long-term employment opportunities will be created.

The locality of the proposed project will fall within an area that has already been transformed due to the presence of the Sishen-Saldanha ore line, the Eskom Nieuwehoop Substation and Eskom transmission lines that will be constructed within this area. The locality of this project would not have a significant ("high") impact on any sensitive viewers (as determined in the Visual Impact Assessment included in Chapter 8 of this EIA Report), will not significantly negatively impact on any environmental features (as discussed above), and will have a very low significance negative impact on the current agricultural land use of the site.

Section 24 of the Constitutional Act states that "everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development". Based on this, this EIA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site (as shown in Figures 16.2 and 16.3) and through appropriate monitoring and management plans included in the EMPr (Part B of the EIA Report).

The outcomes of this project therefore succeeds in meeting the environmental management objectives of protecting the ecologically sensitive areas and supporting sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the project site. The findings of this EIA show that all natural resources will be used in a sustainable manner (i.e. this project is a renewable energy project and the majority of the negative site specific and cumulative environmental impacts are considered to be of low significance with mitigation measures implemented), while the benefits from the project will promote justifiable economic and social development.

In order to ensure the effective implementation of the mitigation and management actions, an EMPr has been compiled and is included in Part B of this EIA Report. The mitigation measures necessary to ensure that the project is planned, constructed, operated and decommissioned in an environmentally responsible manner are listed in this EMPr. The EMPr is a dynamic document that should be updated regularly and provide clear and implementable measures for the establishment and operation of the proposed Solar PV facility.

Taking into consideration the findings of the EIA Process and given the national and provincial strategic requirements for infrastructure development, it is the opinion of the EAP that the project benefits outweigh the costs and that the project will make a positive contribution to steering South Africa on a pathway towards sustainable infrastructure development. Provided that the specified mitigation measures are applied effectively, it is recommended that the project receive EA in terms of the 2014 EIA Regulations promulgated under the NEMA.