BASIC ASSESSMENT REPORT

Appendix D.9:
Electromagnetic Interference Technical Report (Cumulative Topographical Analysis of Proposed PV Projects in AGA Area)

THE SCIENCE OF MEASUREMENT

Technical Report:

Cumulative Topographical Analysis of Proposed PV Projects in AGA Area

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Work done for: Scatec Solar SA 163 (Pty) Ltd.

Scatec Solar
Improving our future™

A. J. Otto and P. S. van der Merwe

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Document Approval

	Name	Affiliation	Designation	Signature
Submitted	A. J. Otto	MESA Solutions	Managing Director	
	P. S. van der Merwe	MESA Solutions	Managing Director	

Accepted	C. Bosman	Veroniva	Project Manager	CBosman

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Company Details

Name	MESA Solutions (Pty) Ltd.
Physical Address	Aan-de-wagen Centre Aan-de-wagen Rd. Stellenbosch 7600
Tel.	+27(0)72 317 9784 / +27(0)82 494 6204
Website	http://www.mesasolutions.co.za/

Executive Summary

MESA Solutions was asked by *Scatec Solar* to do a topographical analysis of the terrain profiles between various p hotovoltaic (PV) project locations in the Astronomy Geographic Advantage (AGA) area and the closest and core-site SKA telescopes. A total of three *Scatec Solar* sites (*Kenhardt PV1 to PV3*), as well as ten *Mulilo* sites (*Boven PV1 to PV4; Gemsbok PV1 to PV6*) in close proximity, are considered in this cumulative assessment.

EMI Characterisation of Representative Plant

Conducted Measurements

- TD conducted measurements on supply cables to the *Tracking Units* show large pulses when the plant is *ON*.
- Majority of the pulse energy extends up to at least 500 MHz.
- Equivalent FD measurements on the wireless antenna and pressure switch cables agree.
- Comparison with radiated results show higher frequencies radiate into the environment more efficiently.
- Better part of noise is likely to emanate from the inverter.
- *Tracking Unit* emissions are somewhat aggravated by the wireless communication.
- Switching noise associated with the tracking of the panels creates broadband interference.
- Biggest part of switching interference is generated by the pump contactor and relays.

Radiated Measurements

- Radiated results for the plant *ON* and in *STANDBY* mode show similar emissions levels.
- This confirms that interference producing systems are never completely *OFF*.
- Emissions associated with the *Inverter* units are dominant and occupy frequencies between 300 MHz and 2 GHz
- Peak levels identified range between 30 - 35 dBμV/m as measured at 10 m below 1 GHz and at 3 m above 1 GHz for both polarisations.
- For purposes of RFI mitigation, the fixed line communication would be the preferred implementation.
- The *String Cabinet* shows mostly broadband interference between 300 MHz and 800 MHz for both polarisations.
- Comparative measurements made with the doors to the *Inverters* and *Tracking Units* open show the limited levels of shielding provided by these enclosures.
- It is possible to improve the shielding by incorporating conductive gasketting.

Propagation Analysis

A preferred and alternative site location was included for the Mulilo developments in terms of the total path loss to the SKA receivers. This study attempts to define an E-field upper limit, as a function of frequency, at which the plants are allowed to radiate without exceeding emission limits (SARAS protection and receiver saturation limits) at the various SKA telescope locations. The conformance of the plant can be determined by comparing representative measured results, made at Scatec Solar's 75 MW Dreunberg plant, to the calculated levels provided.

From the results it is shown that:

- Radiated emissions at levels below that of CISPR 11/22 Class B are required (especially in the case of the closest telescope).
- Negligible terrain loss exists between majority of sites and closest SKA telescope.
- Predictions for the maximum allowed E-field level, as measured according to CISPR 11/22 Class B, are given in Figs. (a) to (c) below. A comparison with measured emission levels for each plant is shown.
- Based on plant emission and maximum allowed levels, the required (red) mitigation or surplus (green) attenuation for the closest, second closest and core-site telescopes are given in Tables 1 2 and 3 respectively.

The three proposed Kenhardt plants are shown in Table 1 to exceed the SARAS protection levels by up to 38 dB toward the closest SKA telescope. This includes the cumulative effect of a total of $N = 13$ PV plants developed. However, Boven PV1, PV3 and PV4 exceed this limit by approximately 50 dB in this scenario.

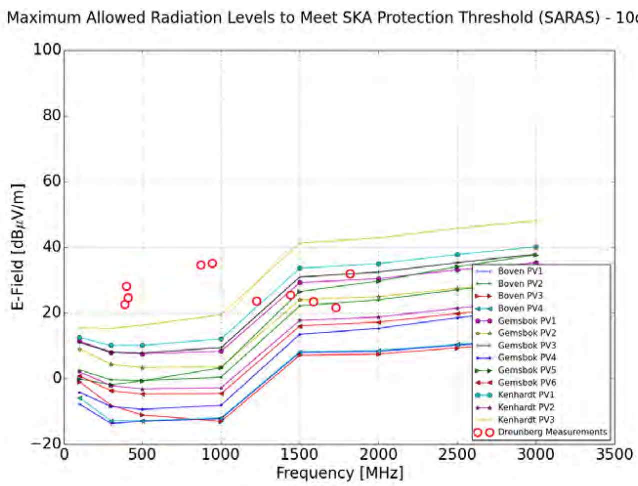
For the case where only the three Kenhardt plants are developed, the exceedance will reduce to 31.6 dB with a cumulative effect for $N = 3$ plants considered.

Mitigation Measures

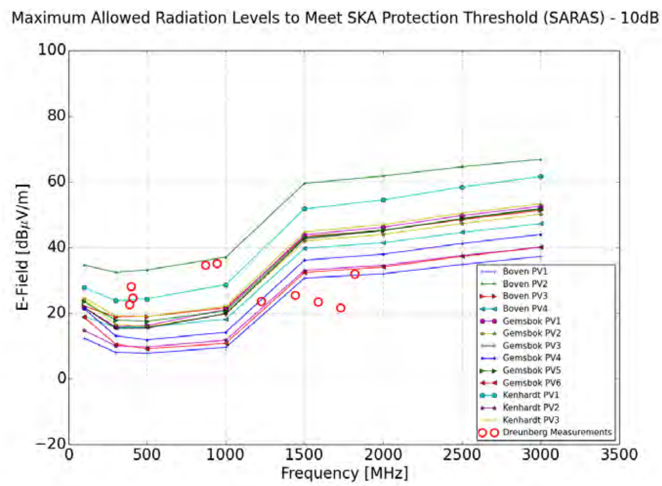
It is strongly recommended that the following **mitigation practises** be incorporated into the plants design:

- 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.
  - 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.

It is MESA's expectations that, if the mitigation measures that are specified are implemented correctly, attenuation of between 20 dB and 40 dB can be achieved. The required maximum mitigation 50 dB for some plant especially towards the closest telescope would require significant attention to detail. *It is important to note that the success of the mitigation measures cannot be guaranteed or confirmed until measurements on a representative mock-up installation with mitigation measures implemented are performed. Furthermore, the findings from this assessment are for the client's own edification, and will be taken into account by SKA-SA during their own propagation analysis. This study is therefore not meant to supersede any investigation done by SKA-SA or relevant RFI working groups. It remains the responsibility of the developer to meet compliance to the SKA requirements, and MESA Solutions cannot accept responsibility for any assessments made in this report which could cause non-compliance.*



(a)



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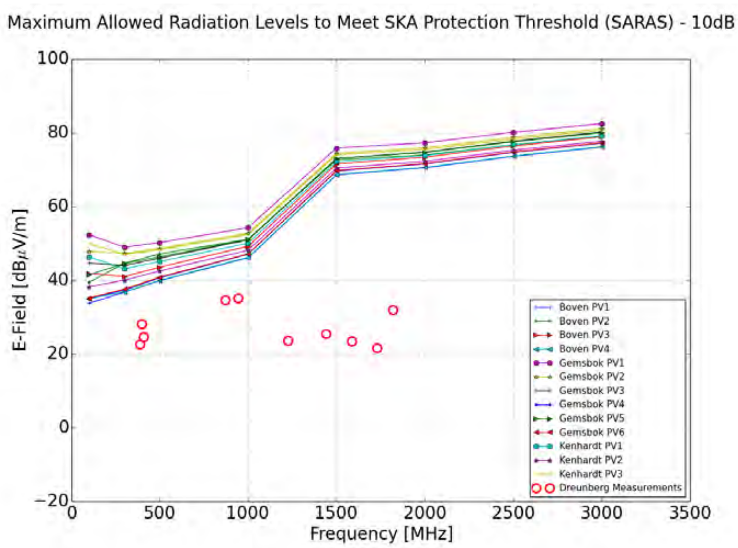

(c)

Maximum allowed measured E-Field (CISPR 22 Class B) to ensure levels are 10 dB below SARAS protection levels toward: (a) Closest SKA telescope; (b) Second closest SKA telescope; and (c) SKA core-site telescopes compared to measured results at 75 MW Scatec Dreunberg PV plant.

Site Location	387.38 MHz	399.19 MHz	409.52 MHz	871.57 MHz	942.42 MHz	1223.81 MHz	1441.27 MHz	1584.12 MHz	1728.57 MHz	1819.05 MHz
Kenhardt PV1	12.55	18.03	14.58	23.06	23.28	1.96	-5.57	-10.4	-12.54	-2.51
Kenhardt PV2	25.23	30.77	27.38	37.53	37.99	17.28	10.17	5.52	3.5	13.6
Kenhardt PV3	6.94	12.37	8.87	15.98	16.03	-5.57	-13.22	-18.11	-20.3	-10.3
Boven PV1	36.02	41.47	37.99	47.05	47.43	26.85	19.92	15.43	13.61	23.82
Boven PV2	23.16	28.66	25.23	34.35	34.79	13.48	5.88	0.97	-1.29	8.67
Boven PV3	32.07	37.73	34.44	47.17	47.95	27.69	20.76	16.27	14.45	24.66
Boven PV4	35.48	40.95	37.5	46.79	47.17	26.59	19.66	15.17	13.35	23.56
Gemsbok PV1	14.85	20.36	16.94	26.52	26.91	5.98	-1.29	-6.01	-8.08	1.99
Gemsbok PV2	18.72	24.26	20.87	31.2	31.68	11.01	3.92	-0.72	-2.73	7.38
Gemsbok PV3	14.75	20.25	16.81	25.63	25.9	4.6	-2.93	-7.77	-9.92	0.09
Gemsbok PV4	31.52	37.06	33.66	43.06	43.38	22.1	14.54	9.64	7.38	17.34
Gemsbok PV5	24.01	29.42	25.92	32.36	32.29	9.96	1.69	-3.63	-6.27	3.43
Gemsbok PV6	26.8	32.34	28.94	39.25	39.73	19.02	11.88	7.2	5.14	15.21

Table 1: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the closest SKA telescope.

Site Location	387.38 MHz	399.19 MHz	409.52 MHz	871.57 MHz	942.42 MHz	1223.81 MHz	1441.27 MHz	1584.12 MHz	1728.57 MHz	1819.05 MHz
Kenhardt PV1	-1.38	4.07	0.59	7.05	6.94	-15.35	-23.55	-28.78	-31.31	-21.52
Kenhardt PV2	12.74	18.24	14.81	23.39	23.6	2.36	-5.07	-9.89	-12.05	-2.03
Kenhardt PV3	3.57	9.07	5.63	13.31	13.36	-8.6	-16.59	-21.69	-24.06	-14.19
Boven PV1	14.73	20.23	16.8	25.52	25.77	4.64	-2.72	-7.48	-9.58	0.46
Boven PV2	3.73	9.21	5.76	13.68	13.81	-7.7	-15.32	-20.25	-22.51	-12.57
Boven PV3	3.73	9.21	5.76	13.68	13.81	-7.7	-15.32	-20.25	-22.51	-12.57
Boven PV4	6.95	12.43	8.98	17.08	17.24	-4.17	-11.73	-16.61	-18.82	-8.84
Gemsbok PV1	6.64	12.1	8.64	14.75	14.56	-7.66	-15.72	-20.84	-23.23	-13.37
Gemsbok PV2	6.39	11.91	8.49	15.91	15.87	-6.01	-13.88	-18.9	-21.21	-11.29
Gemsbok PV3	7.22	12.7	9.25	15.89	15.77	-6.42	-14.51	-19.67	-22.11	-12.27
Gemsbok PV4	10.1	15.65	12.27	21.01	21.18	-0.36	-8.05	-13.0	-15.27	-5.33
Gemsbok PV5	4.92	10.42	6.99	14.78	14.84	-7.04	-14.98	-20.04	-22.4	-12.51
Gemsbok PV6	12.72	18.28	14.91	24.24	24.5	3.19	-4.35	-9.23	-11.45	-1.48

Table 2: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the second closest SKA telescope.

Site Location	387.38 MHz	399.19 MHz	409.52 MHz	871.57 MHz	942.42 MHz	1223.81 MHz	1441.27 MHz	1584.12 MHz	1728.57 MHz	1819.05 MHz
Kenhardt PV1	-21.33	-15.96	-19.51	-14.15	-14.35	-36.27	-44.03	-48.97	-51.19	-41.21
Kenhardt PV2	-18.46	-13.12	-16.7	-12.06	-12.35	-34.46	-42.33	-47.32	-49.57	-39.61
Kenhardt PV3	-24.93	-19.53	-23.04	-16.73	-16.81	-38.43	-46.01	-50.85	-52.99	-42.97
Boven PV1	-15.48	-10.18	-13.79	-9.87	-10.25	-32.51	-40.46	-45.49	-47.77	-37.84
Boven PV2	-19.45	-14.12	-17.69	-13.13	-13.44	-35.56	-43.45	-48.44	-50.7	-40.74
Boven PV3	-19.45	-14.12	-17.69	-13.13	-13.44	-35.56	-43.45	-48.44	-50.7	-40.74
Boven PV4	-15.58	-10.28	-13.89	-10.0	-10.38	-32.64	-40.59	-45.62	-47.89	-37.95
Gemsbok PV1	-26.86	-21.45	-24.96	-18.6	-18.67	-40.28	-47.85	-52.69	-54.83	-44.81
Gemsbok PV2	-25.18	-19.78	-23.3	-17.06	-17.15	-38.81	-46.41	-51.27	-53.42	-43.41
Gemsbok PV3	-22.2	-16.84	-20.39	-15.06	-15.27	-37.2	-44.97	-49.91	-52.13	-42.16
Gemsbok PV4	-16.1	-10.82	-14.44	-10.79	-11.19	-33.51	-41.49	-46.53	-48.82	-38.89
Gemsbok PV5	-22.7	-17.32	-20.87	-15.26	-15.43	-37.26	-44.97	-49.88	-52.07	-42.09
Gemsbok PV6	-16.36	-11.07	-14.68	-10.91	-11.31	-33.62	-41.61	-46.65	-48.94	-39.0

Table 3: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the core-site SKA telescopes.

Contents

Nomenclature

AC	Alternating Current
AF	Antenna Factor
AGA	Astronomy Geographic Advantage
BW	Bandwidth
CISPR	Comitè International Spècial des Pertubations Radioèlectriques (French)
CISPR	International Committee on Radio Interference (English)
CM	Common Mode
CP	Current Probe
dB	Decibel
dBμA	Decibel Micro-Ampère
dBμV	Decibel Micro-Volt
dBμV/m	Decibel Micro-Volt per Metre
DC	Direct Current
DEM	Digital Elevation Model
DUT	Device Under Test
E-Field	Electric Field
EMI	Electromagnetic Interference
FD	Frequency Domain
FFT	Fast Fourier Transform
FSPL	Free Space Path Loss
GPS	Global Positioning System
ITM	Irregular Terrain Model
ITWOM	Irregular Terrain With Obstruction Model
KAT	Karoo Array Telescope
kV	Kilovolt
LOS	Line-of-Sight
mV	Millivolt
MW	Megawatt
NF	Noise Floor
PV	Photovoltaic
RBW	Resolution Bandwidth

RFI	Radio Frequency Interference
RFI-WG	Radio Frequency Interference Working Group
RTA	Real Time Analyser
SA	Spectrum Analyser
SARAS	South African Radio Astronomy Services
SKA	Square Kilometre Array
SKA-SA	Square Kilometre Array South Africa
SPLAT	Signal Propagation, Loss And Terrain - Analysis Tool
TD	Time Domain
TL	Terrain Loss
TPL	Total Path Loss
Z_T	Transfer Impedance

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1 Introduction

MESA Solutions was asked to investigate the cumulative effect and possible impact of a number of photovoltaic (PV) plants on the Square Kilometre Array (SKA) project. It is proposed that development of these plants take place in the Astronomy Geographic Advantage (AGA) area described in [1]. The proposed sites include three developments by *Scatec Solar*, as well as ten developments by *Mulilo Renewable Project Developments* in close proximity. From the terrain evaluation we are able to determine what influences, if any, natural topographical features will have on the total expected interference attenuation based on the location of the site. This determines the maximum allowable emission levels which the facility may generate in order to still comply with SKA threshold limits as specified in [2]. An initial study investigating the effect of three of the ten sites, namely *Boven PV1*, *Gemsbok PV1* and *Gemsbok PV2*, on the closest and core SKA telescopes were undertaken in [3].

The following additional sites considered in this cumulative study include:

Scatec Solar

- Kenhardt PV1
- Kenhardt PV2
- Kenhardt PV3

Mulilo Renewable Project Developments

- Boven PV2
- Boven PV3
- Boven PV4
- Gemsbok PV3
- Gemsbok PV4
- Gemsbok PV5
- Gemsbok PV6

For each of the additional Mulilo sites, a preferred and an alternative site location is considered in terms of the total path loss to the closest and core SKA telescopes. The purpose is to identify the recommended site location based on minimum potential impact.

The aim of this investigation is to define emission limits at relevant discrete frequencies to which *in situ* measurements, conducted once the project is built, have to adhere. Compliance to these limits, given the propagation analysis presented, will ensure that emissions will not exceed the SARAS protection or receiver saturation threshold levels. The report is not a prediction of what interference levels will be at each of the telescopes, but rather stipulates a requirement for the developer to ensure conformance. Assuming the same technology, the conformance of the plant can be determined by comparing representative measured results, from the 75 MW Scatec Dreunberg PV plant in Section 2, to the calculated levels provided in Section 6.

In the case where there are more than one PV plant (source of interference) emitting at a specific frequency, it is important that the cumulative effect be considered by taking into account:

$$P_{\text{Cumulative}} = 10\log_{10}(N) \tag{1}$$

where N=13 is the number of PV plants considered in this investigation. This could results in an accumulative effect of up to $P_{\text{Cumulative}}$=11.1 dB for power transmitted at a specific frequency.

It is important to note that the findings from this assessment are for the client's own edification, and will be taken into account by SKA-SA during their own propagation analysis. This study is therefore not meant to supersede any investigation done by SKA-SA or relevant RFI working groups. It remains the responsibility of the developer to meet compliance to the SKA requirements, and MESA Solutions cannot accept responsibility for any assessments made in this report which could cause non-compliance.

2 EMI Characterisation of 75 MW Dreunberg PV Plant

The cumulative study firstly requires the characterisation of electromagnetic interference (EMI) generated by a representative plant using similar technology as what will be implemented on the proposed sites. Secondly, by making use of the identified interference from the facility in propagation analysis, the potential impact of the sites on both the closest and core-site SKA telescopes are determined. Finally, recommendations for the mitigation of interference based on the anticipated impact and plant layout are given.

2.1 Background & Scope

The AGA act specifies that the declared astronomy advantage areas are to be protected, preserved and properly maintained in terms of radio frequency interference (RFI). Therefore, the potential impact from new developments in terms of emissions, specifically on the SKA SA project, have to be determined. MESA Solutions will assist *Scatec Solar* in trying to establish the impact of interference from all the proposed projects on both the closest and core-site SKA stations. It is, however, important to take into account the fact that all measured results in this report include background interference which is dependent on the representative plant's location.

MESA's philosophy for identifying RFI generated by an electric/electronic system is to do both radiated and conducted measurements. Conducted interference, in the form of common mode (CM) current on the cables connected to the system, could radiate if a resonant galvanic path exists. CM current measurements made throughout a system using a current probe (CP), are therefore a diagnostic tool which helps to determine the likely source of interference. Radiated measurements, usually made using active antennas, provide information about how much of the conducted interference is being radiated into the environment. Differences in spectral content between the two methods mean that some interference radiates directly from parts of the system. Levels of radiated interference are, furthermore, subject to multi-path interference and as a consequence have to be made at various separation distances.

Another level of investigation is to repeat some the radiated and conducted measurements in the time domain using a *MESA Product Solutions'* Real Time Analyser (RTA-3). This allows the capture of transient signals usually associated with switching events which a conventional sweeping spectrum analyser (SA) is unlikely to capture. While they might only last for a short duration, the consequence could be a frequency spectrum filled with interference (fast rise time pulse results in broadband frequency content). The combination of these measurement techniques is relied upon to provide information about the total amount of interference produced by a device under test (DUT). Current measurements were made from 70 MHz to 1 GHz due to the operational frequencies of interest (lower limit) and CP (upper limit). Radiated measurements were made from 70 MHz to 3.6 GHz which covers the band of conducted interference and provides some additional information.

2.2 Measurement Locations

A diagram of the plant layout is shown in Fig. 1. The plant is divided into an eastern and western section. Measurement positions were chosen in the eastern section close to inverters 22 and 23 (Position 1) as well as inverters 1 and 2 (Position 2). The two positions were evaluated because of differences in communication methods between the tracking units at each location. The associated global positioning system (GPS) coordinates for the two position are:

- **Position 1:** 30° 50.167’ S, 26° 12.930’ E
- **Position 2:** 30° 49.944’ S, 26° 13.204’ E

Figure 1: Diagram of plant layout showing measurement location at inverters 22 and 23.

The Dreunberg plant makes use of a horizontal single-axis tracking facility operated hydraulically. Each inverter/transformer station is supplied by six arrays of panels each operated by two tracking units. The measurement location was chosen to provide characteristic emissions of a typical *Inverter* station, as well as nearby *String* and *Tracking* cabinets.

The *String* cabinets (Fig. 2) combines all the direct current (DC) supplies for a particular part of the plant onto positive and negative 1000 V DC cables. The *String* cabinet also contain a smart solar energy monitoring system that monitors the voltage, current and power output from the various PV panels (or strings) that feed DC into the *String* cabinet. The *Tracking* cabinets located on the *Tracking* unit contain all the control electronics for the array movement. The hydraulic system makes use of a master and slave hydraulic rams situated either side of a particular array. Depending on the direction the panels are moved in, only one will operate at any given time. Communication between the *Tracking* units are done via a local wireless network for most units in the plant, except at a few units close to Position 2. For the wireless system (Position 1), each pair of *Tracking* units has a unique operating frequency to ensure exclusive communication. For the wired implementation (Position 2), a fixed *RS-485* communication cable runs underground connecting each pair of *Tracking* units.

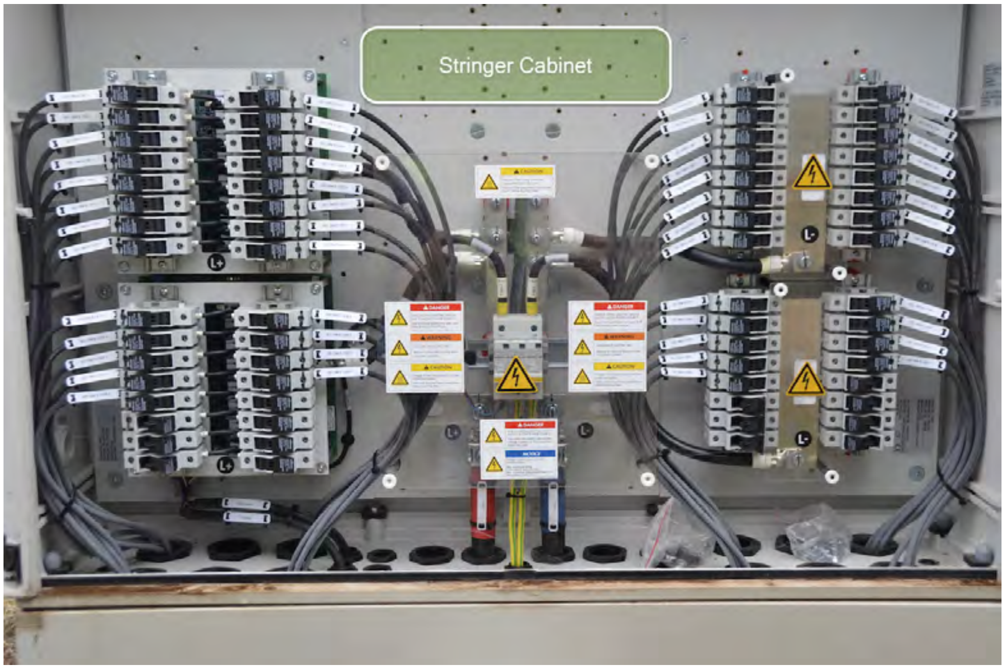


Figure 2: String Cabinet layout where supply from each panel is monitored.

2.3 Conducted Measurements

Conducted measurements were made using an *ETS-Lindgren EMCO* CM CP. Measurements in the time domain (TD) were made using a 800 MHz instantaneous bandwidth (BW) *MESA Product Solutions RTA-3* (Real Time Analyser) capable of measurements up to 2.6 GHz, while frequency domain (FD) measurements were made with a *Rohde & Schwarz ZVH-4* (70 MHz to 3.6 GHz) cable and antenna analyser (SA). In cases where strong low-frequency emissions compressed the receivers, a 100 MHz high pass filter was added.

The majority of measurements were made on cables close to the *Tracking Unit* and *String Cabinets* at Position 1 and 2. Measurements were also made on the cables connected to one of the weather stations located throughout the facility. A number of conducted interference measurement locations are shown in Figs. 3 to 5:

- Positive direct current (DC) panel cables
- Earth strap at the back of the PV panels
- DC cable bundle at the back of the PV panels
- Communication cable in String Cabinet
- Tracking Unit Position 1 wireless antenna cable
- Pressure switch cable (Tracking Unit)
- Tracking Unit communication cable Position 2
- Weather station cable

Measurements were made with the plant in full power generation mode, referred to as the *ON* state. After sunset the plant no longer produces power and enters an idle/standby mode. It is important to note, however, that most control and monitoring systems remain on during this period. This is referred to as the *STANDBY* state of operation and was also evaluated. With most systems remaining on, emissions levels will not necessarily change between *ON* and *STANDBY* modes of operation.

Figure 3: CP measurements on the panel earth strap.

Figure 4: CP measurements on cables connected to Tracking Cabinet.

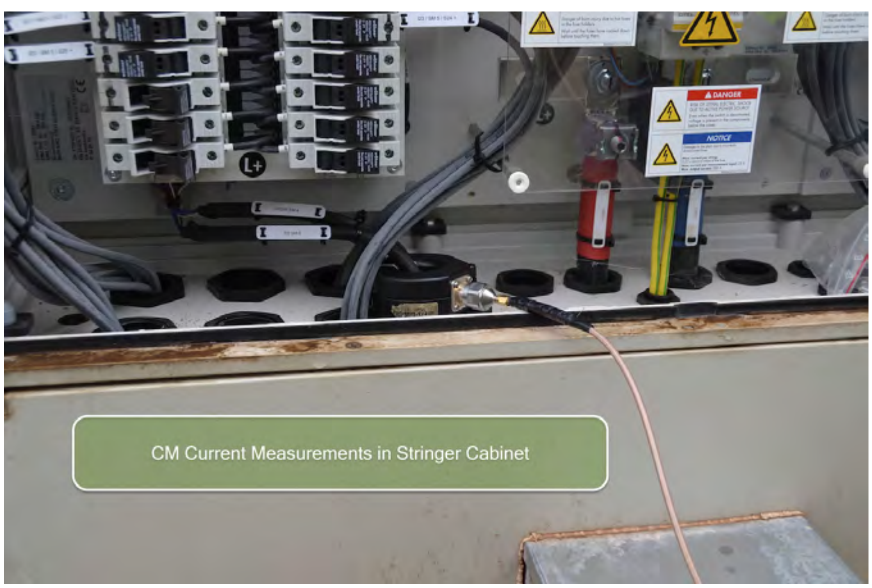


Figure 5: CP measurements on the communication cable inside the String Cabinet.

2.3.1 Frequency Domain Measurements

FD results obtained with the CM CP and SA are shown in Figs. 6 to 12. In these results the measured voltage levels [dBμV] are converted to current levels [dBμA] by removing the transfer impedance (Z_T [dBΩ]) of the probe. Each figure displays the frequency content measured from 70 MHz to 1 GHz. The dominating low-frequency content occasionally required the use of a low pass filter with a cut-in frequency of 100 MHz. The effect therefore on band of interest is negligible. In most cases the pre-amplifier was used with a 100 kHz resolution bandwidth (RBW) which is the closest option to CISPR equivalent RBW of 120 kHz for frequencies below 1 GHz.

Included in all results are the CISPR 11/22 Class B (more stringent standard for household applications) equivalent current limit. It is derived from antenna theory that any cable in free space carrying a CM current level of 5 μA (or 13.98 dBμA) above 230 MHz, will produce a worst-case E-field strength of 37 dBμV/m at a distance of 10 m from the DUT. This will only occur if the cable has resonant properties at a given frequency. The 37 dBμV/m limit is relaxed by 10 dB for CISPR 22 Class A (industrial applications). While the SKA, because of its sensitivity, enforces much more stringent limits than CISPR, it is purely included as a well-known reference.

Most of the results show a comparison between the *ON* and *STANDBY* modes of operation. Because the plant never fully switches off, evaluation of the *STANDBY* mode is relevant. In all cases where *STANDBY* measurements were made, the comparison with *ON* results confirms that there are no appreciable difference in terms of the interference generated. A prominent broadband interference signal seen on the DC cable bundle is visible at a lower level on the single panel DC cable. Also visible in the two DC results is a particularly strong narrowband emission at 872 MHz. It was also measured on the panel earth strap, the pressure switch and wireless antenna cables. Its narrowband feature and the fact that it was not measured on the cables connected to the *String* or fixed line *Tracking Cabinets* suggest it to be some local oscillator or clock frequency only visible at Position 1.

Other significant levels of conducted interference are seen on the pressure switch, wireless antenna and *Tracking Cabinet* communication cable. These levels are above the equivalent current limit between 100 MHz and 350 MHz and seem to be broadband in nature. The wireless antenna and pressure switch cables show narrowband higher frequency interference not measured anywhere else. The similarity in spectral content on these two cables can be attributed to their close proximity of the *Tracking Unit*, with the source likely to be the wireless communication system. Similar interference is not visible on the communication cable of the *Tracking Unit* at Position 2 where the wireless system is not used. A simple comparison of conducted and radiated interference will subsequently be presented to determine the contribution of CM current to the overall radiated emissions.

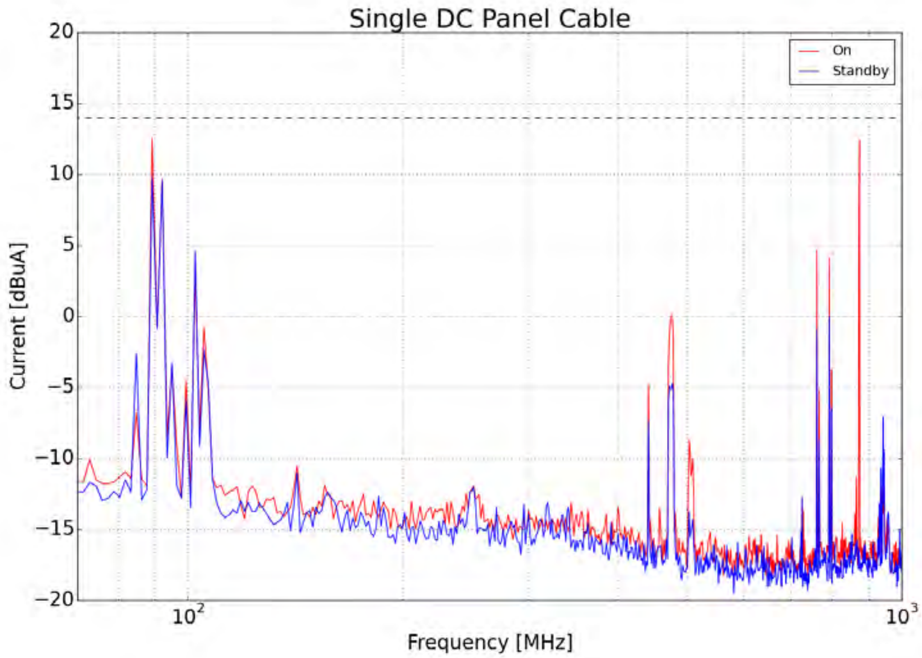


Figure 6: Frequency domain current probe measurements on the PV panel DC cables for the plant *ON* and in *STANBY* mode.

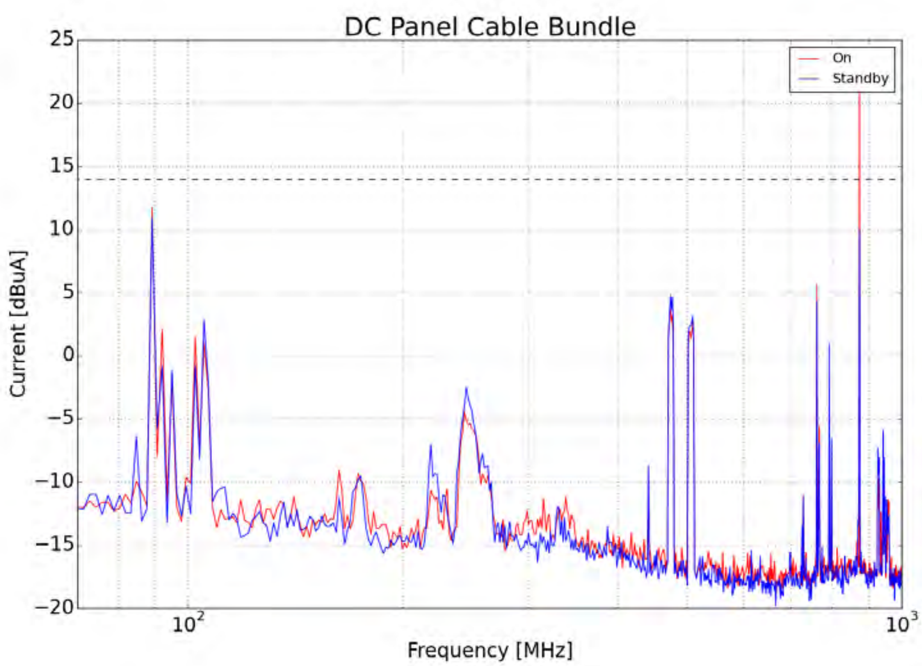


Figure 7: Frequency domain current probe measurements on DC cable bundle at the back of the PV pannels for the plant *ON* and in *STANDBY* mode.

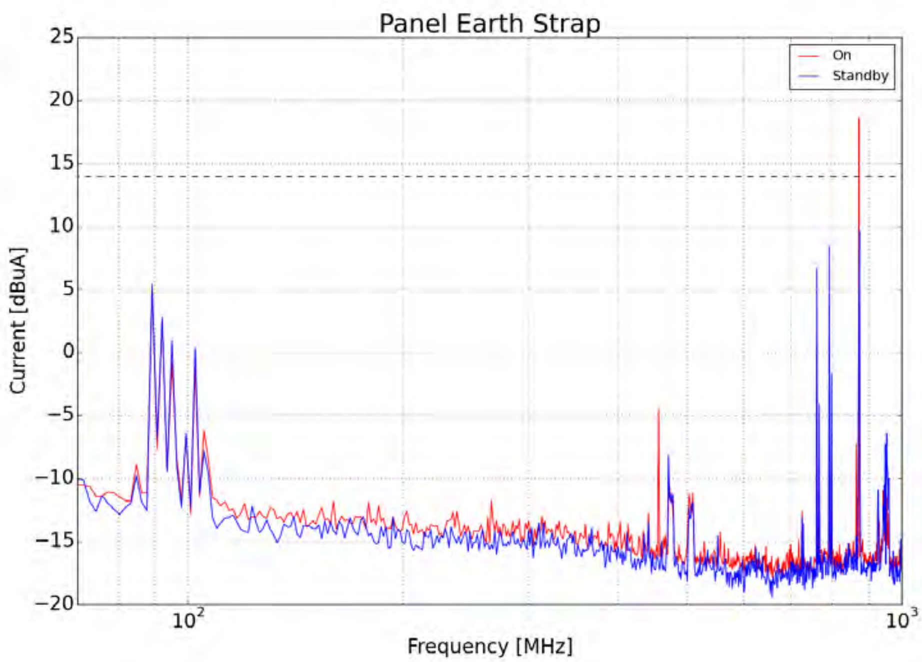


Figure 8: Frequency domain current probe measurements on PV earth strap for the plant *ON* and in *STANBY* mode.

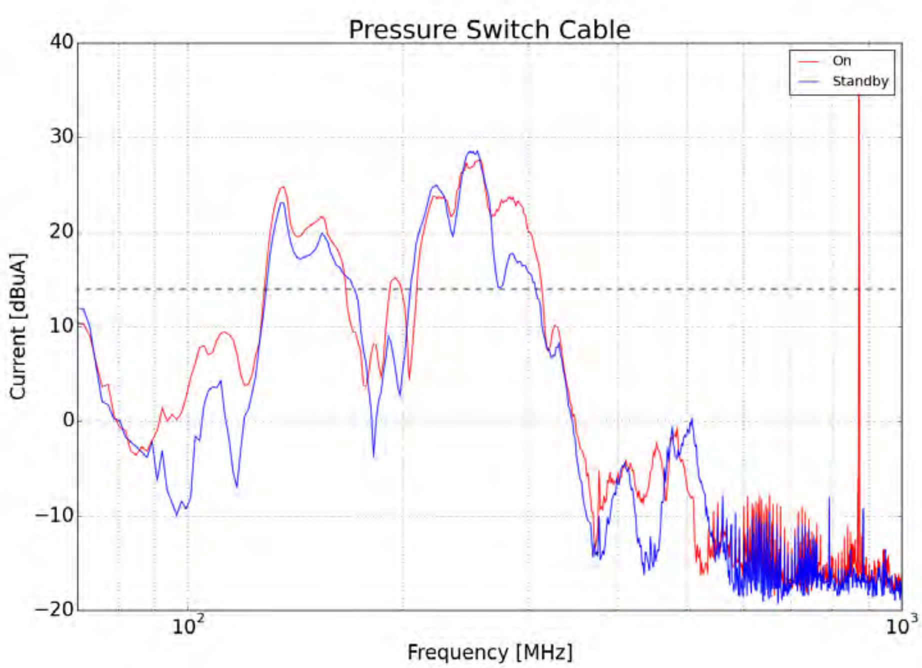


Figure 9: Frequency domain current probe measurements on the hydraulic pressure switch located at the Tracking Unit for the plant *ON* and in *STANDBY* mode.

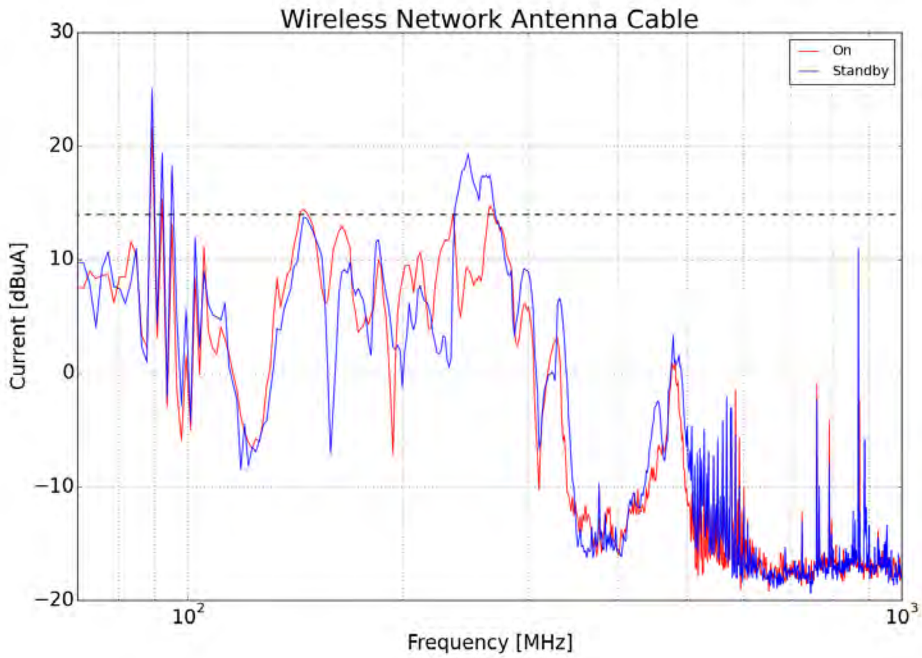


Figure 10: Frequency domain current probe measurements on wireless antenna cable located at the Tracking Unit at Position 1 for the plant *ON* and in *STANBY* mode.

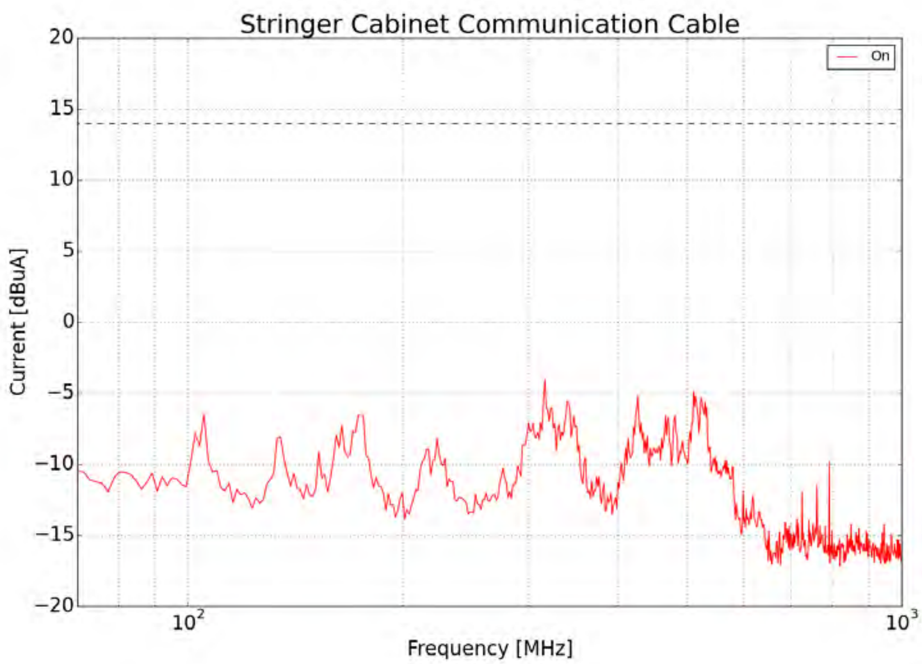


Figure 11: Frequency domain current probe measurements on String Cabinet communication cable for the plant *ON* and in *STANDBY* mode.

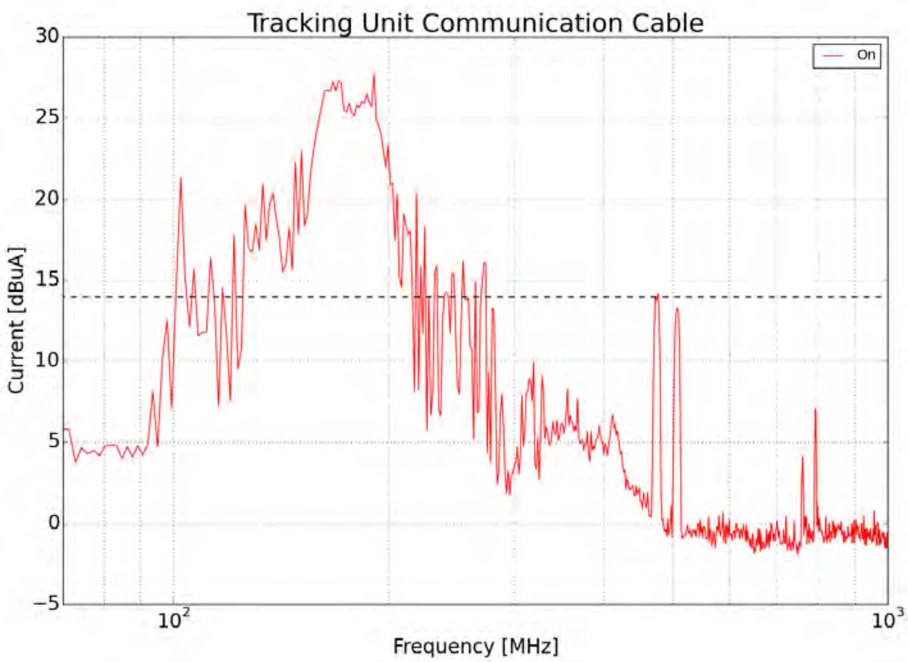


Figure 12: Frequency domain current probe measurements on Tracking Cabinet communication cable at Position 2 for the plant *ON* and in *STANBY* modes.

2.3.2 Time Domain Measurements

TD conducted measurements, focussing particularly on the *Tracking Unit* operation were made, as shown in Fig. 4. A typical TD transient pulse, as well as its corresponding Fast Fourier Transform (FFT) FD spectrum, captured on supply cables entering the cabinet of the unit at Position 1 with the RTA-3 and EMCO CM CP are shown in Fig. 13 and Fig. 14 respectively.

In both of the results shown above, the resultant spectrum gives the frequency content only associated with the particular pulse captured. The fast changing nature of the pulses cannot be captured using a conventional sweeping SA, so both TD and FD data have to both be considered. In the event of the supply cable that was measured, levels exceeding the CISPR equivalent current limit are seen from approximately 100 MHz across most of the frequency band. The pulse therefore suggests relatively strong transient events which will distribute to all cables closely spaced to this supply cable. A comparison with radiated results also measured in the TD in close proximity to the *Tracking Unit* are presented in Section 2.4.4.

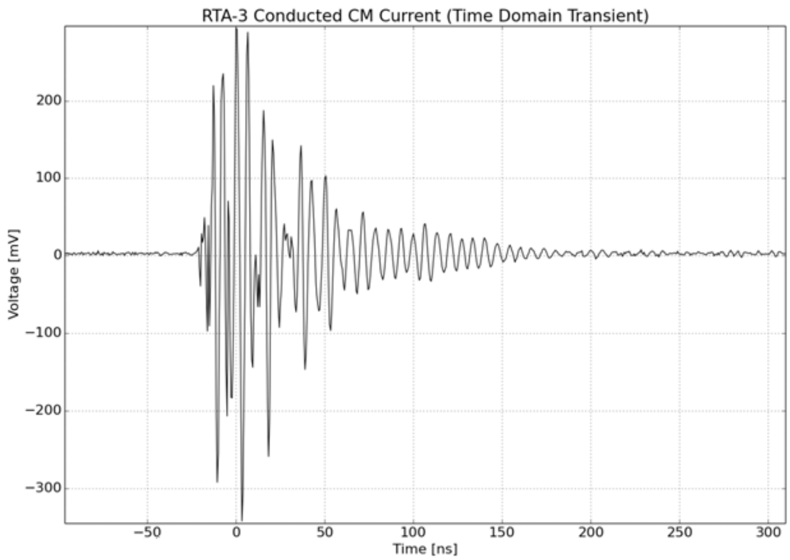


Figure 13: Typical CM current transient pulse captured with RTA-3 on supply cables to the Tracking Unit at Position 1.

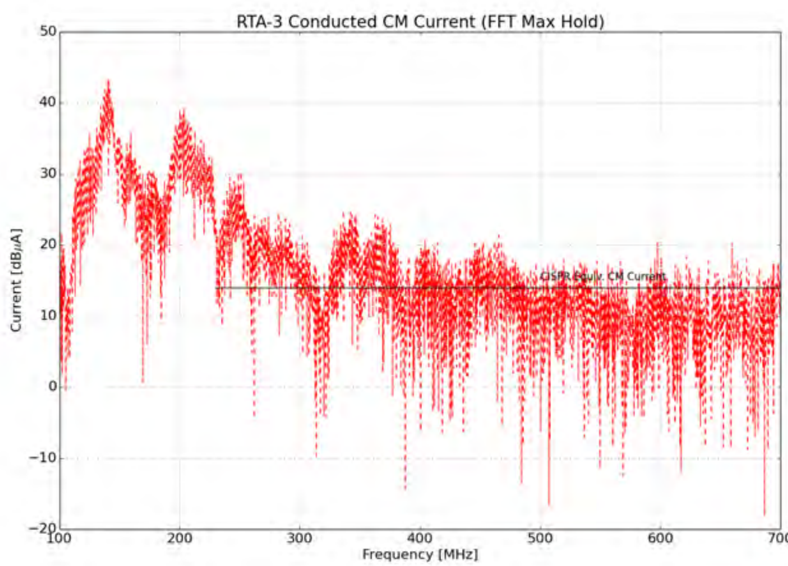


Figure 14: Equivalent Fast Fourier Transform spectrum for the conducted interference measured on supply cable to the Tracking Unit at Position 1.

2.4 Radiated Measurements

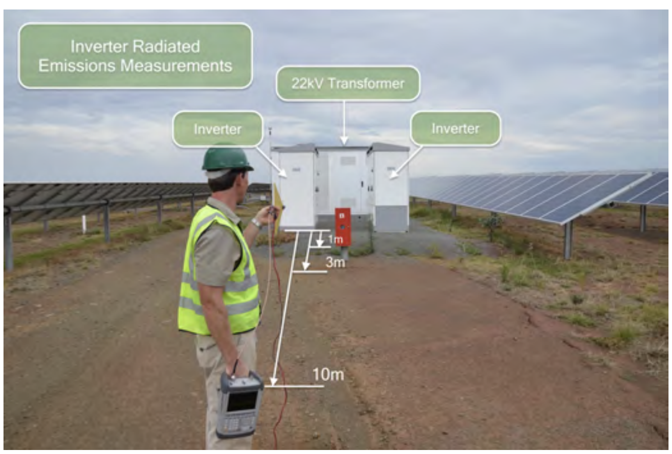
2.4.1 Frequency Domain Measurements

Inverters 22 and 23 Position 1

Radiated measurements were made in the TD and FD using the same conventional sweeping SA and RTA-3. A log periodic dipole array (LPDA) antenna in both active and passive modes were used as the receiver. Measurements were made between 70 MHz and 3.6 GHz, with measured voltage levels [dBμV] transformed into electric field (E-field) [dBμV/m] by incorporating the appropriate antenna factor (AF) values [dB/m].

Radiated measurements were made at Position 1 (Fig. 1) of Inverters 22 and 23 as well as the closest *Tracking* and *String Cabinets* at separation distances of 1, 3, 10 m as shown in Figs. 15 (a) and (b). Measurements were also made at Position 2 (Fig. 1) of the *Tracking Cabinet* at a location in the plant were fixed-line communication is used between the *Tracking Units*. A comparison of results for the two positions give an indication of the possible increased high frequency interference associated with the wireless communication network.

In addition to evaluating emissions as a function of distance, measurements were also made with the doors to the *Inverter* enclosures and *Tracking Cabinet* open. Both sets of results help to identify interference produced only by the plant. In all cases measurements were made during full power production (*ON*), and when no power was being generated (*STANDBY*) for both polarisations.



(a)

(b)

Figure 15: Radiated measurements of (a) Inverter and Transformer units and (b) Tracking Cabinet.

Results as measured for *Inverters* 22 and 23 at Position 1 with the system *ON* and in *STANDBY* mode for both polarisations are given in Figs. 16 and 17. These results are with all doors to enclosures closed.

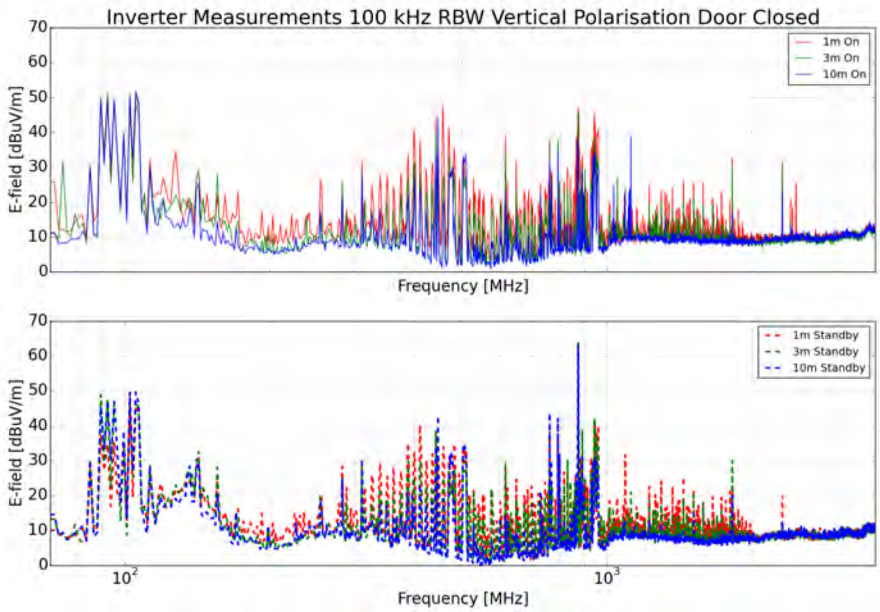


Figure 16: **Vertical** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Inverters at Position 1 for both *ON* and *STANDBY* modes of operation with door **closed**.

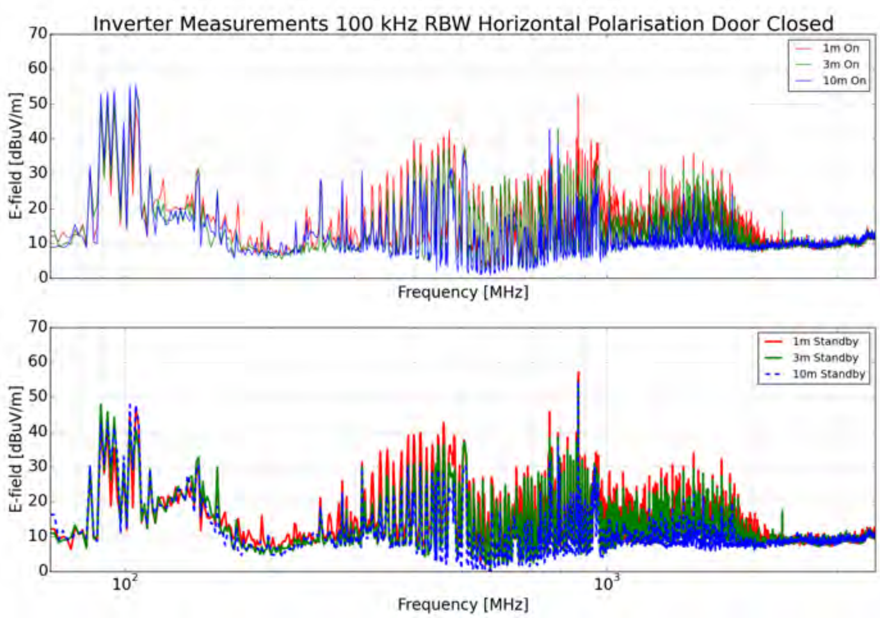


Figure 17: **Horizontal** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Inverters at Position 1 for both *ON* and *STANDBY* modes of operation with doors **closed**.

Similar levels of interference are measured for both polarisations, as well as for the plant *ON* and in *STANDBY* mode. Variation with distance can be seen from 300 MHz up to 2 GHz, and peak emission levels reach 48 dBμV/m at 1 m for vertical polarisation and 42 dBμv/m at 1 m for horizontal polarisation. A particularly strong emission at 872 MHz can be seen in all results shown.

Results for a repeat measurement as a function of distance, but with the doors to the *Inverter* enclosures open, are shown in Fig. 18 for vertical polarisation and in Fig. 19 for horizontal polarisation. In both cases results are shown for the plant *ON* and in *STANDBY* mode.

The comparison shows emission in the vertical polarisation to increase, especially between 1 and 2 GHz. Peak levels for vertical polarisations have increased to above 50 dBμV/m compared to 48 dBμV/m for the door closed. In the case of horizontal polarisation signal levels have increased by at least 10 dB for measurements with the inverter and transformer doors open. The variation with distance and level increase with the doors open, albeit less than expected at some frequencies, confirms the radiating source to be the *Inverters*.

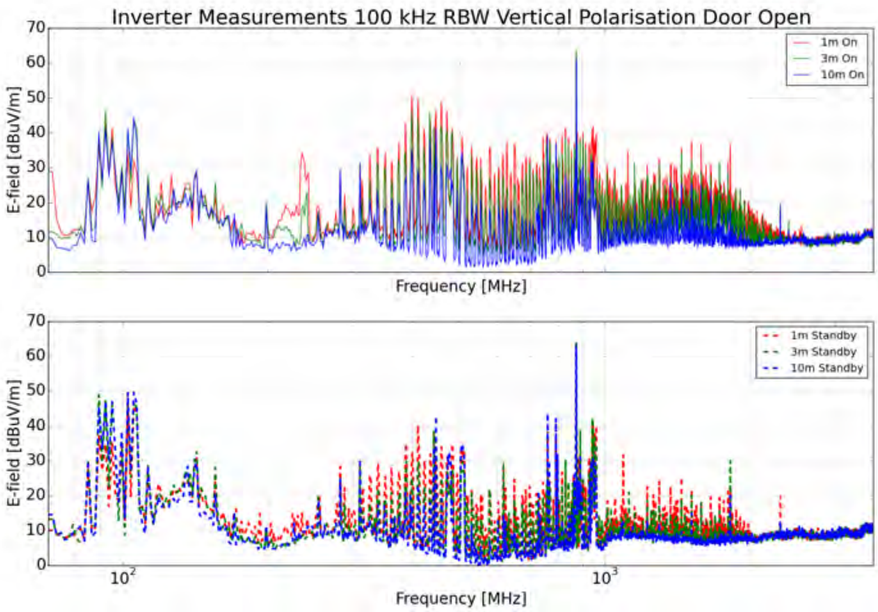


Figure 18: **Vertical** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Inverter at Position 1 for both *ON* and *STANDBY* modes of operation with doors **open**.

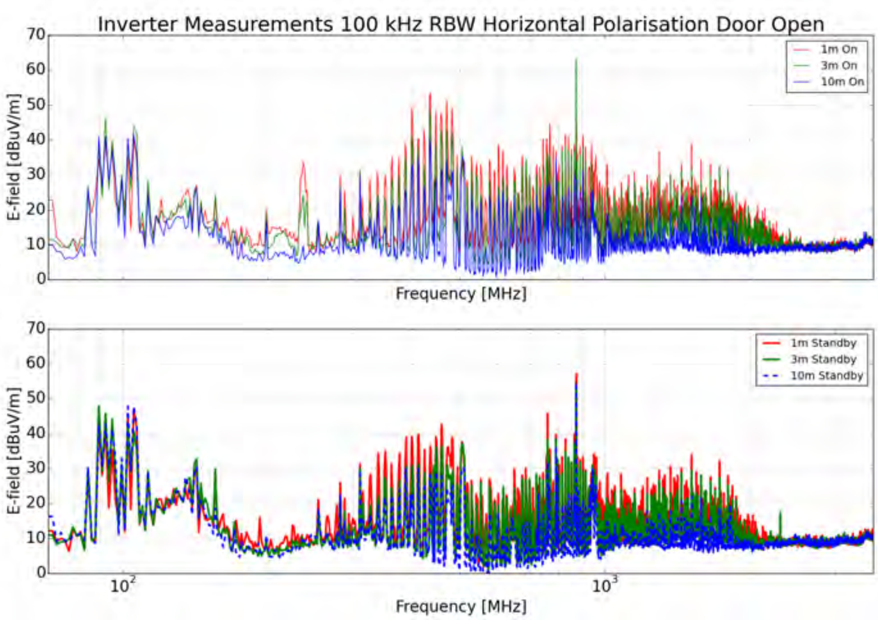


Figure 19: **Horizontal** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Inverters at Position 1 for both *ON* and *STANDBY* modes of operation with doors **open**.

Tracking Unit Position 1
Results measured for one of the *Tracking Units* at Position 1 with the plant *ON* and in *STANDBY* mode are given in Figs. 22 and 21. These results are for the door of the *Tracking Cabinet*, visible in Fig. 15(b), closed.

Peak interference levels for both polarisations can be seen around 250 MHz as well as between 500 MHz and 1 GHz. A decrease in amplitudes when moving away from the cabinet is also visible, but for some frequencies this is less than predicted free space loss. This can be attributed to the reflective nature of the surroundings and uncertainty about where the measurement point is in the far-field of the radiating source is. However, these measurements indicate specifically that the source has been correctly identified.

String Cabinet Position 1
Emissions from one of the *String Cabinets* at Position 1 with the plant *ON* and in *STANDBY* mode for both polarisations are given in Figs. 24 and 25. With the *String Cabinet* being made of fibre glass, measurements with the door open were not required, so only comparisons for 1, 3, and 10 m are given.

The spectrum shows predominantly wideband interference between 300 MHz and 800 MHz for both polarisations and with the plant *ON* and in *STANDBY* modes. Variation in amplitude when moving from 1 m to 10 m are between 14 dB and 16 dB for vertical polarisation, and between 7 dB and 15 dB for horizontal polarisation. This is less that the predicted 20 dB free space reduction, which again confirms the influence of the complex reflective environment between the panels. The precise source of radiating interference are therefore influential.

Tracking Cabinet Position 2
Below are results showing the difference in radiated emissions from the *Tracking Unit*'s cabinet as measured at Position 1 and 2 (Fig. 1). It shows the difference in radiated interference when comparing the wireless and fixed line communication systems that are implemented. Results are only shown for the plant *ON*. The measurements being compared were all made using a 100 kHz RBW with the cabinet door closed.

The comparison for both polarisations at all three separation distances clearly show more frequency content for the wireless implementation, especially between 500 - 700 MHz. Prominent wideband interference between 200 - 300 MHz are also not present for the fixed line implementation, suggesting that for purposes of radio interference mitigation, this would be a better implementation.

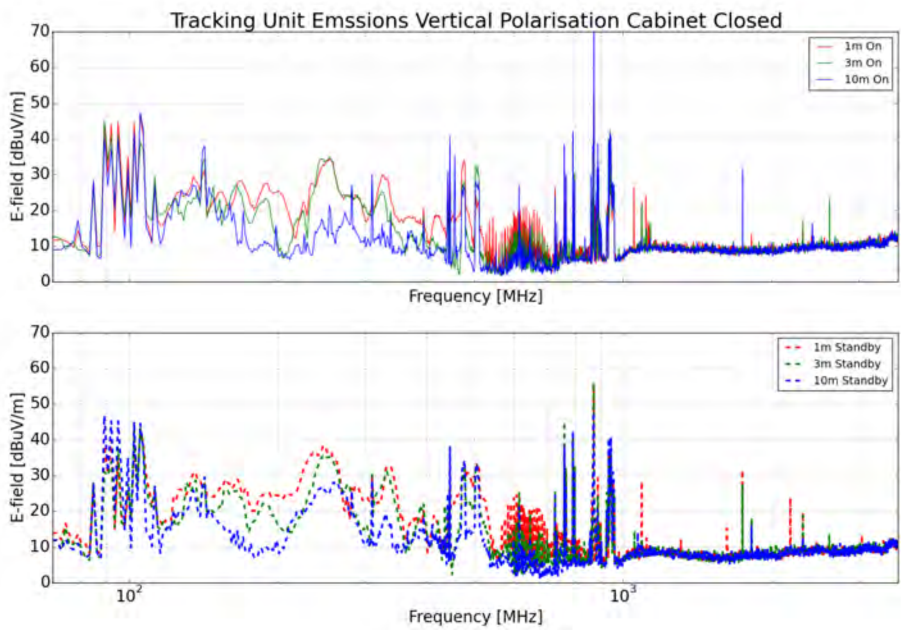


Figure 20: **Vertical** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Tracking Unit at Position 1 for both *ON* and *STANDBY* modes of operation with cabinet **closed**.

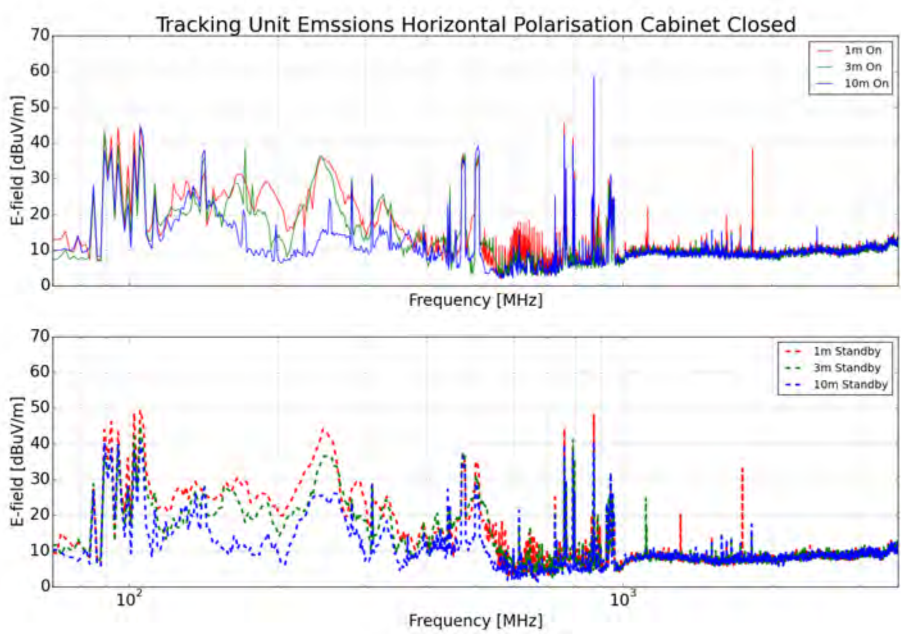


Figure 21: **Horizontal** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Tracking Unit at Position 1 for both *ON* and *STANDBY* modes of operation with cabinet **closed**.

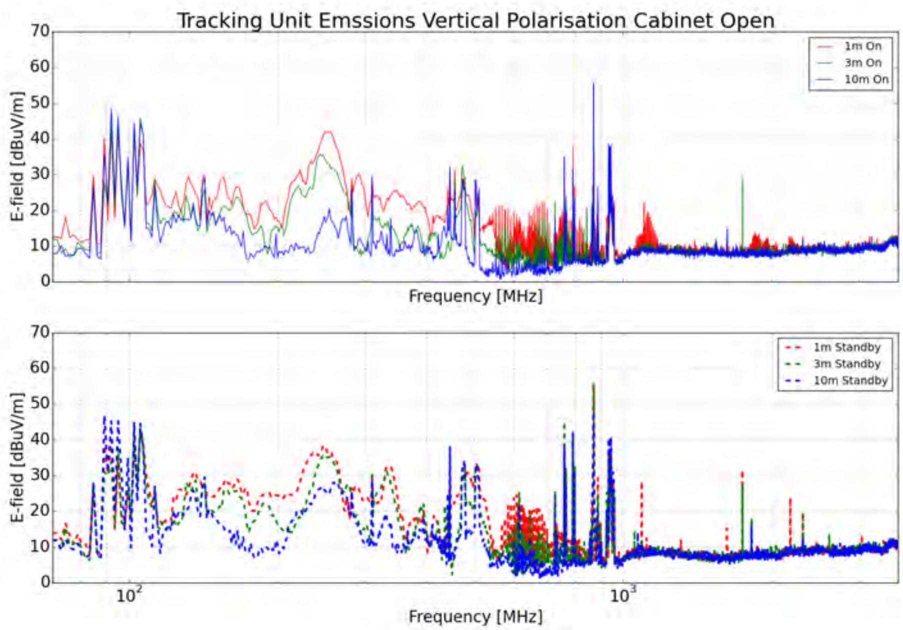


Figure 22: **Vertical** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Tracking Unit at Position 1 for both *ON* and *STANDBY* modes of operation with cabinet **open**.

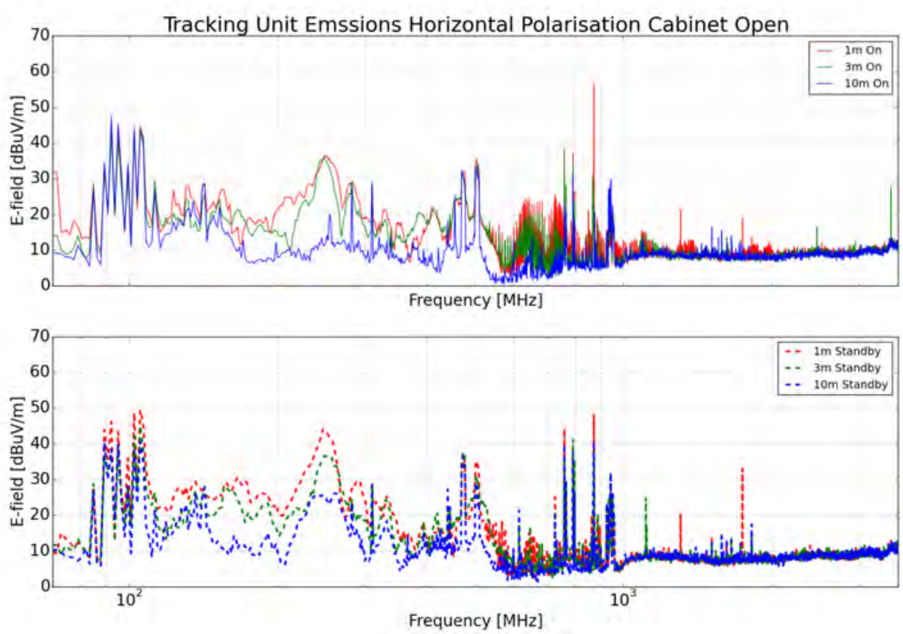


Figure 23: **Horizontal** polarisation E-field measurements at a distance of 1, 3 and 10 m form the Tracking Unit at Position 1 for both *ON* and *STANDBY* modes of operation with cabinet **open**.

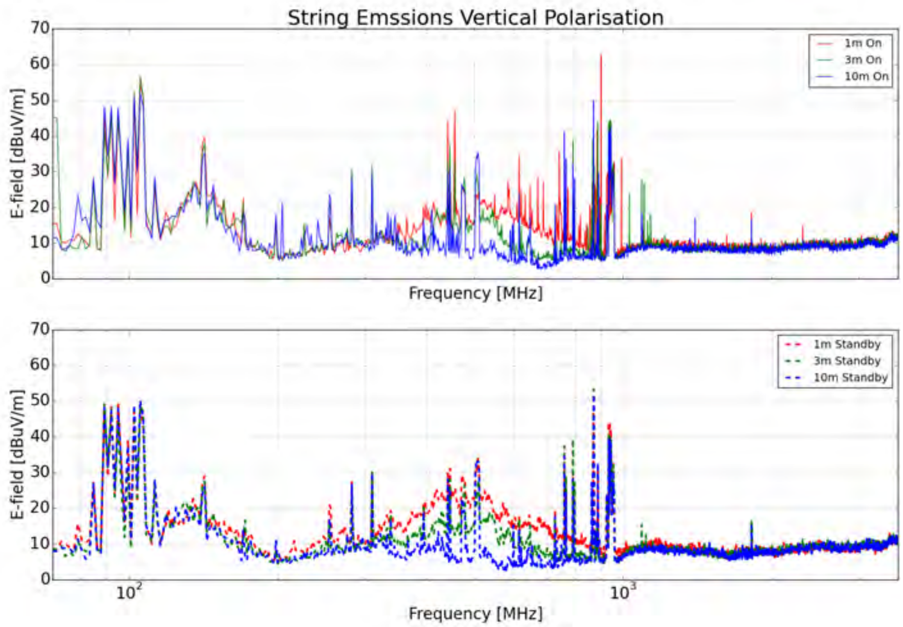


Figure 24: **Vertical** polarisation E-field measurements at a distance of 1, 3 and 10 m form the String Cabinet at Position 1 for both *ON* and *STANDBY* modes of operation.

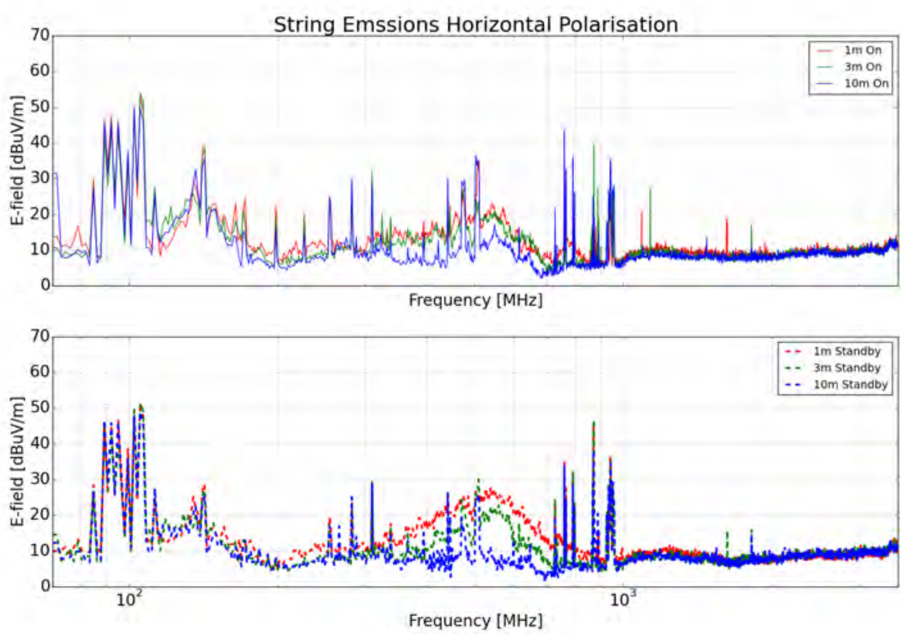
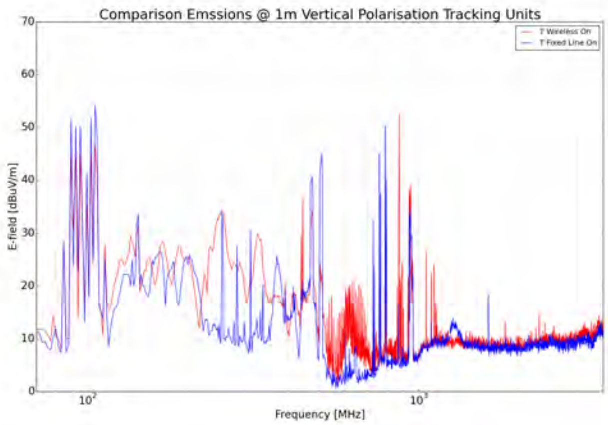
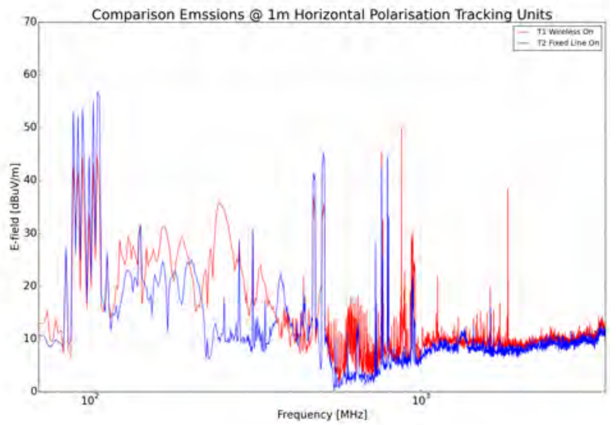


Figure 25: **Horizontal** polarisation E-field measurements at a distance of 1, 3 and 10 m form the String cabinet at Position 1 for both *ON* and *STANDBY* modes of operation.

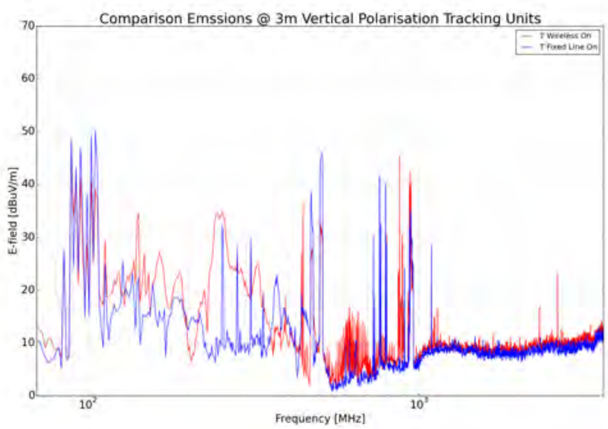
DIRECTORS: H. C. Reader, A. J. Otto and P. S. van der Merwe | www.mesasolutions.co.za | EMAIL: info@mesasolutions.co.za
REG NO: 2002/025186/07 | POSTAL ADDRESS: P.O. Box 12572, Die Boord, Stellenbosch, 7613



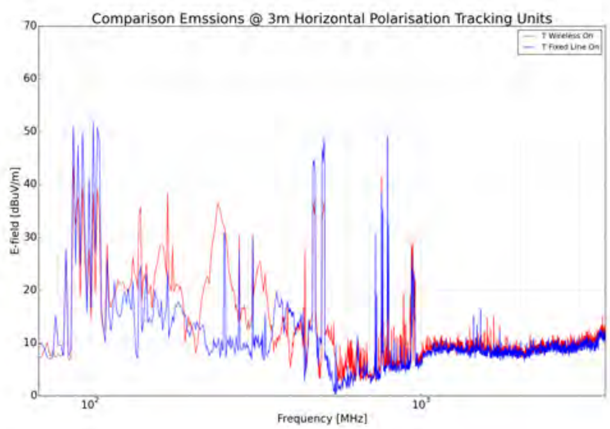
(a)



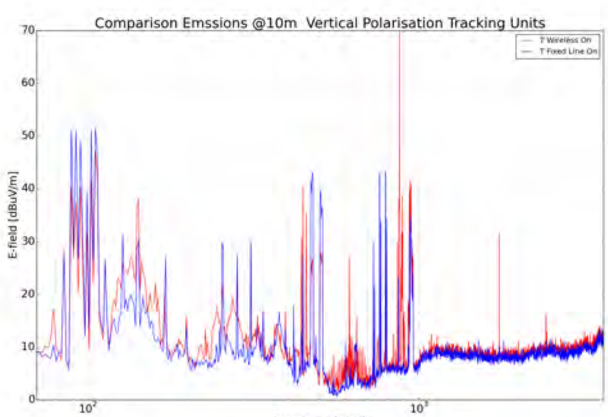
(b)



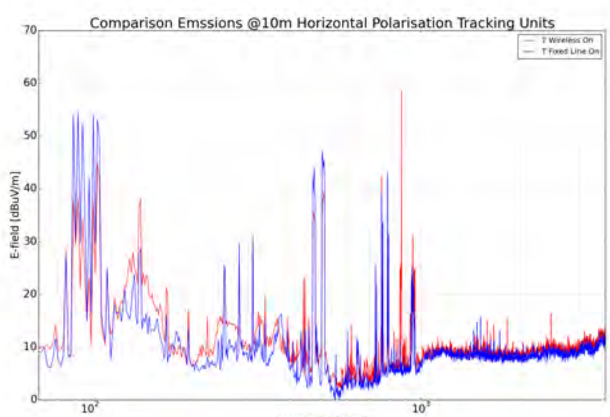
(c)



(d)



(e)



(f)

Figure 26: Comparison of radiated emissions measured for the Tracking Units at Position 1 and Position 2. Figures (a), (c) and (e) are for vertical polarisation at 1 m, 3 m, and 10 m and (b), (d) and (f) are for horizontal polarisation.

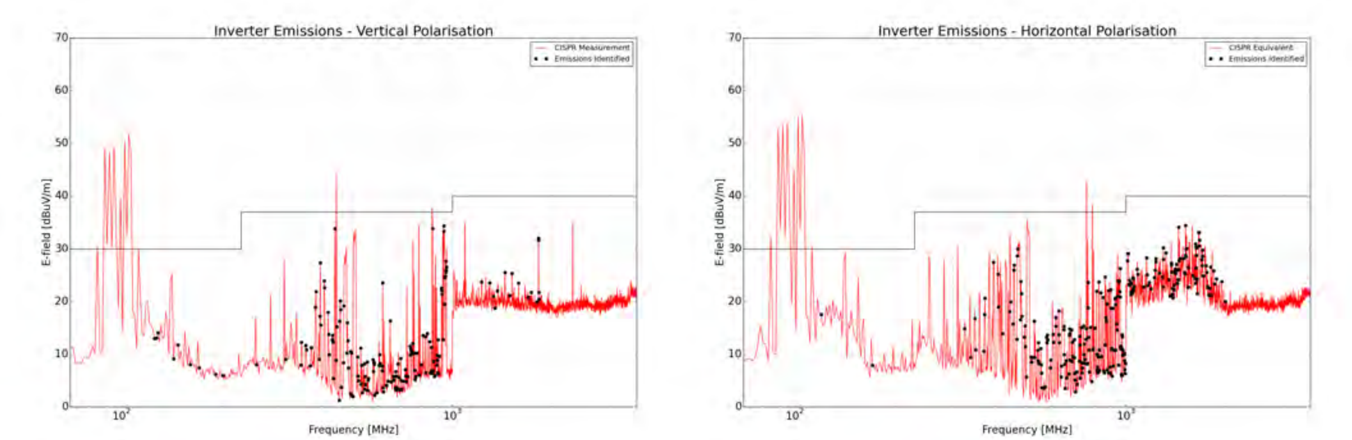
2.4.2 Interference Frequency Identification

Required for the subsequent propagation analysis are the maximum emission levels and associated frequencies identified to be generated by the plant. This is obtained by comparing emissions measured for the *Inverters*, *Tracking Units* and *String Cabinets* at 1, 3, and 10 m as discussed in Section 2.4. This is according to specifications in CISPR 11/22 Class B standard which is used as a well-known reference. It requires measurements at 3 m for frequencies above 1 GHz to use a 1 MHz RBW, and at 10 m below 1 GHz to use a 120 kHz RBW. The comparison to CISPR 11/22 Class B standard will subsequently be related to protection and saturation levels as specified by SKA-SA in [2].

To identify emissions generated by the plant, differences in measured levels at 1 m and 10 m are compared to the expected 20 dB free space path loss. However, from variations observed in the results in Section 2.4 due to the complex reflective environment, the 20 dB reduction was relaxed to 10 dB. The subsequent identified frequencies were then used in a second comparison of emissions measured at 3 m and 10 m, for which levels are expected to reduce by 10.46 dB. Again, considering the typical reduction seen in the radiated results, this criteria was relaxed to a 3 dB variation. All comparisons were were done using measurements made with a 100 kHz RBW, but the resulting frequency list in each case was used to identify the correct emission levels at 10 m for frequencies below 1 GHz (100 kHz RBW) and at 3 m for frequencies above 1 GHz (1 MHz RBW).

The results in Figs. 27 to 30 show both the total measured spectrum according to CISPR 11/22 Class B requirements as well as the plant-generated emissions using the search criteria just described for the *Inverters*, *Tracking Units* at both positions and *String Cabinet*. Included for reference purposes is the CISPR 11/22 Class B limit.

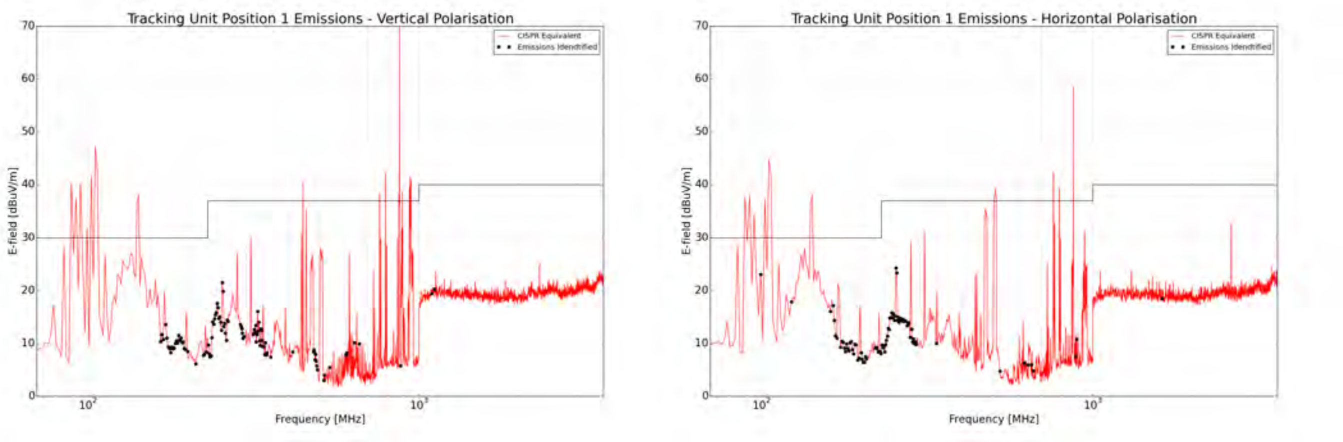
Inverters 22 and 23 Position 1



(a) (b)

Figure 27: Inverter radiated emissions as measured according to CISPR 11/22 Class B specifications identified for (a) vertical and (b) horizontal polarisations.

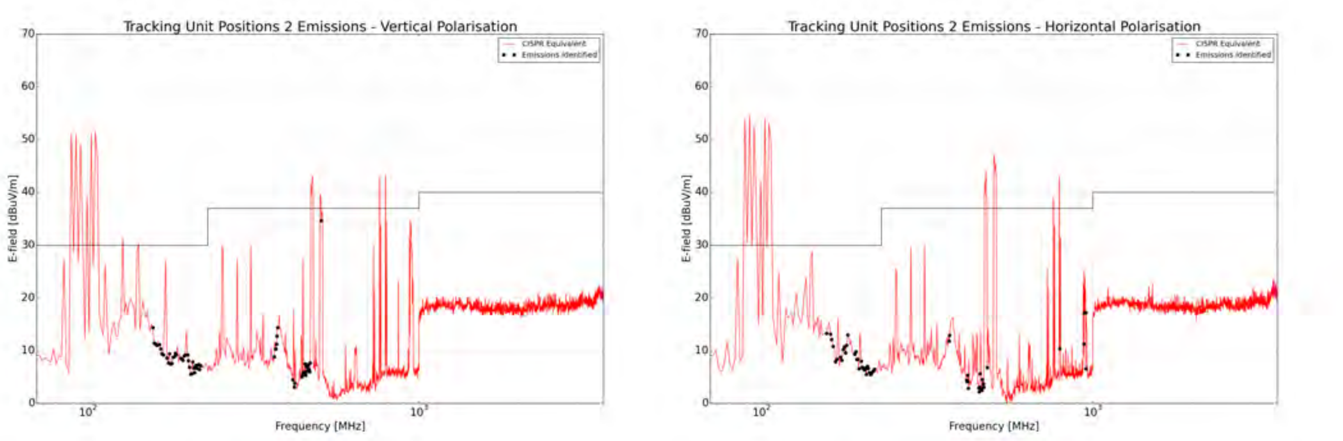
Tracking Unit Position 1



(a) (b)

Figure 28: Tracking Unit at Position 1 radiated emissions as measured according to CISPR 11/22 Class B specifications identified for (a) vertical and (b) horizontal polarisations.

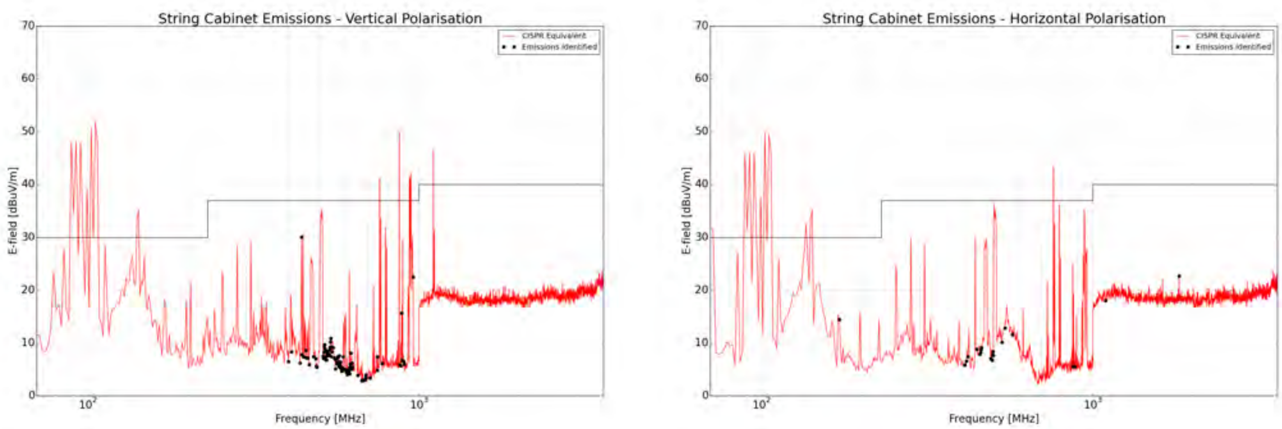
Tracking Unit Position 2



(a) (b)

Figure 29: Tracking Unit at Position 2 radiated emissions as measured according to CISPR 11/22 Class B specifications identified for (a) vertical and (b) horizontal polarisation.

String Cabinet



(a) (b)

Figure 30: String Cabinet at Position 1 radiated emissions as measured according to CISPR 11/22 Class B specifications identified for (a) vertical and (b) horizontal polarisations.

2.4.3 CM Current and Radiated Emission Comparison

When comparing radiated with conducted FD results we make use of the identified peaks for the Position 1 *Tracking Unit* emissions presented in Fig. 28, but only focus on frequencies between 230 MHz and 1 GHz. The radiated results will be compared to conducted interference measured on the pressure switch cable shown in Fig. 9. Similarities can be seen in the narrowband conducted interference between 500 MHz and 700 MHz. The broadband conducted interference measured on the cable between 100 MHz and 300 MHz can be seen to exceed the equivalent CM current limit and should therefore produce radiated interference also exceeding the limit if a resonant cable length exist. With the majority of cables running below ground, however, this seem to attenuate resonant effects at the longer wavelengths and therefore do not radiate efficiently. Table 4 gives a comparison of the five frequencies identified in Fig. 28 between 500 MHz and 700 MHz.

The results in brackets are the difference between the measured level and theoretical 13.98 dBμA for conducted CM current interference, and 37 dBμV/m for E-field levels		
Frequency [MHz]	**CM Current [dBμA]**	**E-field V-pol [dBμV/m]**
536	-11.74 (-25.72)	5.4 (-31.6)
599	-9.5 (-23.47)	7.7 (-29.3)
603	-7.92 (-21.89)	8.1 (-28.9)
636	-8.31 (-22.28)	10.16 (-26.84)
660	9.98 (-27.02)	-8.81 (-22.78)

Table 4: Comparison of conducted and radiated emission levels based on theoretically predicted levels for the Tracking Unit at Position 1.

A second comparison between conducted and radiated interference is shown Table 5 for the communication cable of the *Tracking Unit* at Position 2. For this comparison the identified radiated emissions, shown in Fig. 29 between 230 MHz and 1 GHz, were again used. In some cases the identified frequencies give measured levels close to or on the noise floor of the instrument. These were therefore not considered as they might not be accurate in amplitude.

The results in brackets are the difference between the measured level and theoretical 13.98 dBμA for conducted CM current interference, and 37 dBμV/m for E-field levels		
Frequency [MHz]	**CM Current [dBμA]**	**E-field V-pol [dBμV/m]**
373	5.05 (-8.93)	14.33 (-22.67)
451	1.59 (-12.39)	7.49 (-29.51)
459	2.02 (-11.96)	7.3 (-29.7)
506	13.20 (-0.78)	35.1 (-1.9)

Table 5: Comparison of conducted and radiated emission levels based on theoretically predicted levels for the Tracking Unit at Position 2.

It is clear that for measurements at both positions, significant levels of low frequency broadband interference visible between 100 MHz and 300 MHz do not radiate very efficiently. They exceed the equivalent current limit as indicated, but do not produce radiated interference that exceed the indicated CISPR 11/22 Class B limit by the same amount. For the *Tracking Unit* at Position 1 the results in Table 4 show better agreement between conducted and equivalent radiated levels (taking into account the reflective environment for frequencies between 500 MHz and 700 MHz). The difference in measured levels compared to the limits for both conducted and radiated interference are within an acceptable margin. This confirms that this interference originates at the *Tracking Unit* and associated systems.

The measurements of the *Tracking Unit* at Position 2, which incorporates the fixed line communication, again show significant levels of low-frequency conducted interference with reduced levels between 500 MHz and 700 MHz. In this case, however, none of the spectral content in the CM results seem to radiate efficiently when considering the levels in Table 5. Only at 506 MHz is there acceptable correlation with no frequencies identified beyond this point. The results therefore confirm that while high levels of conducted CM current are present at both positions, they are not efficiently converted to radiated interference. High frequency conducted noise is less for the fixed line communication and therefore are not being radiated.

2.4.4 Time Domain Measurements

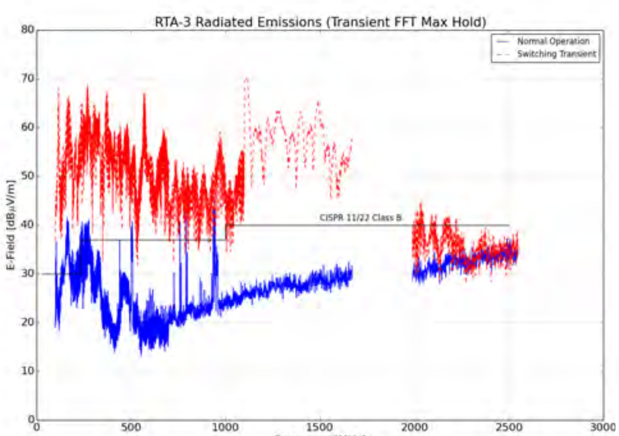
Tracking Units Position 1 and Position 2

A big concern is the switching noise generated every time the plant starts tracking. The system makes use of hydraulic rams which is operated by a small hydraulic pump located inside the hydraulic fluid reservoir located on top of each ram. The reservoir, a fully metallic enclosure, provides some level of attenuation of radiated interference generated by the pump. A cable still supplies the pump with power through a hole on top of the reservoir, but this can be mitigated.

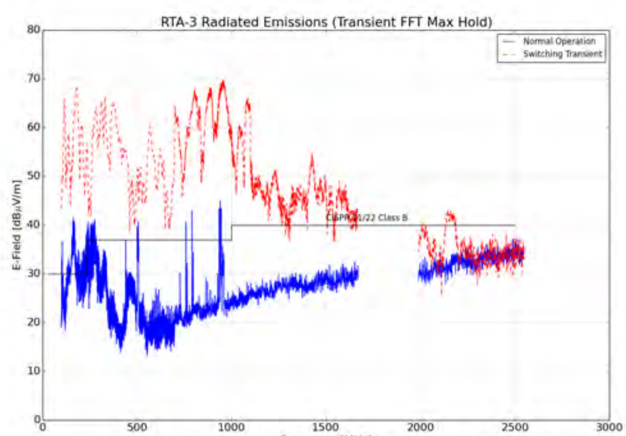
A bigger contributor to transient interference is the switching contactor that operates the pump. An arcing effect can clearly be seen each time the pump switches on and off, and this produces wideband interference. Measurements were made at Position 1 and 2 as shown in Fig. 31. Typical spectrums when the plant is tracking compared to when it is stationary are shown in Fig. 32 (a) and (b) for vertical and horizontal polarisation respectively.

Peak level for measurements conducted at Position 1 are between 60 and 70 dBμV/m as measured at 1 m. This will however be influenced by likely near-field coupling. Transforming these levels to 10 m using the free space propagation loss, and accounting for a difference in RBW between the sweeping analyser and RTA-3 of approximately 7 dB, produce levels between 33 and 43 dBμV/m @ 10 m. A comparison with identified interference for the *Tracking Unit* at Position 1, given in Fig. 28, show higher levels in the TD. It should be considered that a sweeping analyser is inefficient at capturing transient events. The significance of these results should be the broadband nature of the interference.

Figure 31: Radiated time domain measurements of Tracking unit.



(a)



(b)

Figure 32: Time domain radiated interference associated with the switching of the hydraulic pump to move the panels. The results can be seen for the system operating and stationary for (a) vertical polarisation and (b) horizontal polarisation as measured at Position 1.

A second measurement was done for the *Tracking Unit* at Position 2 making use of a fixed line communication. The radiated measurements were, however, made at a separation distances of 10 and 30 m to determine how efficiently the interference propagate with distance. This was again done with the system tracking and stationary, and the results are shown in Fig. 33. The absence of a trace for the system tracking below is because no reliable triggering of of interference from the plant could be established.

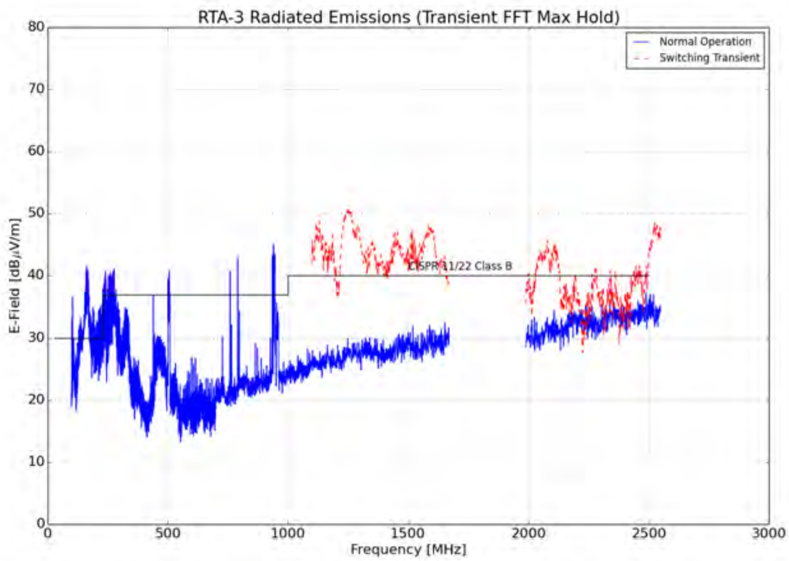


Figure 33: Time domain radiated interference associated with the switching of the hydraulic pump to move the panels. The results can be seen for the system operating and stationary for vertical polarisation as measured at Position 2.

2.5 Electric Fence Measurements

A radiate time domain pulse produced by a loose wire on the electric fence surrounding the PV plant (Fig. 36) are shown in Fig. 34. The equivalent FFT spectrum is given in Fig. 35.

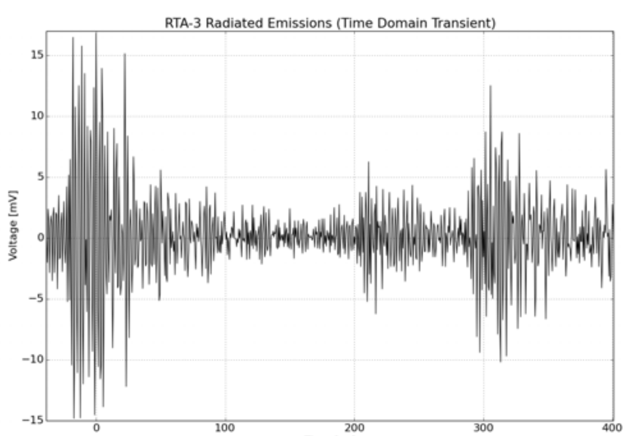


Figure 34: Radiated time domain pulse measured for a loose wire of the electric fence.

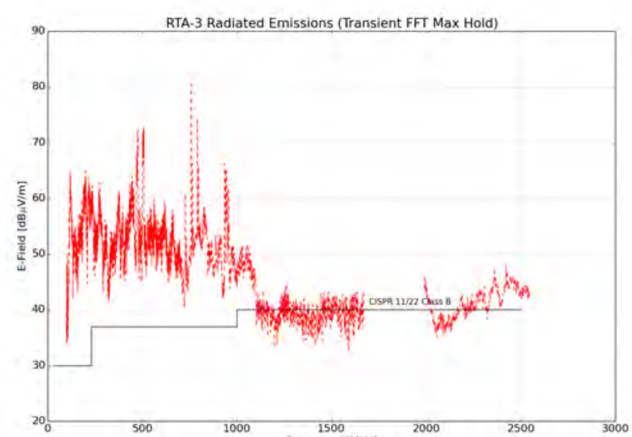


Figure 35: Equivalent Fast Fourier Transform spectrum for the radiated interference associated with a sparking electric fence.

Figure 36: Electric fence surrounding the perimeter of the Dreunberg PV plant.

Significant interference above the CISPR 11/22 Class B limit can be seen. While this is not directly associated with the operation of the plant, it will likely also be built on the proposed sites and could produce problematic levels of broadband interference.

2.6 Administration Building Emissions

An additional measurement of possible RFI culprits located at the Administration building (Fig. 37) were measured and the result is shown in Fig. 38. The results from this investigation are not meant to be comprehensive as it is unclear whether an Administration building will ultimately be built on the proposed site locations. This does, however, show some of the interference typically associated with such a building.

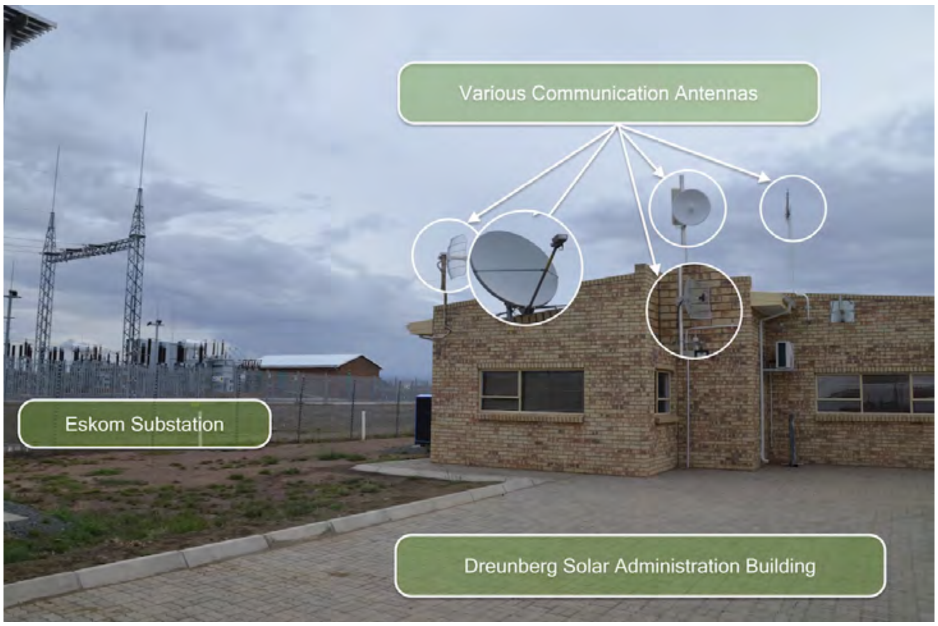


Figure 37: Administration building with potential RFI culprits

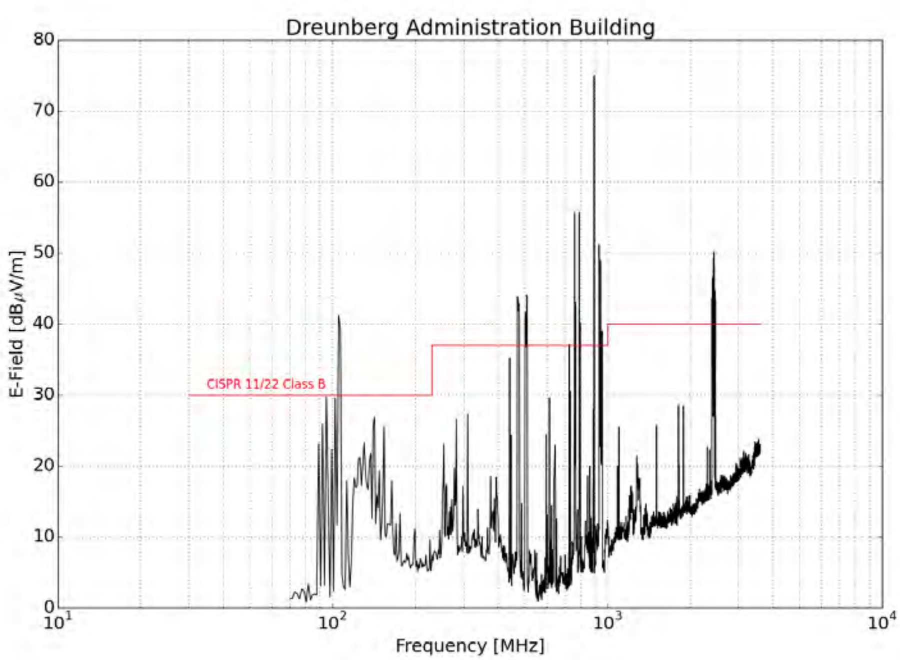


Figure 38: Radiated frequency domain emissions of the Administration building as measured at 10 m.

2.7 Discussion

2.7.1 Conducted Measurements

TD conducted measurements on supply cables to the *Tracking Unit* at Position 1 show large pulses when the plant is *ON*. When considering the FD content of these captured TD pulses (by applying the FFT), the majority of the energy extends up to at least 500 MHz. Equivalent FD measurements, particularly on the wireless antenna and pressure switch cables, agree with this, and additionally show trace peaks at frequencies around 150 MHz and 250 MHz. The higher frequencies seem to radiate into the environment more efficiently as confirmed by comparison with radiated results.

Conducted measurements, again made on the *Tracking Unit* at Position 2, still show significant levels of low frequency interference, but less higher frequency noise. This would indicate that the majority of the noise is likely to be in the vicinity of the inverter. The *Tracking Unit* emissions are somewhat aggravated by the wireless communication method. This is again confirmed with the radiated measurements.

Switching noise associated with the tracking of the panels, which were measured as conductive interference on cables connected to the *Tracking Unit* creates broadband interference. This happens both when the tracking pump switches *ON* and produces multiple pulses when it switches *OFF*. While some of the interference could be generated by the hydraulic pump, the majority is believed to be generated by the pump contactor.

2.7.2 Radiated Measurements

Radiated results for the plant *ON* and in *STANDBY* mode generally show similar emissions levels, confirming that interference producing systems are never completely *OFF*. Emissions associated with the *Inverter* units are dominant and occupy frequencies between 300 MHz and 2 GHz. Peak levels identified range between 30 - 35 dBμV/m as measured at 10 m below 1 GHz and at 3 m above 1 GHz for both polarisations.

Results for the *Tracking Unit* measured at Position 1 (wireless communication) show dominating frequencies around 250 MHz, with some additional components identified between 500 MHz and 1 GHz. Peak levels are again similar for both polarisations and are lower than *Inverter* emissions at 20 - 25 dBμV/m as measured at 10 m below 1 GHz and at 3 m above 1 GHz. In the case of emissions measured for the *Tracking Unit* at Position 2 (fixed line communication), broadband interference are present between 200 MHz and 300 MHz, and narrowband interference visible between 500 MHz and 700 MHz. Levels are lower by at least 10 dB, but this is only because of the limit in measurement sensitivity at 10 m. The results in Figs. 29 (a) and (b) show levels for many of the identified interference which are close to the measurement noise floor. Their exact levels can therefore be lower if sensitivity is improved. It shows that for purposes of RFI mitigation, the fixed line communication would be the preferred implementation.

The *String Cabinet* shows mostly broadband interference between 300 MHz and 800 MHz for both polarisations. Identified levels are again close to the measurement noise floor, with an exception at 440 MHz. The levels there are 30 dBμV/m.

Comparative measurements made with the doors to the *Inverters* and *Tracking Units* open not only helps to identify interference generated by the plant, but also show the limited levels of shielding provided by these enclosures. It is therefore possible to improve the shielding by incorporating conductive gasketting around the edges of the door and properly defining cable interfaces. This will help to reduce the level of radiated interference emitted by the devices. Radiated TD measurements of the *Tracking Units* at Position 1 and 2 show broadband interference across the 3.6 GHz frequency range. Levels of between 33 and 43 dBμV/m can be expected at 10 m. The main contributor is believed to be the switching relays and contactor inside the *Tracking Cabinet*. This, however, can be improved by proper shielding of the cabinet interfaces and apertures.

3 Site Location Data

The proximity of the proposed PV plant locations to the closest and core-site SKA telescopes are shown in Figs. 39 to 49, while separation distances, azimuth angles, transmitter and receiver heights for preferred and alternative site locations are given in Tables 6 to 24.

3.1 Scatec PV1, PV2 and PV3

Scatec PV1 Pref	**Closest Telescope 1**	**Closest Telescope 2**	**SKA Core Site**
Distance	20.92 km	56.60 km	169.79 km
Azimuth	86.21 ^{o}	163.45 ^{o}	173.55 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

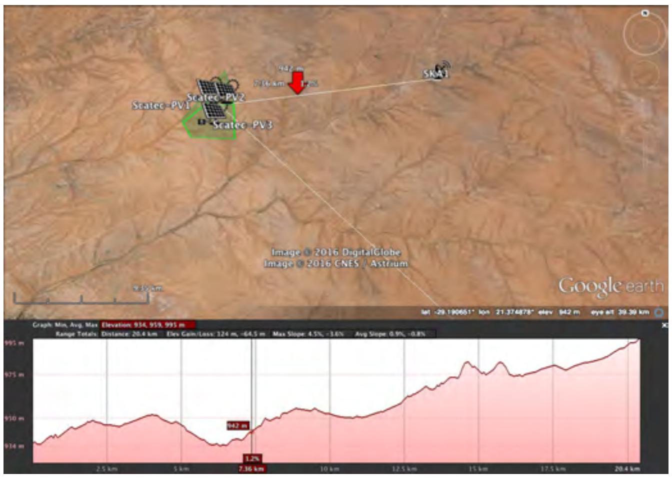
Table 6: Specifications of location Scatec PV1 solar farm relative to the SKA core and closest telescopes.

Scatec PV2 Pref	**Closest Telescope 1**	**Closest Telescope 2**	**SKA Core Site**
Distance	19.43 km	55.30 km	169.33 km
Azimuth	83.77 ^{o}	163.86 ^{o}	174.24 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

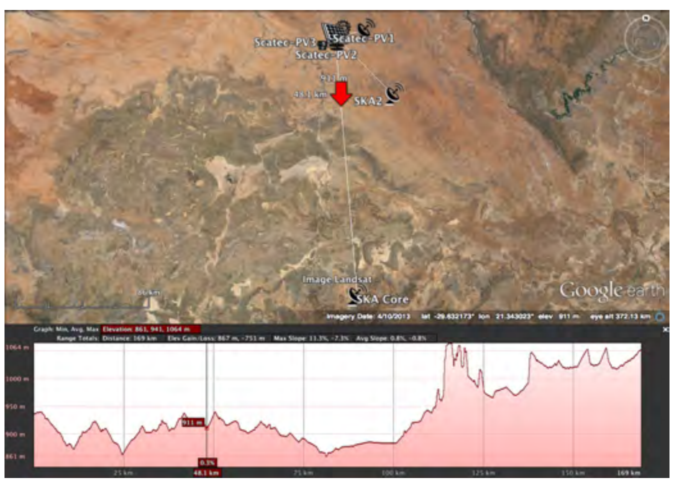
Table 7: Specifications of location Scatec PV2 solar farm relative to the SKA core and closest telescopes.

Scatec PV3 Pref	**Closest Telescope 1**	**Closest Telescope 2**	**SKA Core Site**
Distance	20.57 km	54.09 km	167.02 km
Azimuth	75.12 ^{o}	162.75 ^{o}	173.91 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 8: Specifications of location Scatec PV3 solar farm relative to the SKA core and closest telescopes.



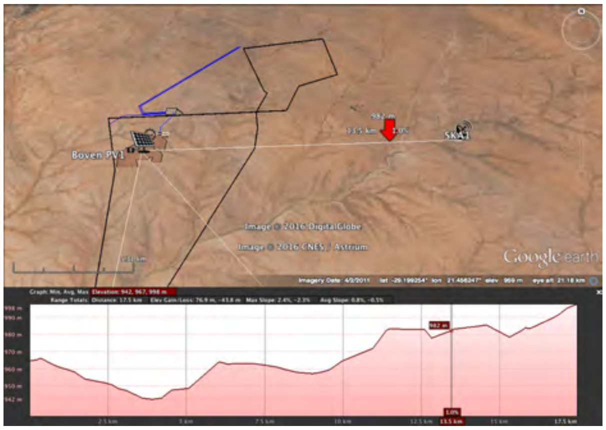
(a) (b)



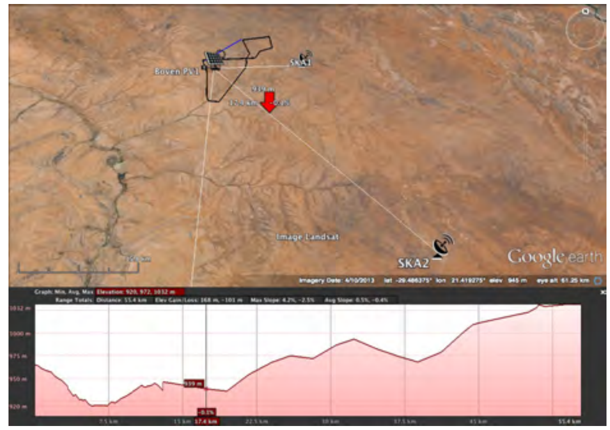
(c)

Figure 39: Google Earth terrain profile for Scatec PV1 to PV3 to (a) closest and (b) second closest and (c) core SKA telescopes.

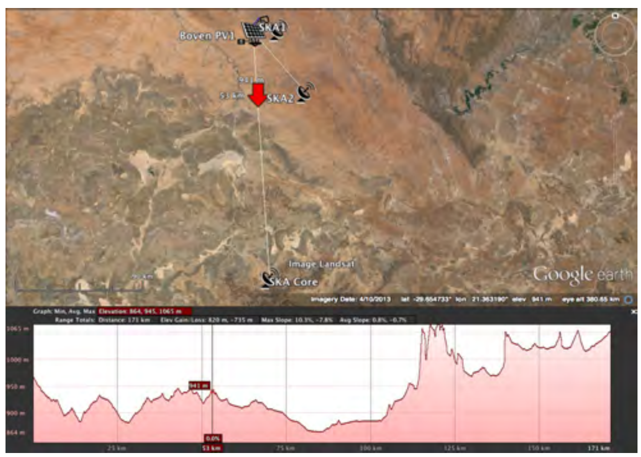
3.2 Boven PV1



(a)



(b)



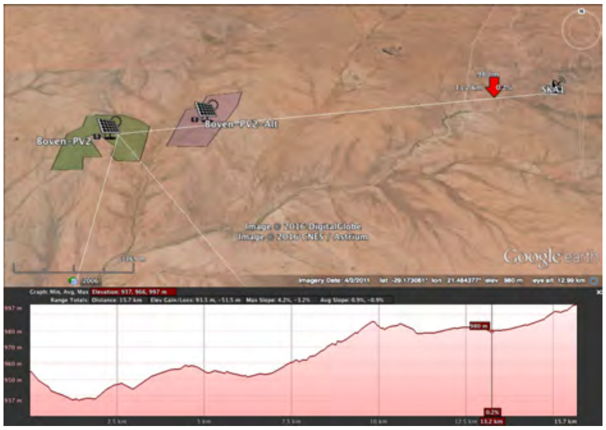
(c)

Figure 40: Google Earth terrain profile for Boven PV1 to (a) closest and (b) second closest and (c) core SKA telescopes.

Boven PV1	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	17.37 km	55.45 km	171.10 km
Azimuth	90.92 ^{o}	165.13 ^{o}	175.10 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 9: Specifications of location Boven PV1 solar farm relative to the SKA core and closest telescopes.

3.3 Boven PV2



(a)

(b)

(c)

Figure 41: Google Earth terrain profile for Boven PV2 to (a) closest and (b) second closest and (c) core SKA telescopes.

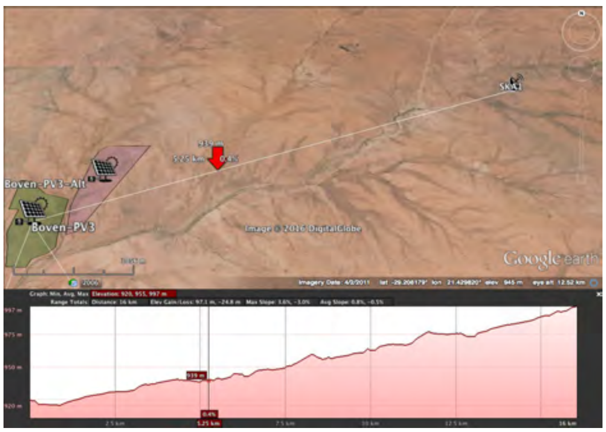
Boven PV2 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	15.00 km	52.46 km	169.08 km
Azimuth	80.68 ^{o}	140.60 ^{o}	177.13 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 10: Specifications of **preferred** location Boven PV2 solar farm relative to the SKA core and closest telescopes.

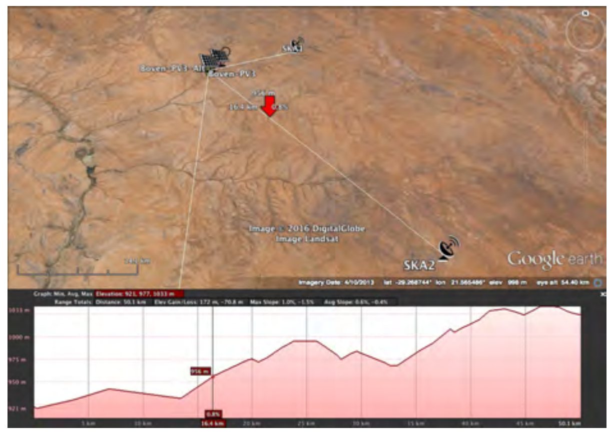
Boven PV2 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	12.52 km	52.07 km	170.30 km
Azimuth	84.93 ^{o}	143.50 ^{o}	177.93 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 11: Specifications of **alternative** location Boven PV2 solar farm relative to the SKA core and closest telescopes.

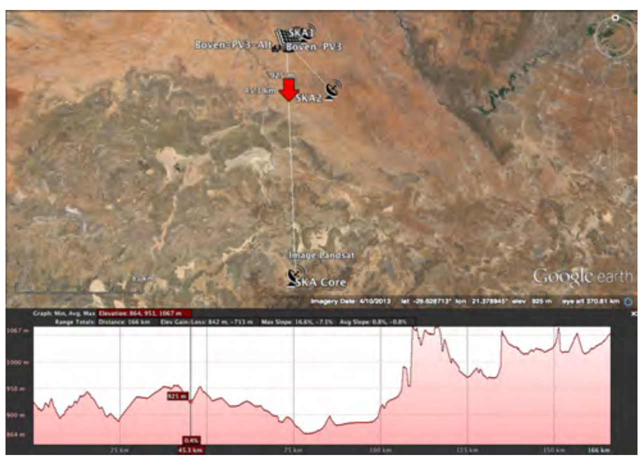
3.4 Boven PV3



(a)



(b)



(c)

Figure 42: Google Earth terrain profile for Boven PV3 to (a) closest and (b) second closest and (c) core SKA telescopes.

Boven PV3 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	15.69 km	50.06 km	166.01 km
Azimuth	69.50 ^{o}	138.46 ^{o}	177.11 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 12: Specifications of **preferred** location Boven PV3 solar farm relative to the SKA core and closest telescopes.

Boven PV3 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	13.79 km	50.41 km	167.63 km
Azimuth	73.94 ^{o}	140.96 ^{o}	177.63 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 13: Specifications of **alternative** location Boven PV3 solar farm relative to the SKA core and closest telescopes.

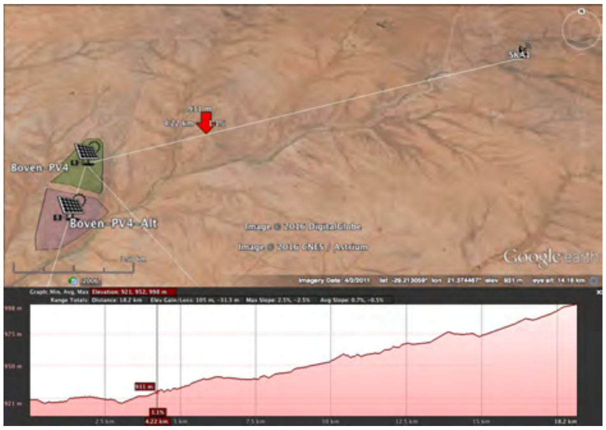
3.5 Boven PV4

Boven PV4 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	17.94 km	51.16 km	165.60 km
Azimuth	70.38 ^{o}	136.24 ^{o}	176.36 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

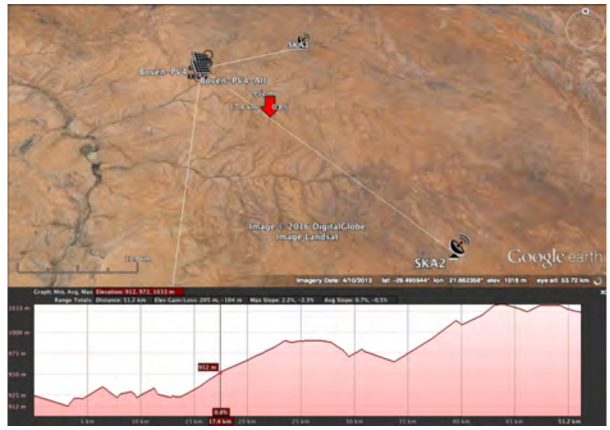
Table 14: Specifications of **preferred** location Boven PV4 solar farm relative to the SKA core and closest telescopes.

Boven PV4 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	18.72 km	49.62 km	163.48 km
Azimuth	64.21 ^{o}	134.58 ^{o}	176.32 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

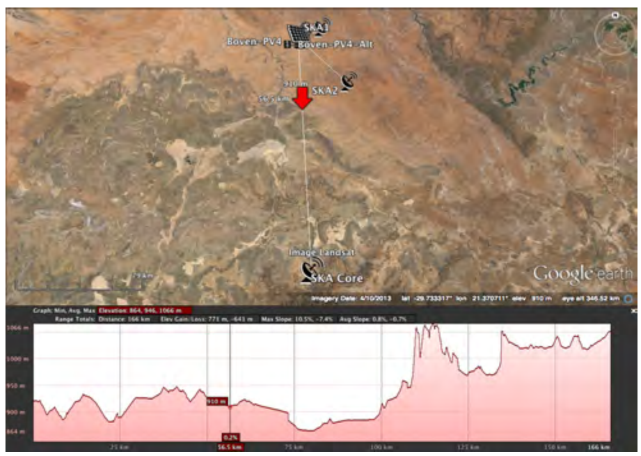
Table 15: Specifications of **alternative** location Boven PV4 solar farm relative to the SKA core and closest telescopes.



(a)



(b)



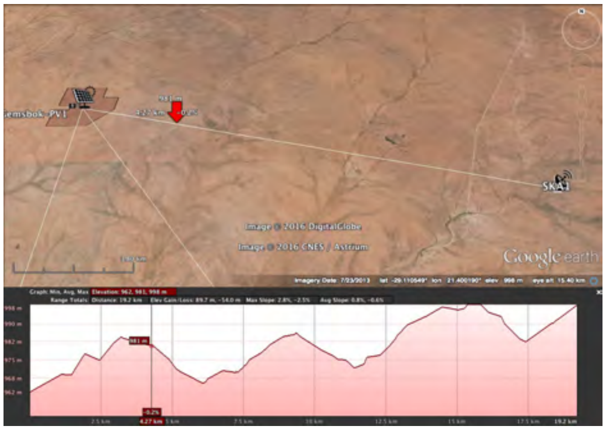
(c)

Figure 43: Google Earth terrain profile for Boven PV4 to (a) closest and (b) second closest and (c) core SKA telescopes.

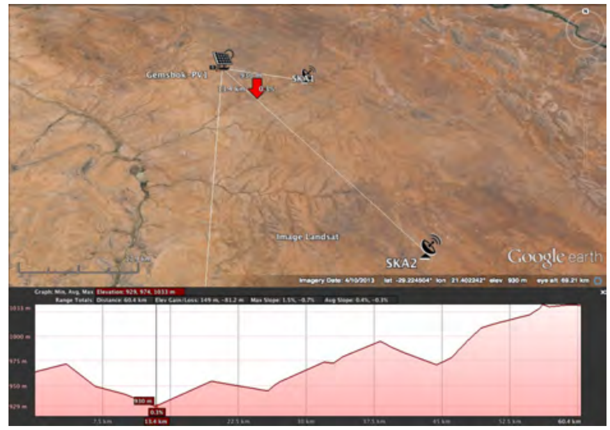
3.6 Gemsbok PV1

Gemsbok PV1	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	19.12 km	60.45 km	176.67 km
Azimuth	113.77 ^{o}	166.26 ^{o}	174.59 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 16: Specifications of location Gemsbok PV1 solar farm relative to the SKA core and closest telescopes.



(a)



(b)

(c)

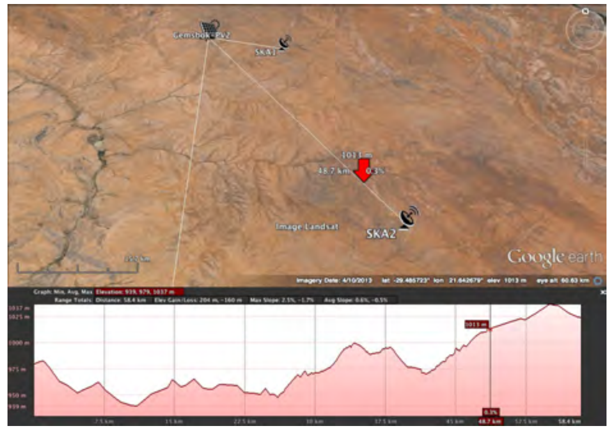
Figure 44: Google Earth terrain profile for Gemsbok PV1 to (a) closest and (b) second closest and (c) core SKA telescopes.

3.7 Gemsbok PV2

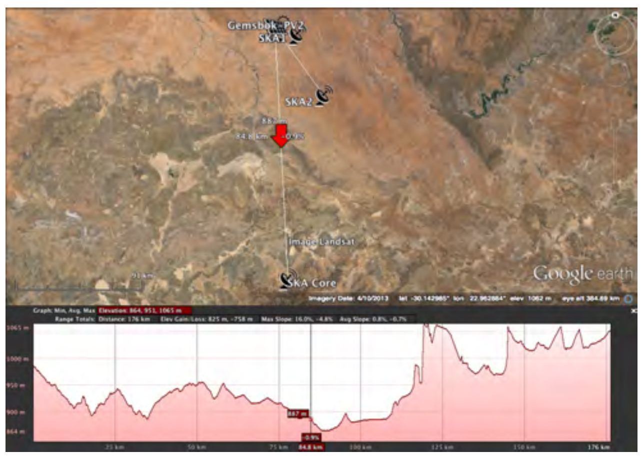
Gemsbok PV2	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	16.14 km	58.41 km	176.19 km
Azimuth	115.27 ^{o}	167.15 ^{o}	175.95 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 17: Specifications of location Gemsbok PV2 solar farm relative to the SKA core and closest telescopes.

(a)



(b)



(c)

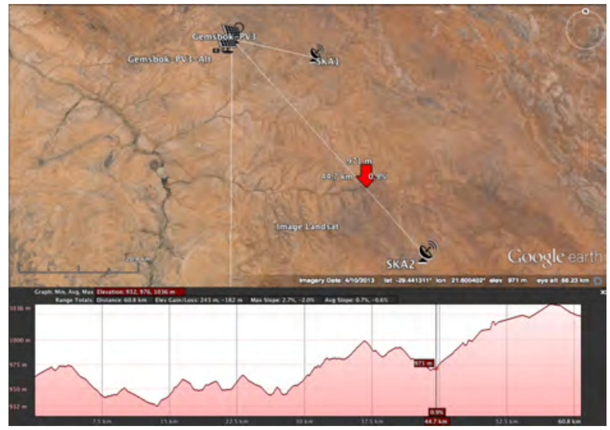
Figure 45: Google Earth terrain profile for Gemsbok PV2 to (a) closest and (b) second closest and (c) core SKA telescopes.

3.8 Gemsbok PV3

Gemsbok PV3 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	19.46 km	61.16 km	177.36 km
Azimuth	106.87 ^{o}	142.65 ^{o}	176.05 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 18: Specifications of **preferred** location Gemsbok PV3 solar farm relative to the SKA core and closest telescopes.

(a)



(b)

(c)

Figure 46: Google Earth terrain profile for Gemsbok PV3 to (a) closest and (b) second closest and (c) core SKA telescopes.

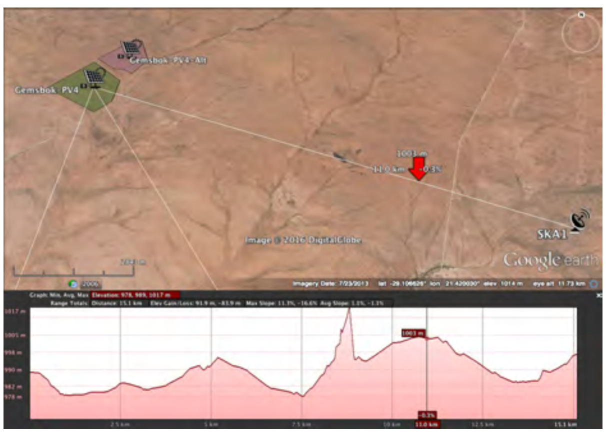
Gemsbok PV3 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	19.53 km	59.47 km	174.71 km
Azimuth	98.67 ^{o}	140.55 ^{o}	175.77 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 19: Specifications of **alternative** location Gemsbok PV3 solar farm relative to the SKA core and closest telescopes.

3.9 Gemsbok PV4

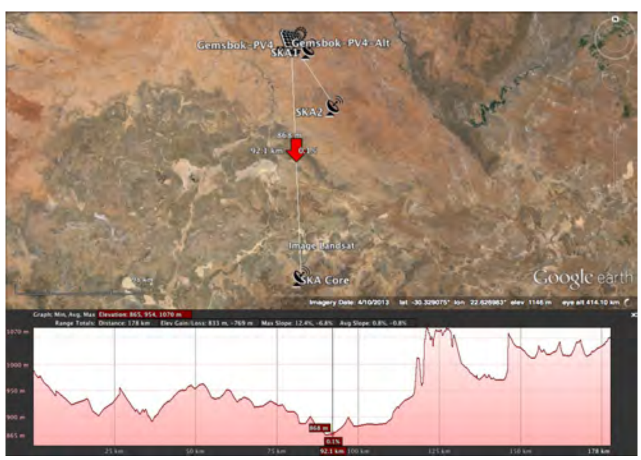
Gemsbok PV4 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	15.24 km	58.87 km	177.62 km
Azimuth	113.85 ^{o}	146.57 ^{o}	177.54 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 20: Specifications of **preferred** location Gemsbok PV4 solar farm relative to the SKA core and closest telescopes.



(a)

(b)



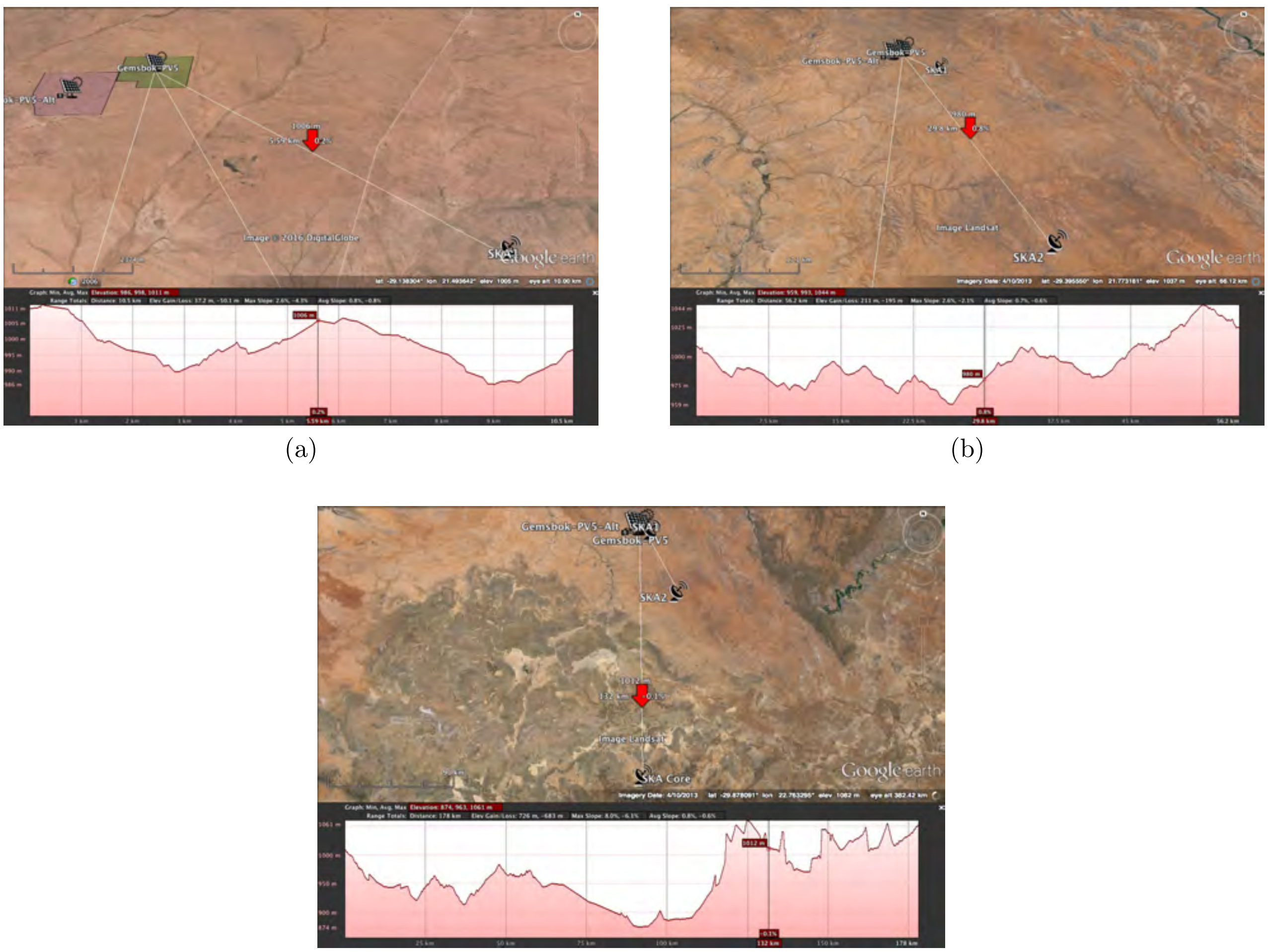
(c)

Figure 47: Google Earth terrain profile for Gemsbok PV4 to (a) closest and (b) second closest and (c) core SKA telescopes.

Gemsbok PV4 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	15.31 km	59.95 km	179.43 km
Azimuth	121.55 ^{o}	148.25 ^{o}	177.85 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 21: Specifications of **alternative** location Gemsbok PV4 solar farm relative to the SKA core and closest telescopes.

3.10 Gemsbok PV5



(a) (b) (c)

Figure 48: Google Earth terrain profile for Gemsbok PV5 to (a) closest and (b) second closest and (c) core SKA telescopes.

Gemsbok PV5 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	10.59 km	56.39 km	178.01 km
Azimuth	129.26 ^{o}	151.72 ^{o}	179.37 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 22: Specifications of **preferred** location Gemsbok PV5 solar farm relative to the SKA core and closest telescopes.

Gemsbok PV5 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	11.83 km	56.56 km	177.00 km
Azimuth	118.57 ^{o}	149.27 ^{o}	178.67 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 23: Specifications of **alternative** location Gemsbok PV5 solar farm relative to the SKA core and closest telescopes.

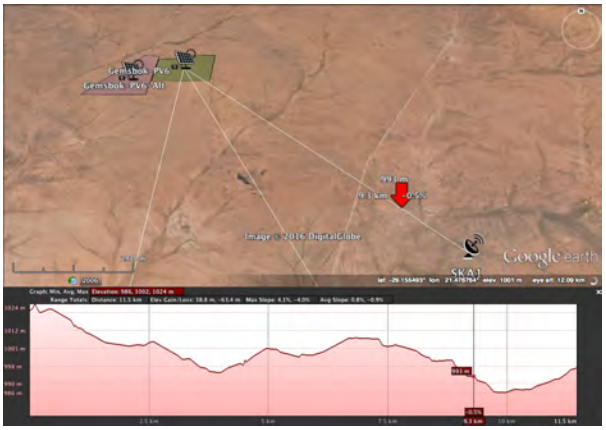
3.11 Gemsbok PV6

Gemsbok PV6 Pref	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	11.48 km	57.56 km	179.32 km
Azimuth	134.26 ^{o}	152.32 ^{o}	179.37 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 24: Specifications of **preferred** location Gemsbok PV6 solar farm relative to the SKA core and closest telescopes.

Gemsbok PV6 Alt	Closest Telescope 1	Closest Telescope 2	SKA Core Site
Distance	12.50 km	57.86 km	178.64 km
Azimuth	125.74 ^{o}	150.31 ^{o}	178.76 ^{o}
PV Tx Height	3 m	3 m	3 m
SKA Rx Height	15 m	15 m	15 m

Table 25: Specifications of **alternative** location Gemsbok PV6 solar farm relative to the SKA core and closest telescopes.



(a)

(b)

(c)

Figure 49: Google Earth terrain profile for Gemsbok PV6 to (a) closest and (b) second closest and (c) core SKA telescopes.

4 Signal Propagation Loss and Terrain Analysis

The default propagation analysis software used by MESA Solutions is called SPLAT!, which is a **S**ignal **P**ropagation, **L**oss **A**nd **T**errain analysis tool based on the *Longley-Rice Irregular Terrain Model (ITM)*, as well as the *Irregular Terrain With Obstructions Model (ITWOM 3.0)*. The software takes into account actual terrain elevation data, to ultimately predict the total path loss (TPL) between a transmitter and a receiver. As part of the analysis, certain assumptions are made regarding the source characteristics. For this investigation the various parameters defining the SPLAT! propagation model are listed in Table 26. The digital elevation model (DEM) makes use of 3-arc-second (90 m) elevation resolution data.

For this investigation, the frequency range of interest is defined from 100 MHz to 3 GHz. While the upper frequency limit of the standard in [2] is specified to at least 10 GHz, the span is limited to what is practically measurable and representative of the majority of expected interference. In the analysis the allowable SKA radiation limits defined by SARAS in citeAGA2007, including an additional 10 dB safety margin, are used as the reference level. This defines the maximum allowable levels of radiated interference than can be tolerated at the telescope.

This maximum level, which is given as a power spectral density (PSD) in dBm/Hz, is compensated for by the TPL as predicted by SPLAT!, to provide an equivalent PSD associated with the closest and core-site telescopes. This PSD for each case is then converted to an equivalent electric field (E-field) as measured at either 10 m (frequency $<$ 1 GHz) or 3 m (frequency $>$ 1 GHz) away from the plant. The 3 and 10 m separation distances is in accordance with measurement specifications defined in the latest international special committee on radio interference's (CISPR) 11/22 Class B standard. This standard is used for reference purposes as it is internationally know and used for industry qualification. This calculation is done for a number of representative frequencies within the band of interest and defines an E-field upper limit which the plant is allowed to radiate without exceeding emission limits at the various telescope locations. Ultimately, conformance of the plant can then be determined by comparing representative measured results to the calculated levels provided.

SPLAT! Analysis Parameters	
Frequency [MHz]	100 - 3000
Earth Dielectric Constant (Relative Permittivity [F/m])	4.000
Earth Conductivity [S/m]	0.001
Atmospheric Bending Constant	301
Radio Climate	4 (Desert)
Polarisation (Vertical=1; Horizontal=0)	1
Fraction of Time	0.05
Fraction of Situations	0.05

Table 26: SPLAT! parameters for predicted 100 MHz to 3 GHz emissions from proposed PV projects to SKA core and closest telescope.

5 Total Path Loss

Shown in Tables 27 to 45 are the values for the free space path loss (FSPL), terrain loss (TL), and total path loss (TPL) at each of the frequencies chosen for the investigation. The 0 dB TL at 100 MHz is a purely mathematical limitation of the software indicating a negligible contribution at that frequency over this particular terrain. The attenuation maps for 100, 1000, 2000 and 3000 MHz calculated at each of the site location are given in Figs. 50 to 69.

5.1 Scatec PV 1 Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	98.85dB	25.85dB	**124.7dB**	107.5dB	32.55dB	**140.05dB**	117.04dB	41.49dB	**158.53dB**
300MHz	108.4dB	22.11dB	**130.51dB**	117.04dB	27.16dB	**144.2dB**	126.58dB	36.97dB	**163.55dB**
500MHz	112.83dB	21.54dB	**134.37dB**	121.48dB	27.13dB	**148.61dB**	131.02dB	38.31dB	**169.33dB**
1000MHz	118.85dB	22.67dB	**141.52dB**	127.5dB	30.64dB	**158.14dB**	137.04dB	42.46dB	**179.5dB**
1500MHz	122.37dB	24.04dB	**146.41dB**	131.02dB	33.55dB	**164.57dB**	140.56dB	44.38dB	**184.94dB**
2000MHz	124.87dB	25.12dB	**149.99dB**	133.52dB	35.96dB	**169.48dB**	143.06dB	45.72dB	**188.78dB**
2500MHz	126.81dB	25.97dB	**152.78dB**	135.46dB	37.92dB	**173.38dB**	145.0dB	46.77dB	**191.77dB**
3000MHz	128.4dB	26.75dB	**155.15dB**	137.04dB	39.58dB	**176.62dB**	146.58dB	47.63dB	**194.21dB**

Table 27: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Scatec PV1 emissions.

5.2 Scatec PV 2 Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	98.21dB	16.04dB	**114.25dB**	107.3dB	19.65dB	**126.95dB**	117.02dB	33.37dB	**150.39dB**
300MHz	107.75dB	10.55dB	**118.3dB**	116.84dB	13.63dB	**130.47dB**	126.56dB	33.87dB	**160.43dB**
500MHz	112.19dB	8.9dB	**121.09dB**	121.28dB	12.7dB	**133.98dB**	131.0dB	35.77dB	**166.77dB**
1000MHz	118.21dB	8.42dB	**126.63dB**	127.3dB	13.91dB	**141.21dB**	137.02dB	40.56dB	**177.58dB**
1500MHz	121.73dB	8.83dB	**130.56dB**	130.82dB	15.07dB	**145.89dB**	140.54dB	42.73dB	**183.27dB**
2000MHz	124.23dB	9.49dB	**133.72dB**	133.32dB	16.21dB	**149.53dB**	143.04dB	44.18dB	**187.22dB**
2500MHz	126.17dB	10.26dB	**136.43dB**	135.25dB	17.3dB	**152.55dB**	144.98dB	45.28dB	**190.26dB**
3000MHz	127.75dB	10.93dB	**138.68dB**	136.84dB	18.3dB	**155.14dB**	146.56dB	46.16dB	**192.72dB**

Table 28: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Scatec PV2 emissions.

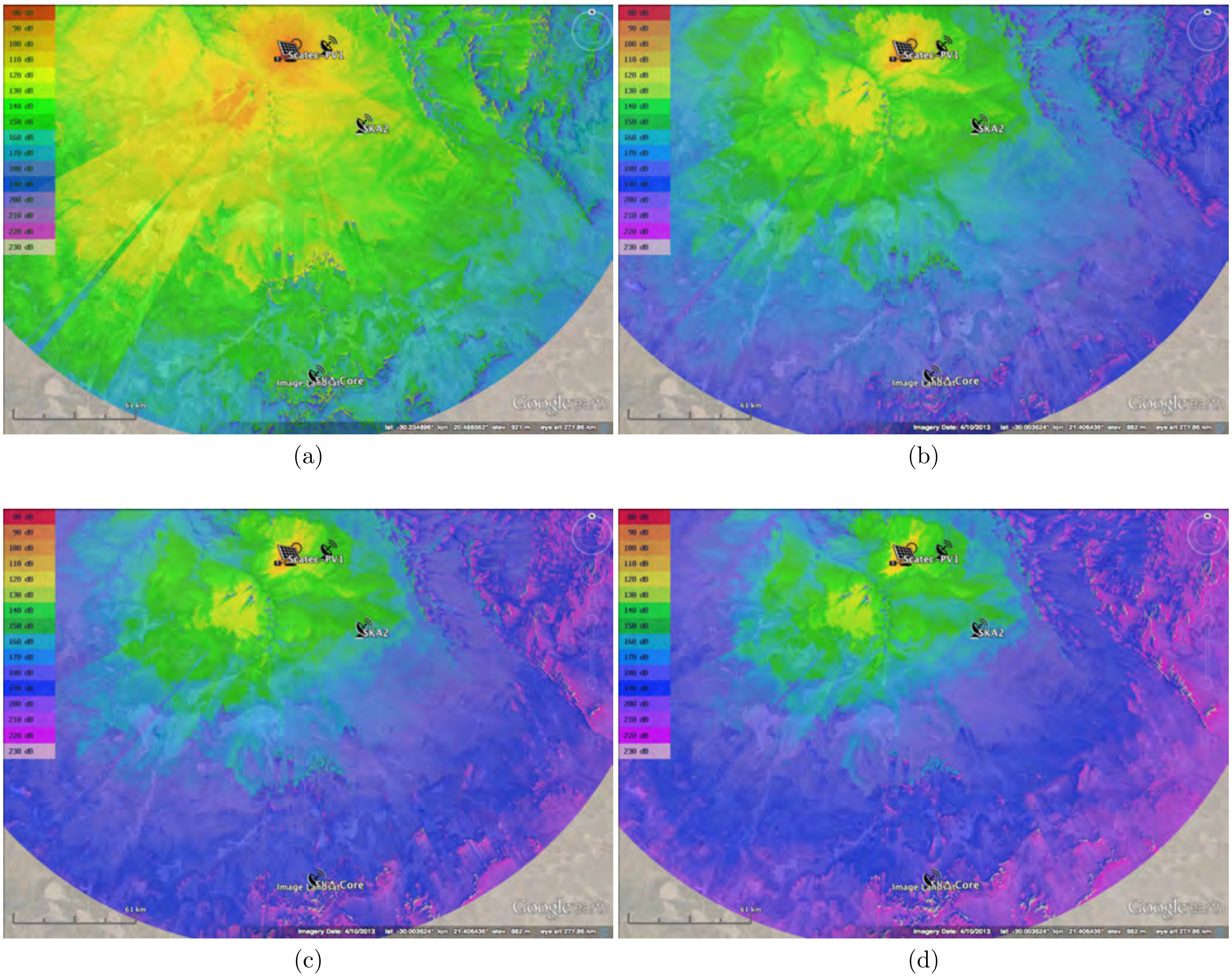


Figure 50: TPL attenuation maps for site location of Scatec PV1 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

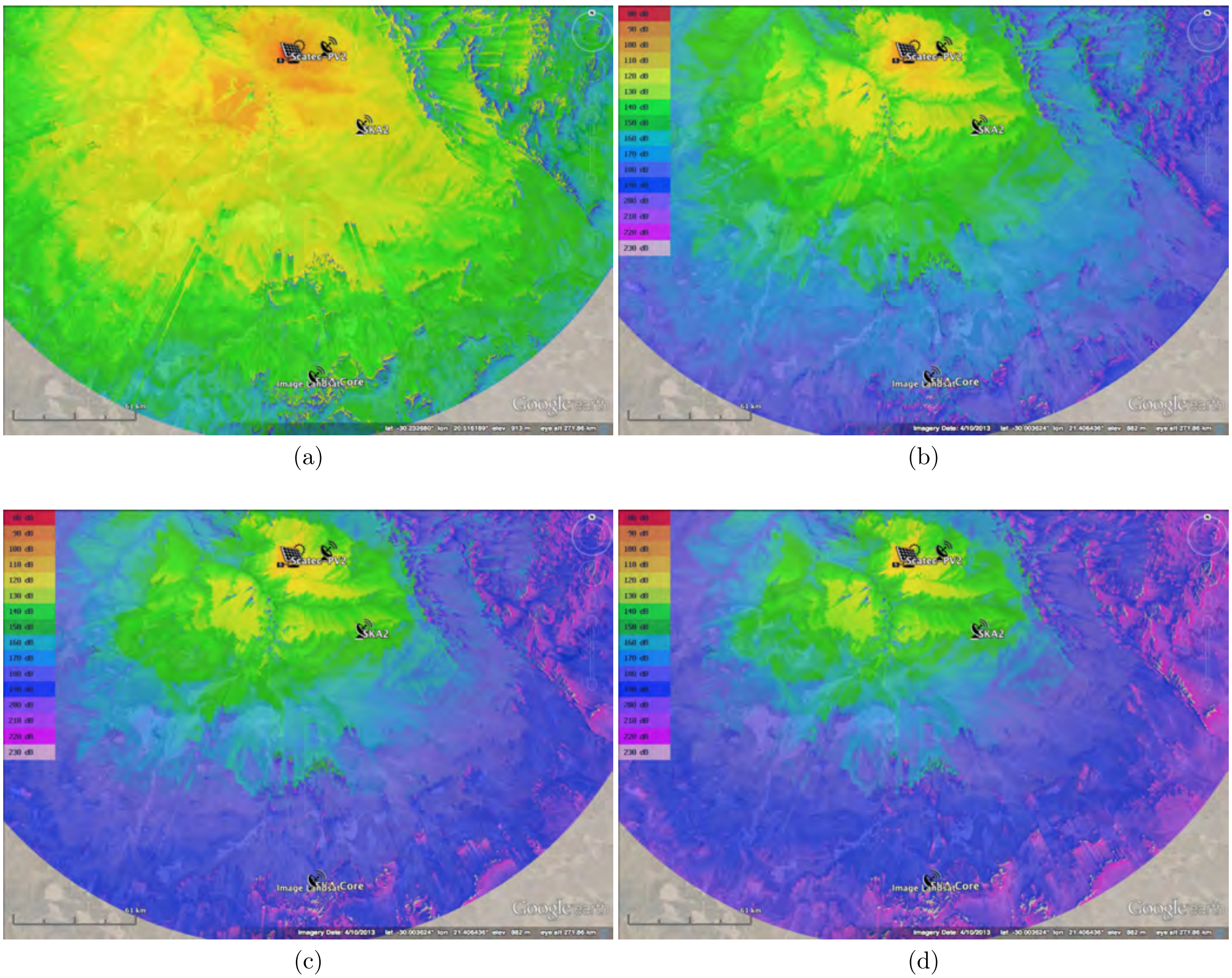
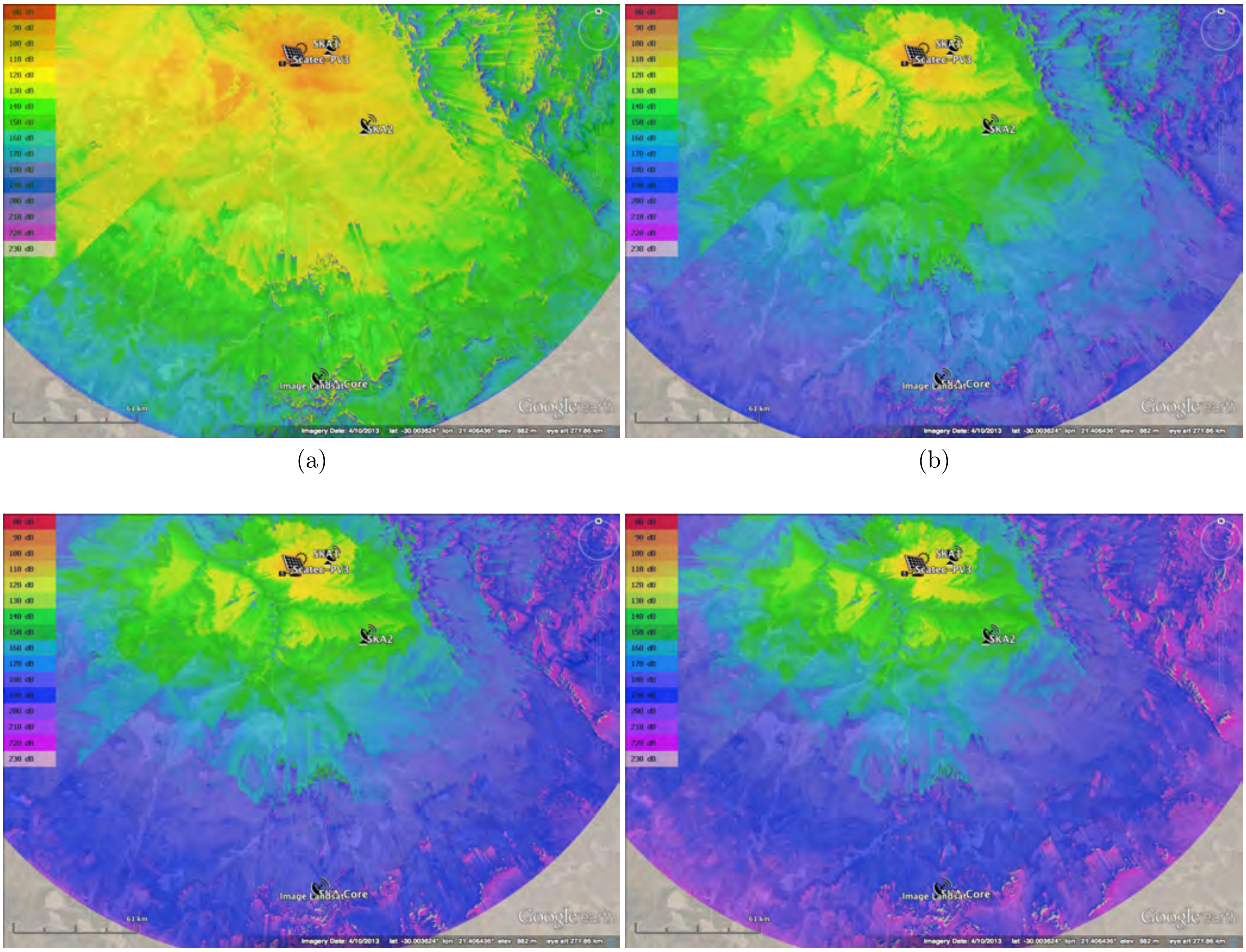


Figure 51: TPL attenuation maps for site location of Scatec PV2 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.3 Scatec PV 3 Site Location



(a) (b)

(c) (d)

Figure 52: TPL attenuation maps for site location of Scatec PV3 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

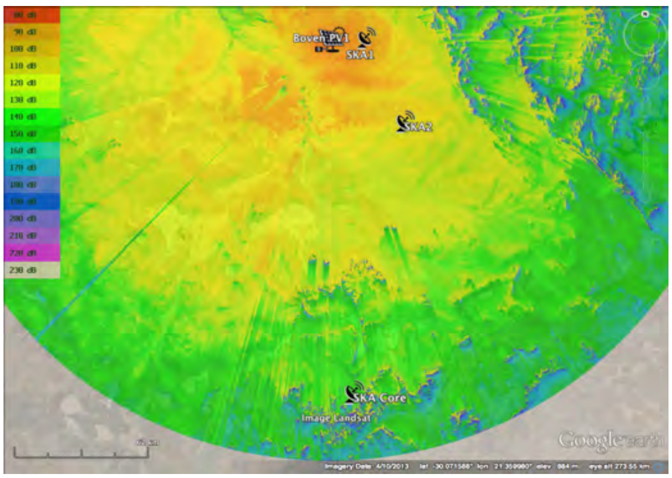
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	98.71dB	28.91dB	**127.62dB**	107.1dB	29.76dB	**136.86dB**	116.9dB	45.22dB	**162.12dB**
300MHz	108.25dB	27.45dB	**135.7dB**	116.65dB	22.96dB	**139.61dB**	126.44dB	41.0dB	**167.44dB**
500MHz	112.69dB	27.82dB	**140.51dB**	121.08dB	22.11dB	**143.19dB**	130.88dB	41.68dB	**172.56dB**
1000MHz	118.71dB	30.21dB	**148.92dB**	127.1dB	24.49dB	**151.59dB**	136.9dB	44.96dB	**181.86dB**
1500MHz	122.23dB	31.86dB	**154.09dB**	130.63dB	26.93dB	**157.56dB**	140.42dB	46.44dB	**186.86dB**
2000MHz	124.73dB	33.11dB	**157.84dB**	133.12dB	28.84dB	**161.96dB**	142.92dB	47.53dB	**190.45dB**
2500MHz	126.67dB	34.08dB	**160.75dB**	135.06dB	30.38dB	**165.44dB**	144.86dB	48.43dB	**193.29dB**
3000MHz	128.25dB	34.86dB	**163.11dB**	136.65dB	31.62dB	**168.27dB**	146.44dB	49.2dB	**195.64dB**

Table 29: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Scatec PV3 emissions.

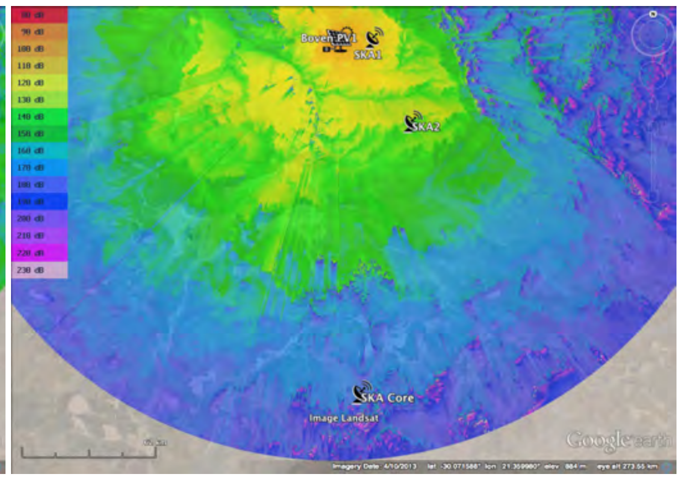
5.4 Boven PV1 Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	97.24dB	7.21dB	**104.45dB**	107.32dB	17.22dB	**124.54dB**	117.11dB	28.82dB	**145.93dB**
300MHz	106.78dB	0.0dB	**106.78dB**	116.86dB	11.61dB	**128.47dB**	126.65dB	30.53dB	**157.18dB**
500MHz	111.22dB	0.0dB	**111.22dB**	121.3dB	10.71dB	**132.01dB**	131.09dB	33.05dB	**164.14dB**
1000MHz	117.24dB	0.0dB	**117.24dB**	127.32dB	11.7dB	**139.02dB**	137.11dB	38.43dB	**175.54dB**
1500MHz	120.76dB	0.0dB	**120.76dB**	130.84dB	12.67dB	**143.51dB**	140.63dB	40.79dB	**181.42dB**
2000MHz	123.26dB	0.0dB	**123.26dB**	133.34dB	13.63dB	**146.97dB**	143.13dB	42.36dB	**185.49dB**
2500MHz	125.19dB	0.0dB	**125.19dB**	135.28dB	14.53dB	**149.81dB**	145.07dB	43.52dB	**188.59dB**
3000MHz	126.78dB	0.0dB	**126.78dB**	136.86dB	15.39dB	**152.25dB**	146.65dB	44.46dB	**191.11dB**

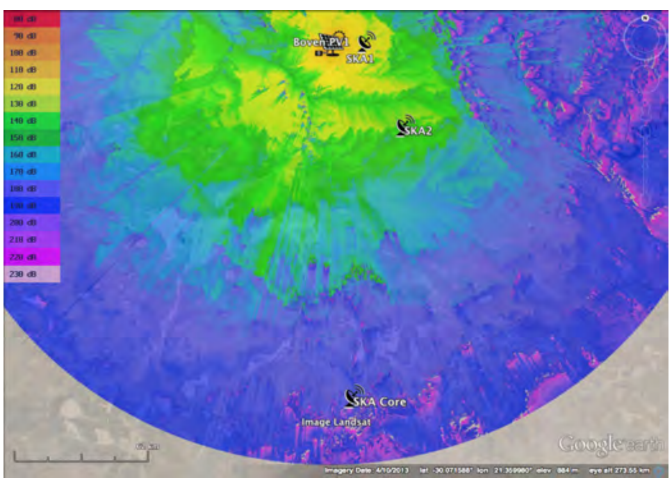
Table 30: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation site Boven PV1 emissions.



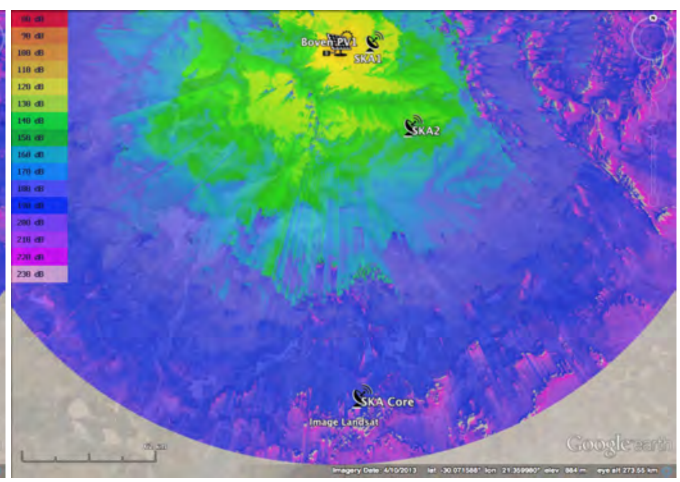
(a)



(b)



(c)



(d)

Figure 53: TPL attenuation maps for site location of Boven PV1 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.5 Boven PV2 Site Location

5.5.1 Boven PV2 Preferred Site Location

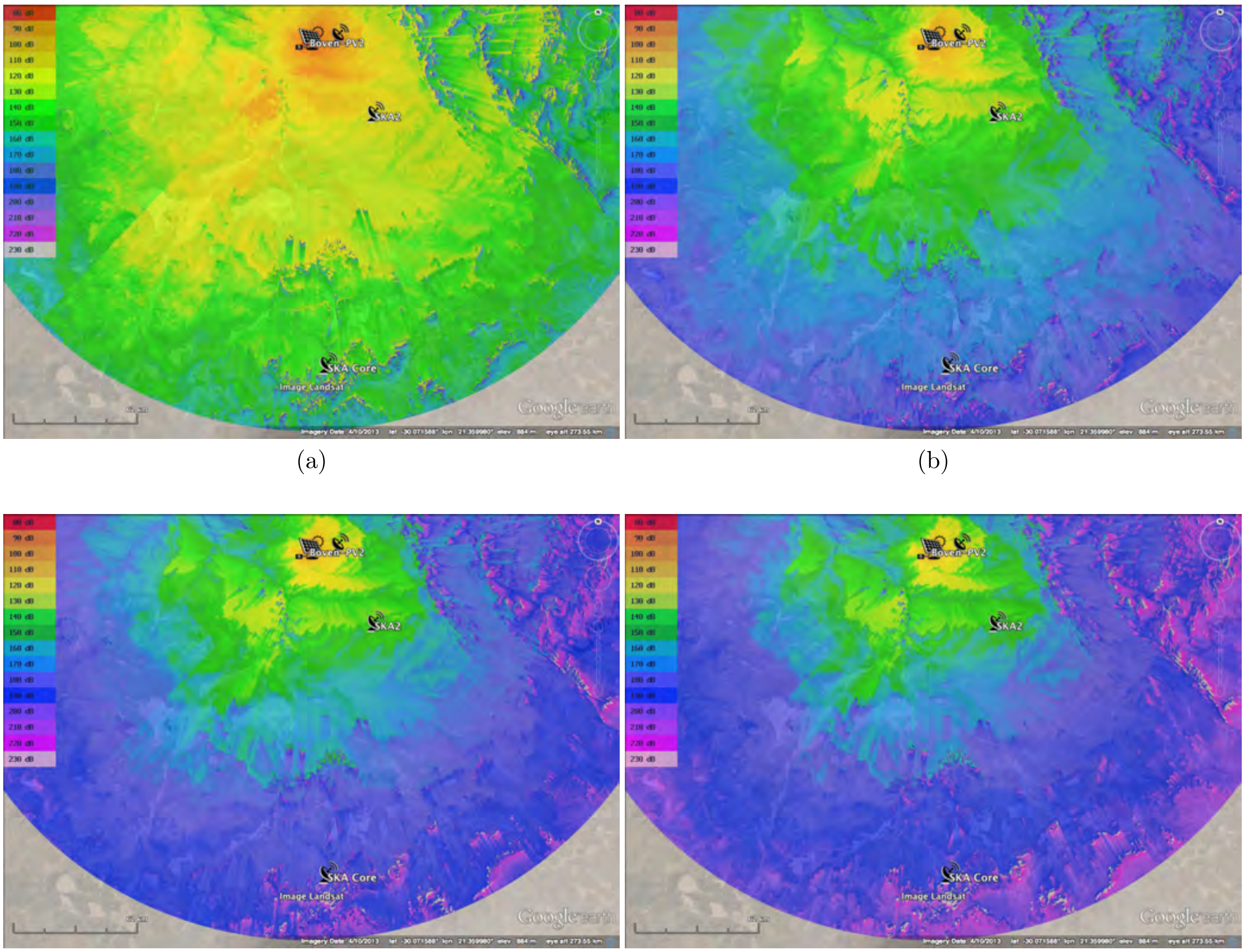
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	96.35dB	9.89dB	**106.24dB**	106.96dB	19.16dB	**126.12dB**	117.03dB	28.24dB	**145.27dB**
300MHz	105.89dB	1.91dB	**107.8dB**	116.5dB	13.49dB	**129.99dB**	126.57dB	30.09dB	**156.66dB**
500MHz	110.33dB	0.0dB	**110.33dB**	120.94dB	12.54dB	**133.48dB**	131.01dB	32.71dB	**163.72dB**
1000MHz	116.35dB	0.0dB	**116.35dB**	126.96dB	13.45dB	**140.41dB**	137.03dB	38.18dB	**175.21dB**
1500MHz	119.87dB	0.0dB	**119.87dB**	130.48dB	14.41dB	**144.89dB**	140.55dB	40.57dB	**181.12dB**
2000MHz	122.37dB	0.0dB	**122.37dB**	132.98dB	15.38dB	**148.36dB**	143.05dB	42.15dB	**185.2dB**
2500MHz	124.31dB	0.0dB	**124.31dB**	134.92dB	16.31dB	**151.23dB**	144.99dB	43.32dB	**188.31dB**
3000MHz	125.89dB	0.0dB	**125.89dB**	136.5dB	17.18dB	**153.68dB**	146.57dB	44.26dB	**190.83dB**

Table 31: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Boven PV2 emissions.

5.5.2 Boven PV2 Alternative Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	94.37dB	20.47dB	**114.84dB**	106.75dB	40.07dB	**146.82dB**	117.06dB	34.54dB	**151.6dB**
300MHz	103.91dB	16.13dB	**120.04dB**	116.29dB	36.53dB	**152.82dB**	126.61dB	38.39dB	**165.0dB**
500MHz	108.35dB	15.23dB	**123.58dB**	120.73dB	36.68dB	**157.41dB**	131.04dB	40.36dB	**171.4dB**
1000MHz	114.37dB	15.55dB	**129.92dB**	126.75dB	39.76dB	**166.51dB**	137.06dB	43.52dB	**180.58dB**
1500MHz	117.89dB	17.09dB	**134.98dB**	130.27dB	42.09dB	**172.36dB**	140.59dB	44.88dB	**185.47dB**
2000MHz	120.39dB	18.56dB	**138.95dB**	132.77dB	43.98dB	**176.75dB**	143.08dB	45.91dB	**188.99dB**
2500MHz	122.33dB	19.72dB	**142.05dB**	134.71dB	44.87dB	**179.58dB**	145.02dB	46.76dB	**191.78dB**
3000MHz	123.91dB	20.82dB	**144.73dB**	136.29dB	45.56dB	**181.85dB**	146.61dB	47.49dB	**194.1dB**

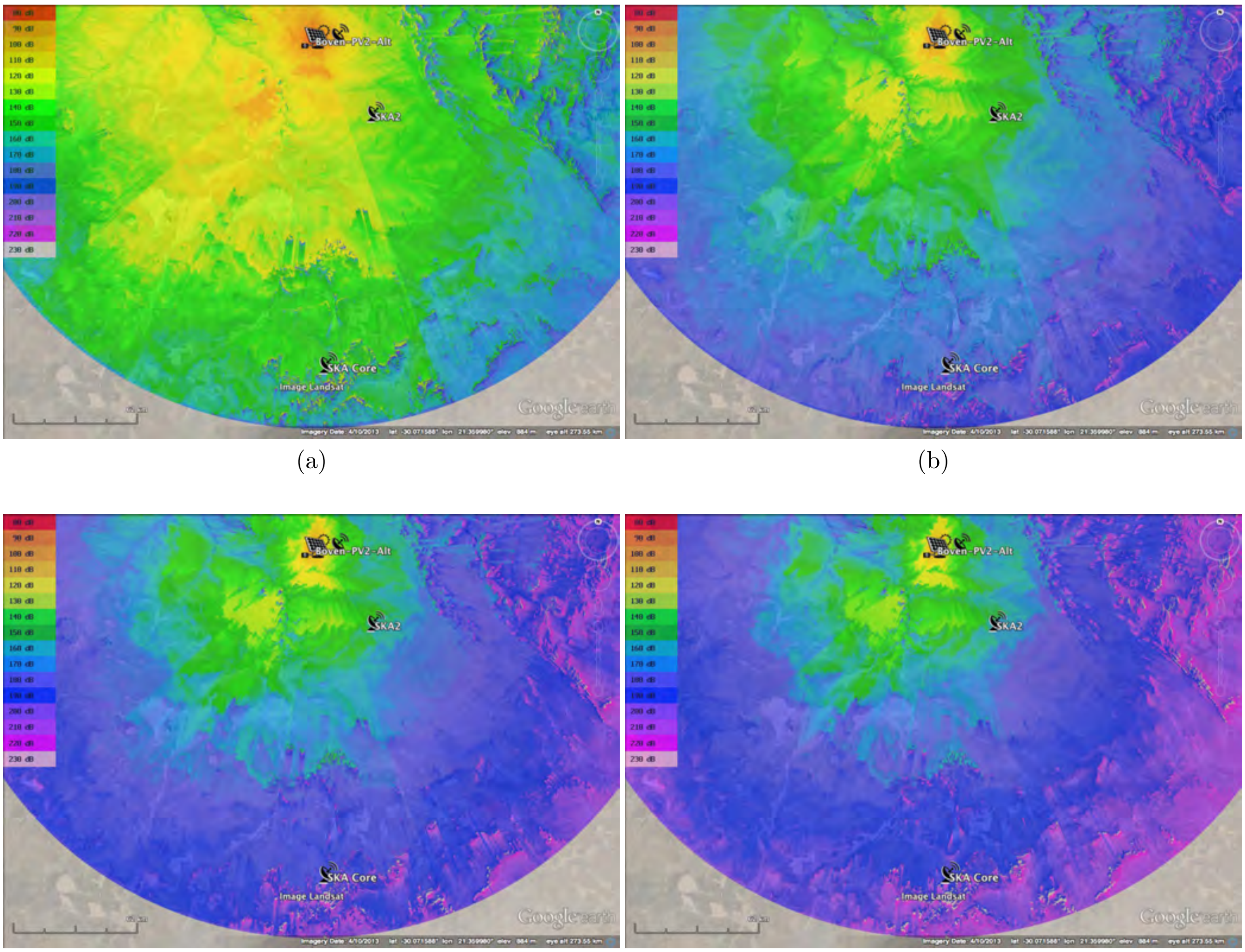
Table 32: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Boven PV2 emissions.



(a) (b)

(c) (d)

Figure 54: TPL attenuation maps for **preferred** site location of Boven PV2 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



(a) (b)

(c) (d)

Figure 55: TPL attenuation maps for **alternative** site location of Boven PV2 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.6 Boven PV3 Site Location

5.6.1 Boven PV3 Preferred Site Location

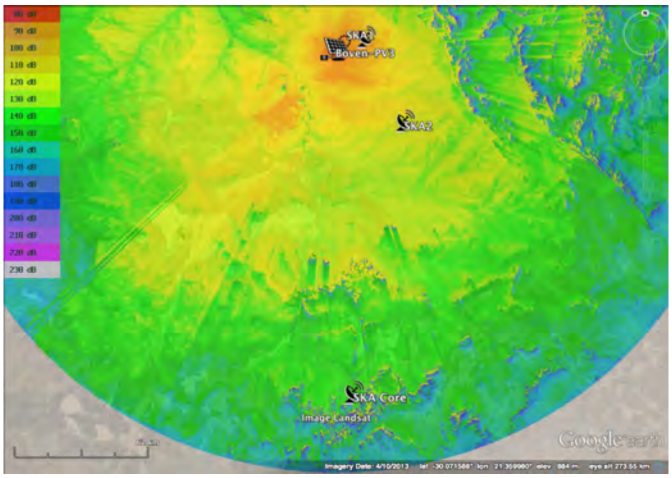
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	96.4dB	14.84dB	**111.24dB**	106.43dB	27.93dB	**134.36dB**	116.85dB	37.22dB	**154.07dB**
300MHz	105.94dB	6.35dB	**112.29dB**	115.98dB	23.3dB	**139.28dB**	126.39dB	35.02dB	**161.41dB**
500MHz	110.38dB	2.78dB	**113.16dB**	120.41dB	22.83dB	**143.24dB**	130.83dB	36.95dB	**167.78dB**
1000MHz	116.4dB	0.0dB	**116.4dB**	126.43dB	24.64dB	**151.07dB**	136.85dB	41.82dB	**178.67dB**
1500MHz	119.92dB	0.0dB	**119.92dB**	129.96dB	26.23dB	**156.19dB**	140.37dB	44.02dB	**184.39dB**
2000MHz	122.42dB	0.0dB	**122.42dB**	132.46dB	27.74dB	**160.2dB**	142.87dB	45.49dB	**188.36dB**
2500MHz	124.36dB	0.0dB	**124.36dB**	134.39dB	29.1dB	**163.49dB**	144.81dB	46.61dB	**191.42dB**
3000MHz	125.94dB	0.0dB	**125.94dB**	135.98dB	30.29dB	**166.27dB**	146.39dB	47.51dB	**193.9dB**

Table 33: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Boven PV3 emissions.

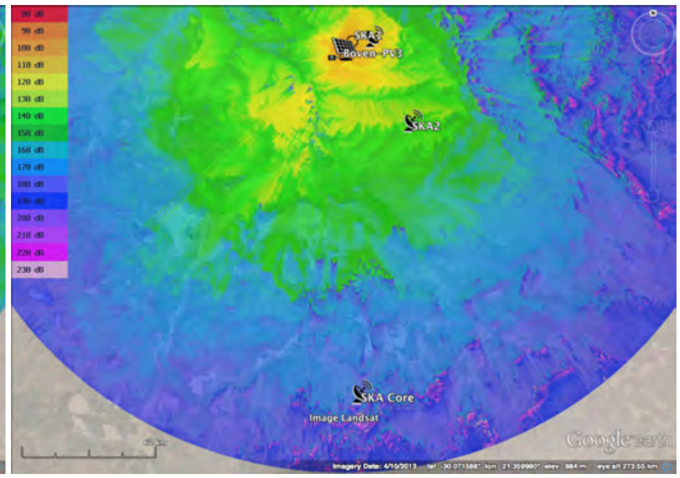
5.6.2 Boven PV3 Alternative Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	95.25dB	19.28dB	**114.53dB**	106.47dB	29.2dB	**135.67dB**	116.93dB	35.52dB	**152.45dB**
300MHz	104.79dB	13.64dB	**118.43dB**	116.01dB	22.11dB	**138.12dB**	126.47dB	34.12dB	**160.59dB**
500MHz	109.23dB	11.02dB	**120.25dB**	120.45dB	20.61dB	**141.06dB**	130.9dB	36.33dB	**167.23dB**
1000MHz	115.25dB	8.35dB	**123.6dB**	126.47dB	21.35dB	**147.82dB**	136.93dB	41.43dB	**178.36dB**
1500MHz	118.77dB	7.28dB	**126.05dB**	129.99dB	22.42dB	**152.41dB**	140.45dB	43.71dB	**184.16dB**
2000MHz	121.27dB	6.94dB	**128.21dB**	132.49dB	23.61dB	**156.1dB**	142.95dB	45.19dB	**188.14dB**
2500MHz	123.21dB	7.07dB	**130.28dB**	134.42dB	24.82dB	**159.24dB**	144.88dB	46.32dB	**191.2dB**
3000MHz	124.79dB	7.19dB	**131.98dB**	136.01dB	26.06dB	**162.07dB**	146.47dB	47.21dB	**193.68dB**

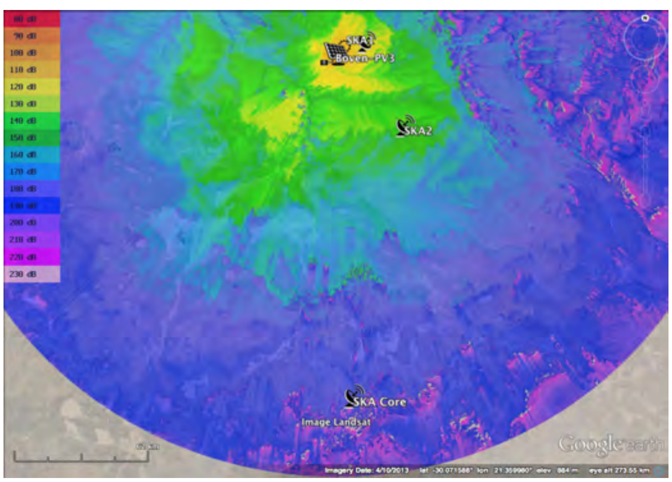
Table 34: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Boven PV3 emissions.



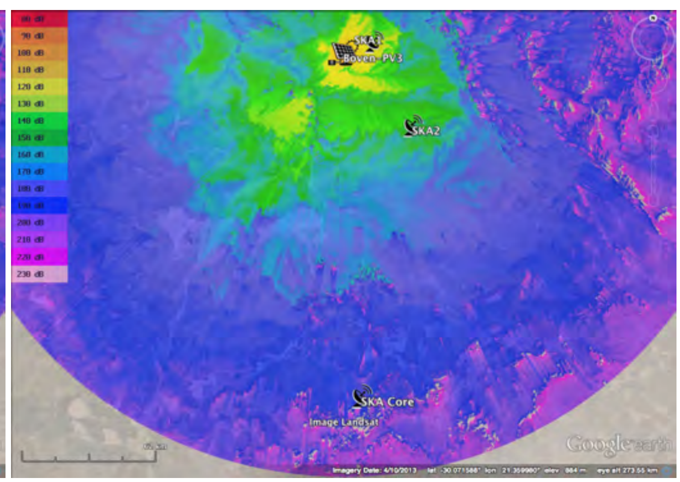
(a)



(b)

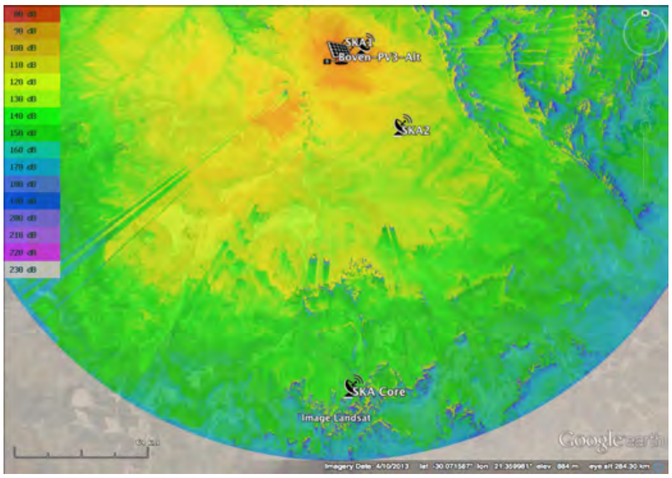


(c)

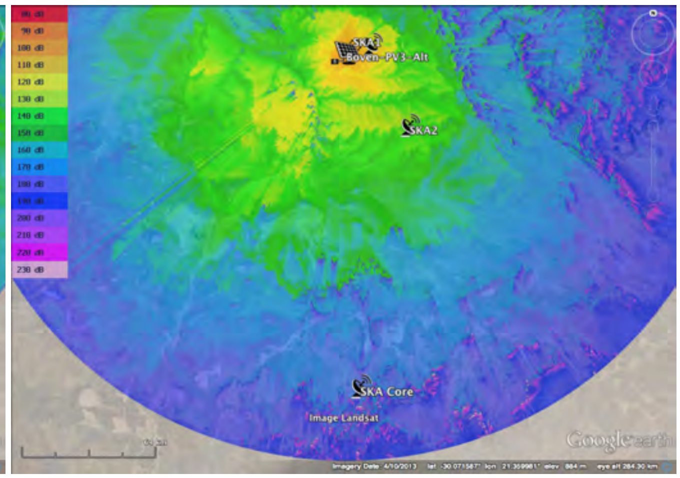


(d)

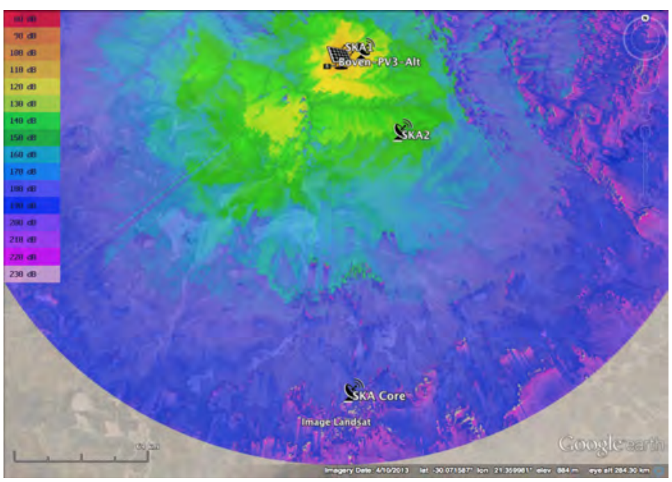
Figure 56: TPL attenuation maps for **preferred** site location of Boven PV3 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



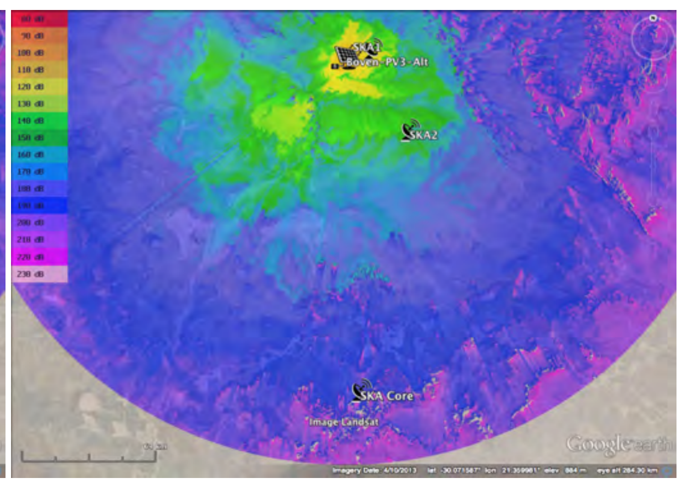
(a)



(b)



(c)



(d)

Figure 57: TPL attenuation maps for **alternative** site location of Boven PV3 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.7 Boven PV4 Site Location

5.7.1 Boven PV4 Preferred Site Location

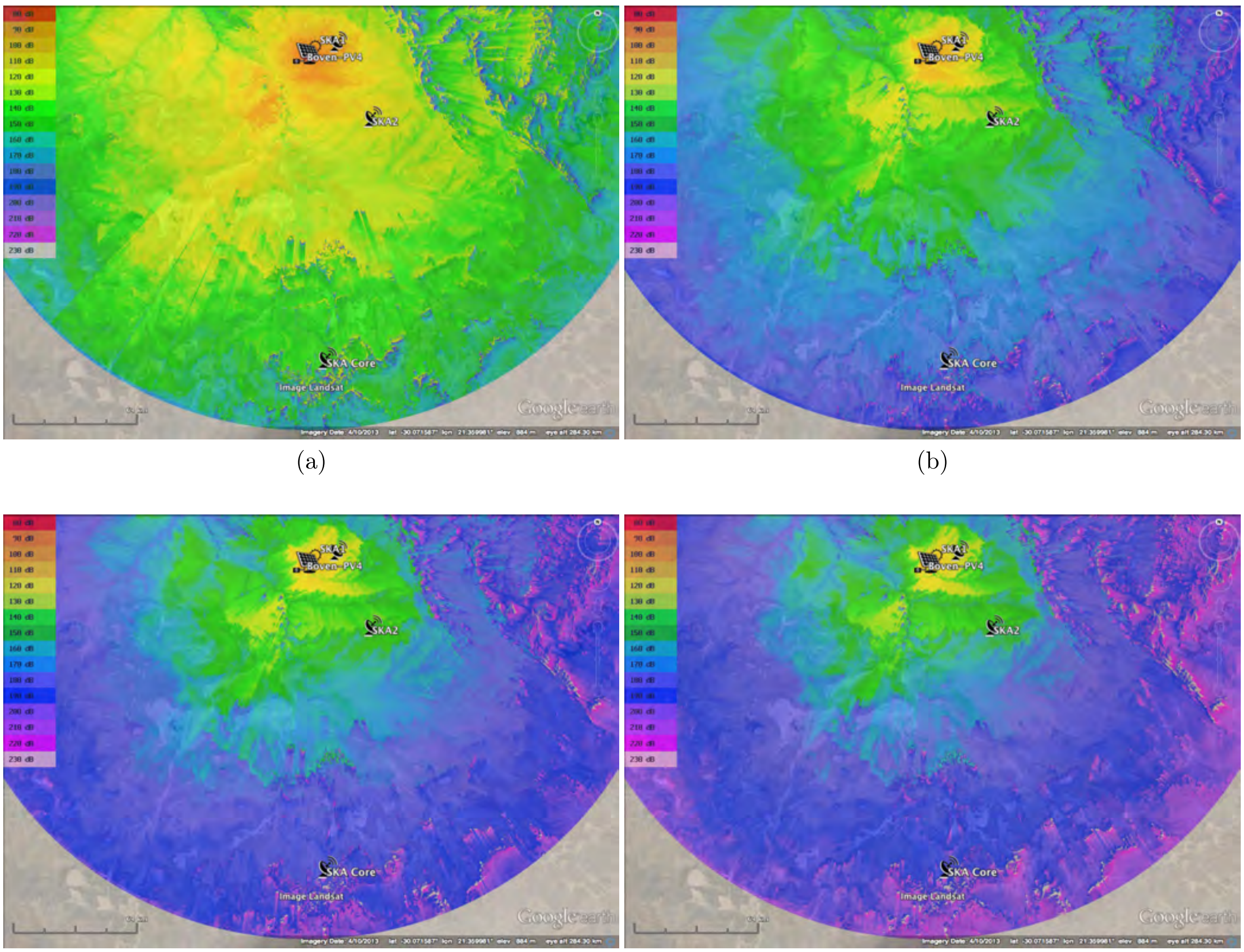
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	97.5dB	8.88dB	**106.38dB**	106.62dB	24.55dB	**131.17dB**	116.83dB	30.34dB	**147.17dB**
300MHz	107.04dB	0.51dB	**107.55dB**	116.16dB	19.93dB	**136.09dB**	126.37dB	30.91dB	**157.28dB**
500MHz	111.48dB	0.0dB	**111.48dB**	120.6dB	19.39dB	**139.99dB**	130.81dB	33.43dB	**164.24dB**
1000MHz	117.5dB	0.0dB	**117.5dB**	126.62dB	21.0dB	**147.62dB**	136.83dB	38.85dB	**175.68dB**
1500MHz	121.02dB	0.0dB	**121.02dB**	130.14dB	22.44dB	**152.58dB**	140.35dB	41.2dB	**181.55dB**
2000MHz	123.52dB	0.0dB	**123.52dB**	132.64dB	23.77dB	**156.41dB**	142.85dB	42.75dB	**185.6dB**
2500MHz	125.45dB	0.0dB	**125.45dB**	134.58dB	24.99dB	**159.57dB**	144.79dB	43.92dB	**188.71dB**
3000MHz	127.04dB	0.0dB	**127.04dB**	136.16dB	26.09dB	**162.25dB**	146.37dB	44.86dB	**191.23dB**

Table 35: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Boven PV4 emissions.

5.7.2 Boven PV4 Alternative Site Location

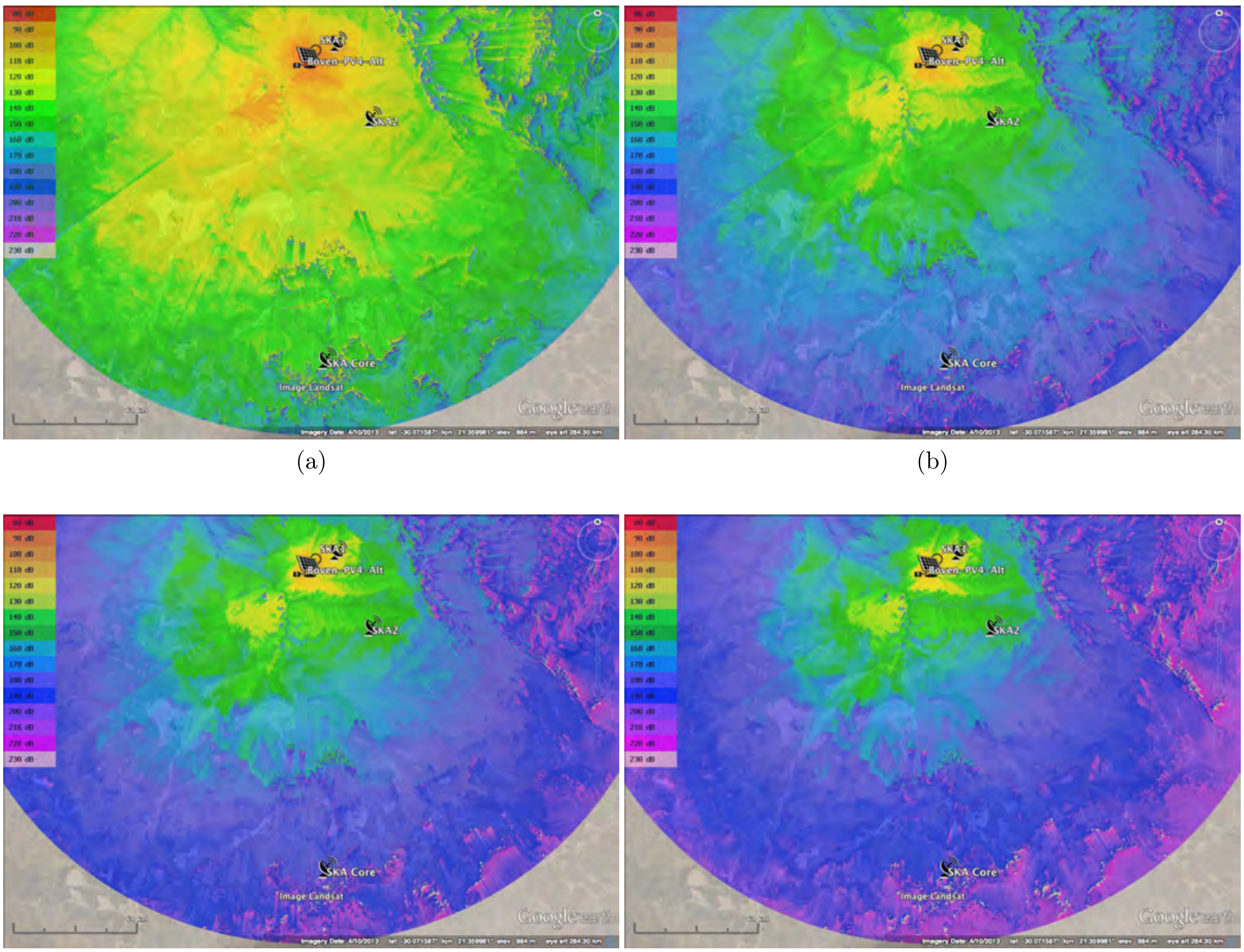
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	97.85dB	14.26dB	**112.11dB**	106.31dB	28.21dB	**134.52dB**	116.71dB	33.63dB	**150.34dB**
300MHz	107.39dB	6.09dB	**113.48dB**	115.85dB	23.98dB	**139.83dB**	126.25dB	32.17dB	**158.42dB**
500MHz	111.83dB	2.74dB	**114.57dB**	120.29dB	23.59dB	**143.88dB**	130.69dB	34.53dB	**165.22dB**
1000MHz	117.85dB	0.0dB	**117.85dB**	126.31dB	25.52dB	**151.83dB**	136.71dB	39.82dB	**176.53dB**
1500MHz	121.37dB	0.0dB	**121.37dB**	129.83dB	27.17dB	**157.0dB**	140.23dB	42.14dB	**182.37dB**
2000MHz	123.87dB	0.0dB	**123.87dB**	132.33dB	28.64dB	**160.97dB**	142.73dB	43.67dB	**186.4dB**
2500MHz	125.81dB	0.0dB	**125.81dB**	134.27dB	29.94dB	**164.21dB**	144.66dB	44.83dB	**189.49dB**
3000MHz	127.39dB	0.0dB	**127.39dB**	135.85dB	31.1dB	**166.95dB**	146.25dB	45.75dB	**192.0dB**

Table 36: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Boven PV4 emissions.



(a) (b) (c) (d)

Figure 58: TPL attenuation maps for **preferred** site location of Boven PV4 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



(a) (b)

(c) (d)

Figure 59: TPL attenuation maps for **alternative** site location of Boven PV4 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.8 Gemsbok PV1 Site Location

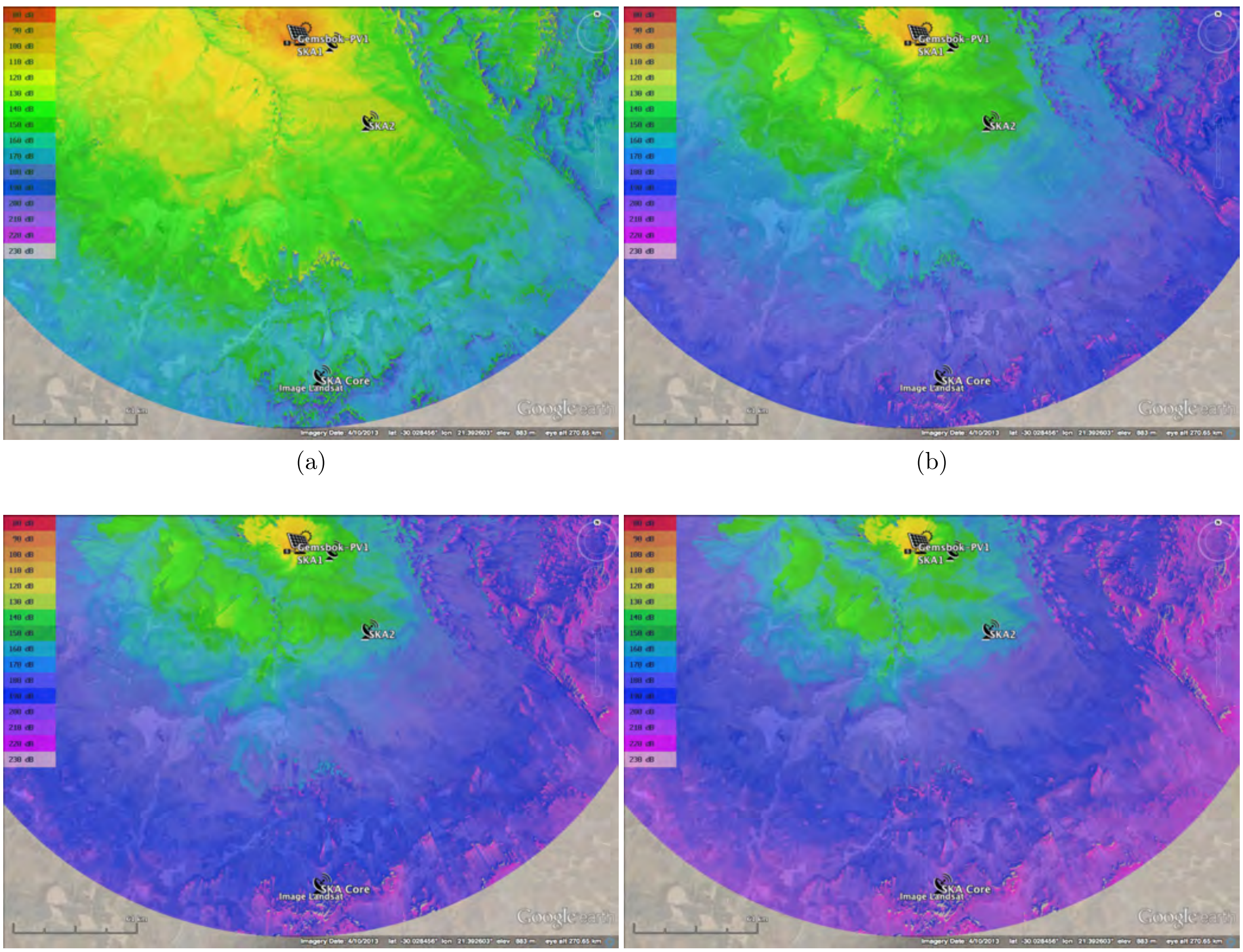
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	98.07dB	25.55dB	**123.62dB**	108.07dB	25.82dB	**133.89dB**	117.38dB	47.18dB	**164.56dB**
300MHz	107.62dB	20.83dB	**128.45dB**	117.61dB	18.67dB	**136.28dB**	126.93dB	42.44dB	**169.37dB**
500MHz	112.05dB	19.71dB	**131.76dB**	122.05dB	18.41dB	**140.46dB**	131.36dB	43.12dB	**174.48dB**
1000MHz	118.07dB	19.69dB	**137.76dB**	128.07dB	22.52dB	**150.59dB**	137.38dB	46.33dB	**183.71dB**
1500MHz	121.6dB	20.46dB	**142.06dB**	131.59dB	25.11dB	**156.7dB**	140.91dB	47.79dB	**188.7dB**
2000MHz	124.09dB	21.31dB	**145.4dB**	134.09dB	27.08dB	**161.17dB**	143.41dB	48.88dB	**192.29dB**
2500MHz	126.03dB	22.05dB	**148.08dB**	136.03dB	28.68dB	**164.71dB**	145.34dB	49.78dB	**195.12dB**
3000MHz	127.62dB	22.7dB	**150.32dB**	137.61dB	29.94dB	**167.55dB**	146.93dB	50.54dB	**197.47dB**

Table 37: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV1 emissions.

5.9 Gemsbok PV2 Site Location

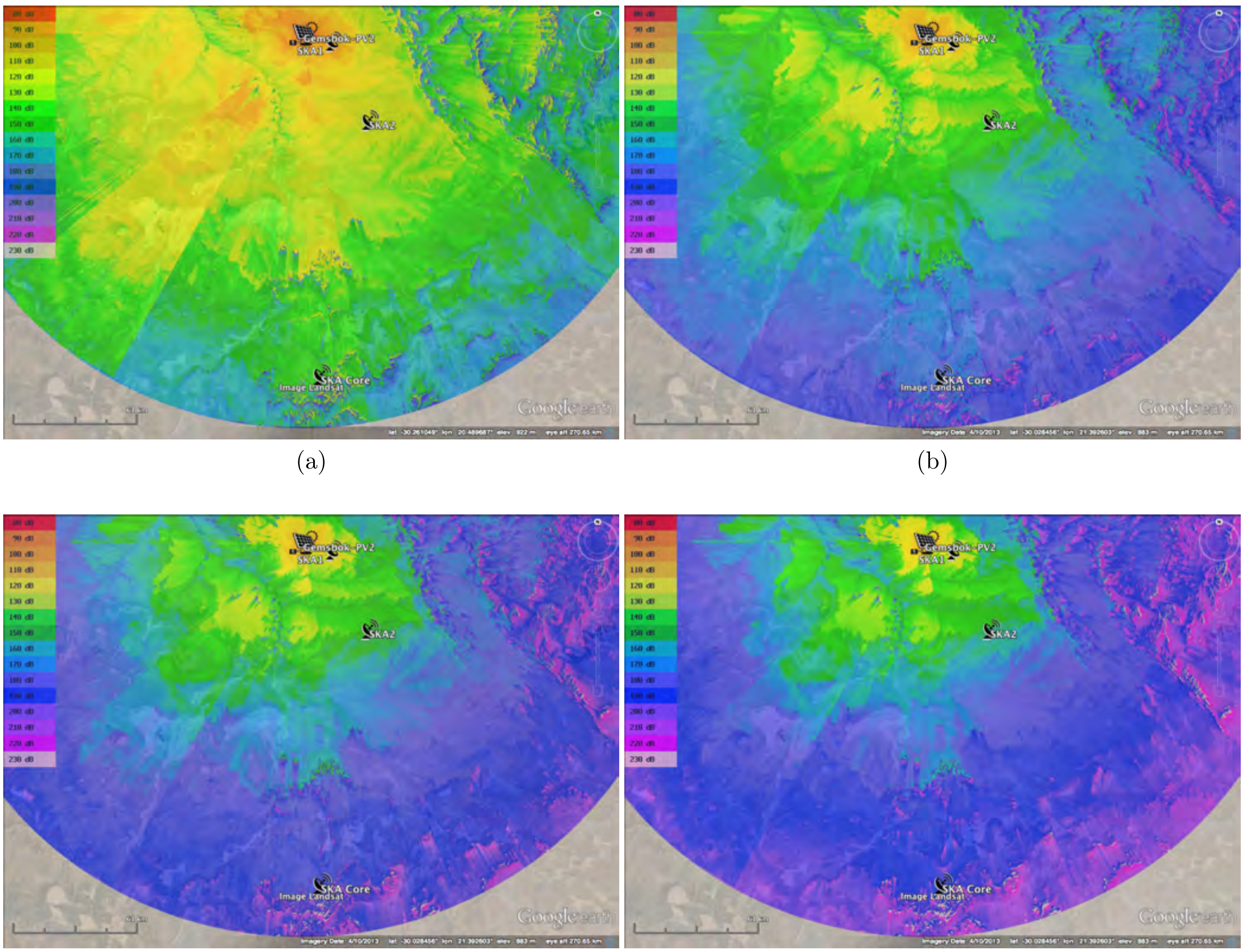
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	96.6dB	24.61dB	**121.21dB**	107.77dB	28.62dB	**136.39dB**	117.36dB	42.67dB	**160.03dB**
300MHz	106.14dB	18.66dB	**124.8dB**	117.31dB	19.64dB	**136.95dB**	126.9dB	40.76dB	**167.66dB**
500MHz	110.58dB	17.02dB	**127.6dB**	121.75dB	18.42dB	**140.17dB**	131.34dB	41.51dB	**172.85dB**
1000MHz	116.6dB	16.31dB	**132.91dB**	127.77dB	21.37dB	**149.14dB**	137.36dB	44.85dB	**182.21dB**
1500MHz	120.12dB	16.69dB	**136.81dB**	131.29dB	23.52dB	**154.81dB**	140.88dB	46.39dB	**187.27dB**
2000MHz	122.62dB	17.31dB	**139.93dB**	133.79dB	25.19dB	**158.98dB**	143.38dB	47.52dB	**190.9dB**
2500MHz	124.56dB	17.93dB	**142.49dB**	135.73dB	26.59dB	**162.32dB**	145.32dB	48.44dB	**193.76dB**
3000MHz	126.14dB	18.52dB	**144.66dB**	137.31dB	27.83dB	**165.14dB**	146.9dB	49.22dB	**196.12dB**

Table 38: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV2 emissions.



(a) (b) (c) (d)

Figure 60: TPL attenuation maps for site location of Gemsbok PV1 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



(a) (b)

(c) (d)

Figure 61: TPL attenuation maps for site location of Gemsbok PV2 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.10 Gemsbok PV3 Site Location

5.10.1 Gemsbok PV3 Preferred Site Location

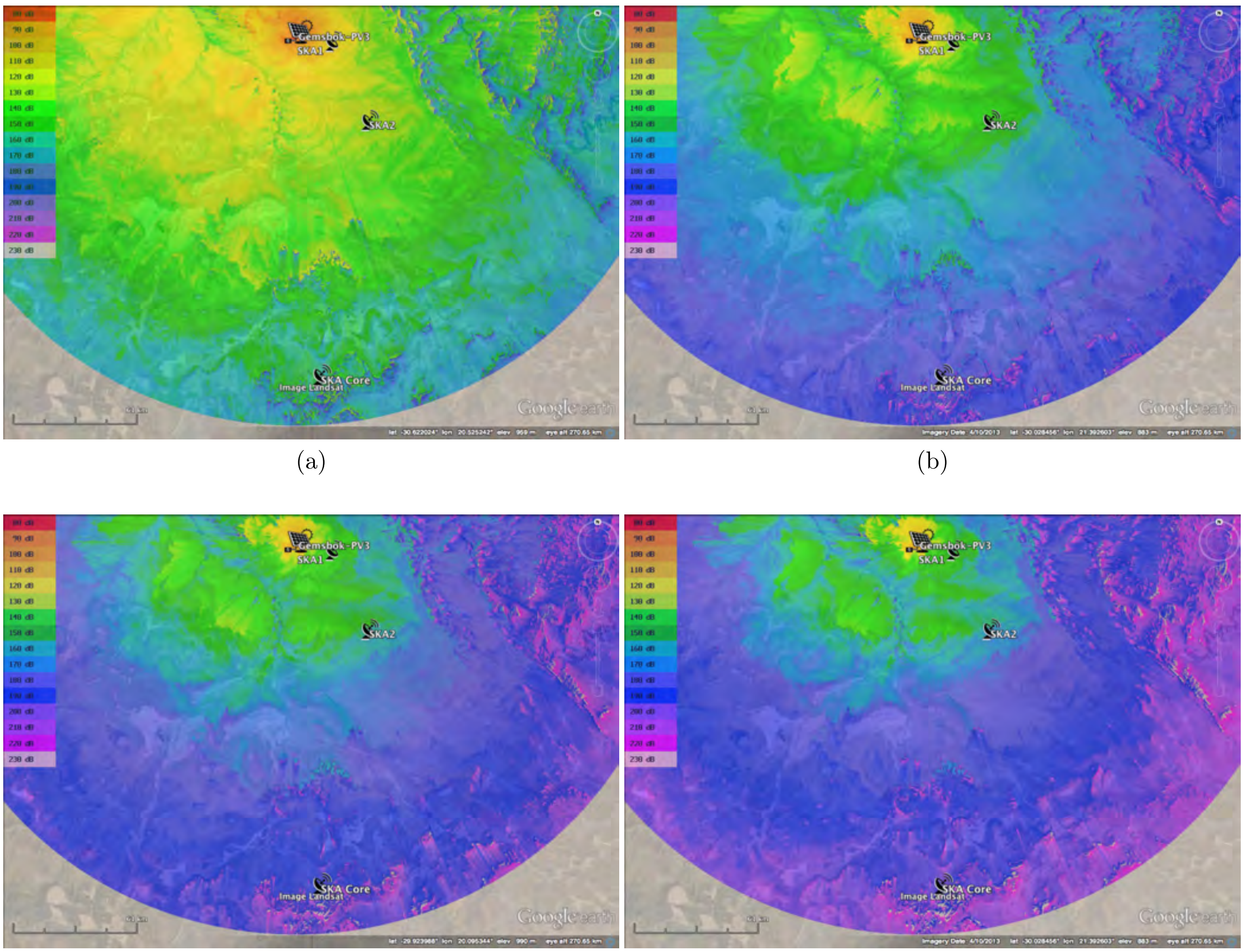
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	97.99dB	25.22dB	**123.21dB**	108.12dB	25.82dB	**133.94dB**	117.42dB	39.45dB	**156.87dB**
300MHz	107.53dB	20.88dB	**128.41dB**	117.66dB	18.16dB	**135.82dB**	126.96dB	37.44dB	**164.4dB**
500MHz	111.97dB	20.06dB	**132.03dB**	122.1dB	17.61dB	**139.71dB**	131.4dB	38.83dB	**170.23dB**
1000MHz	117.99dB	20.88dB	**138.87dB**	128.12dB	21.2dB	**149.32dB**	137.42dB	43.0dB	**180.42dB**
1500MHz	121.51dB	22.26dB	**143.77dB**	131.64dB	23.86dB	**155.5dB**	140.94dB	44.94dB	**185.88dB**
2000MHz	124.01dB	23.39dB	**147.4dB**	134.14dB	25.99dB	**160.13dB**	143.44dB	46.29dB	**189.73dB**
2500MHz	125.95dB	24.34dB	**150.29dB**	136.08dB	27.72dB	**163.8dB**	145.38dB	47.34dB	**192.72dB**
3000MHz	127.53dB	25.35dB	**152.88dB**	137.66dB	29.22dB	**166.88dB**	146.96dB	48.2dB	**195.16dB**

Table 39: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV3 emissions.

5.10.2 Gemsbok PV3 Alternative Site Location

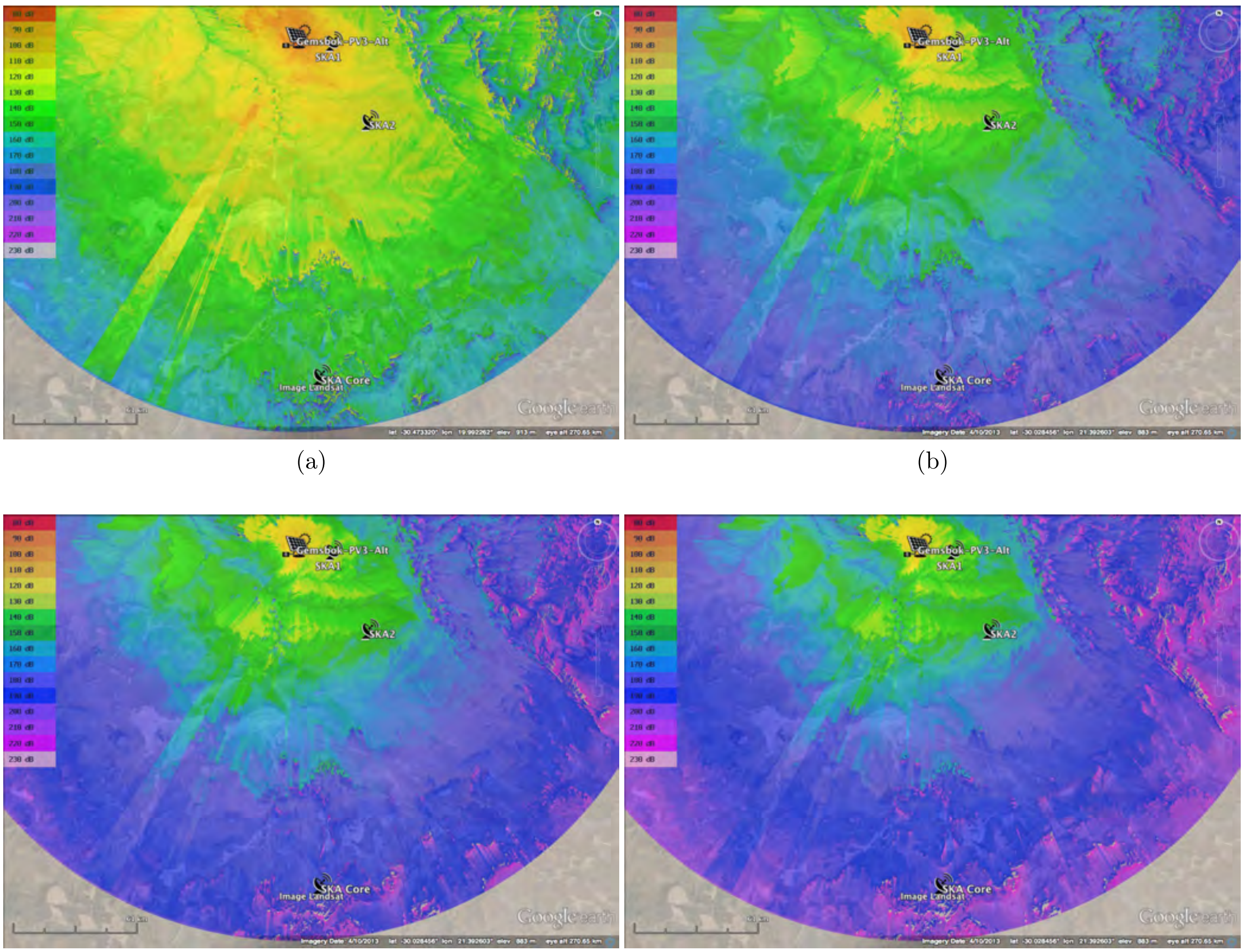
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	98.2dB	18.49dB	**116.69dB**	107.92dB	23.74dB	**131.66dB**	117.29dB	44.43dB	**161.72dB**
300MHz	107.75dB	12.49dB	**120.24dB**	117.46dB	15.51dB	**132.97dB**	126.84dB	42.4dB	**169.24dB**
500MHz	112.18dB	10.59dB	**122.77dB**	121.9dB	14.23dB	**136.13dB**	131.27dB	43.11dB	**174.38dB**
1000MHz	118.2dB	9.57dB	**127.77dB**	127.92dB	16.2dB	**144.12dB**	137.29dB	46.37dB	**183.66dB**
1500MHz	121.73dB	9.76dB	**131.49dB**	131.44dB	18.4dB	**149.84dB**	140.81dB	47.85dB	**188.66dB**
2000MHz	124.22dB	10.06dB	**134.28dB**	133.94dB	20.27dB	**154.21dB**	143.31dB	48.95dB	**192.26dB**
2500MHz	126.16dB	10.56dB	**136.72dB**	135.87dB	21.9dB	**157.77dB**	145.25dB	49.85dB	**195.1dB**
3000MHz	127.75dB	11.06dB	**138.81dB**	137.46dB	23.32dB	**160.78dB**	146.84dB	50.62dB	**197.46dB**

Table 40: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Gemsbok PV3 emissions.



(a) (b) (c) (d)

Figure 62: TPL attenuation maps for **preferred** site location of Gemsbok PV3 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



(a) (b)

(c) (d)

Figure 63: TPL attenuation maps for **alternative** site location of Gemsbok PV3 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.11 Gemsbok PV4 Site Location

5.11.1 Gemsbok PV4 Preferred Site Location

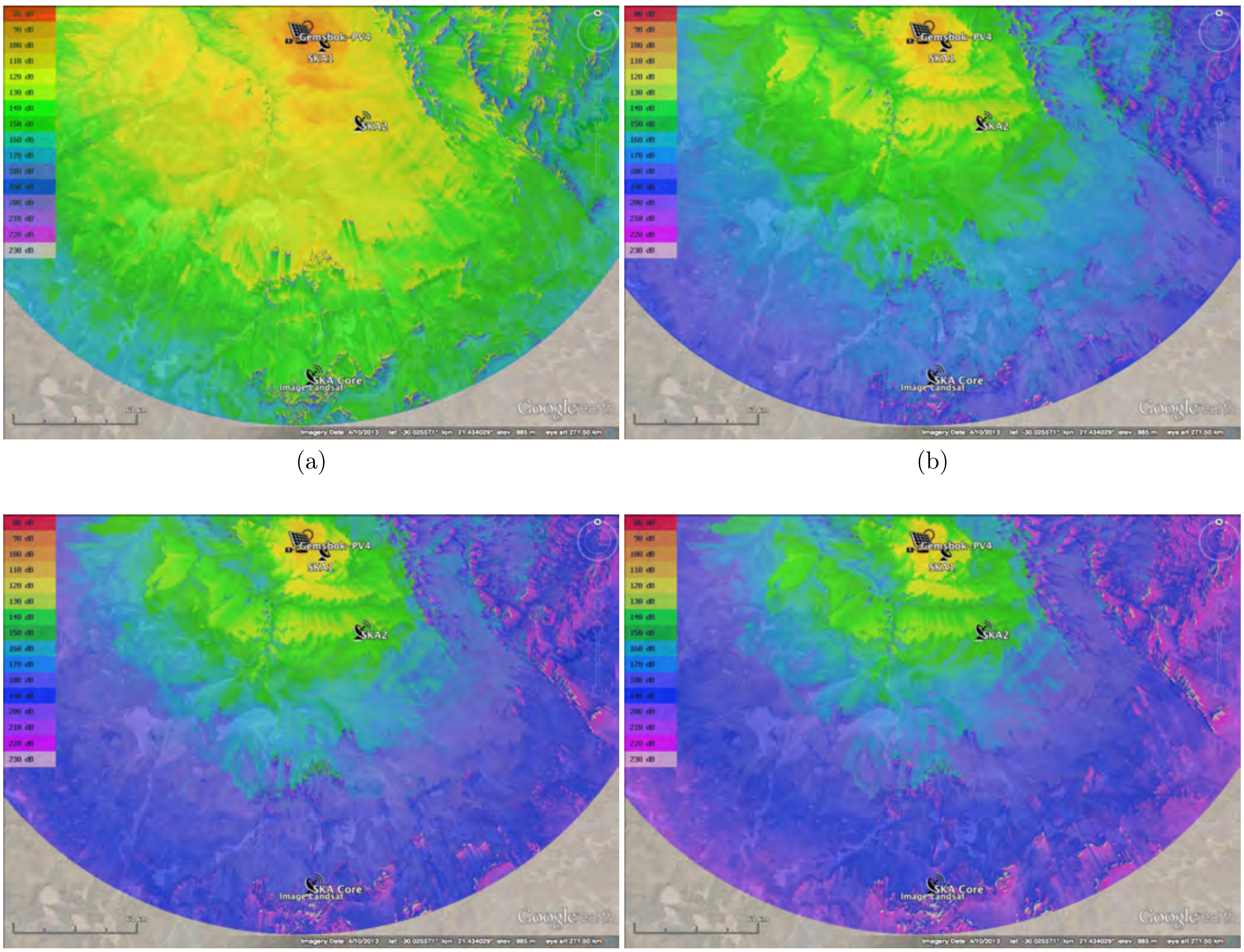
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	95.97dB	12.08dB	**108.05dB**	107.81dB	25.75dB	**133.56dB**	117.43dB	29.85dB	**147.28dB**
300MHz	105.51dB	6.43dB	**111.94dB**	117.35dB	16.16dB	**133.51dB**	126.97dB	30.72dB	**157.69dB**
500MHz	109.95dB	4.92dB	**114.87dB**	121.79dB	14.32dB	**136.11dB**	131.41dB	33.51dB	**164.92dB**
1000MHz	115.97dB	5.38dB	**121.35dB**	127.81dB	15.86dB	**143.67dB**	137.43dB	39.08dB	**176.51dB**
1500MHz	119.49dB	6.82dB	**126.31dB**	131.33dB	17.61dB	**148.94dB**	140.95dB	41.51dB	**182.46dB**
2000MHz	121.99dB	8.29dB	**130.28dB**	133.83dB	19.13dB	**152.96dB**	143.45dB	43.1dB	**186.55dB**
2500MHz	123.93dB	9.6dB	**133.53dB**	135.77dB	20.44dB	**156.21dB**	145.39dB	44.28dB	**189.67dB**
3000MHz	125.51dB	10.59dB	**136.1dB**	137.35dB	21.62dB	**158.97dB**	146.97dB	45.23dB	**192.2dB**

Table 41: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV4 emissions.

5.11.2 Gemsbok PV4 Alternative Site Location

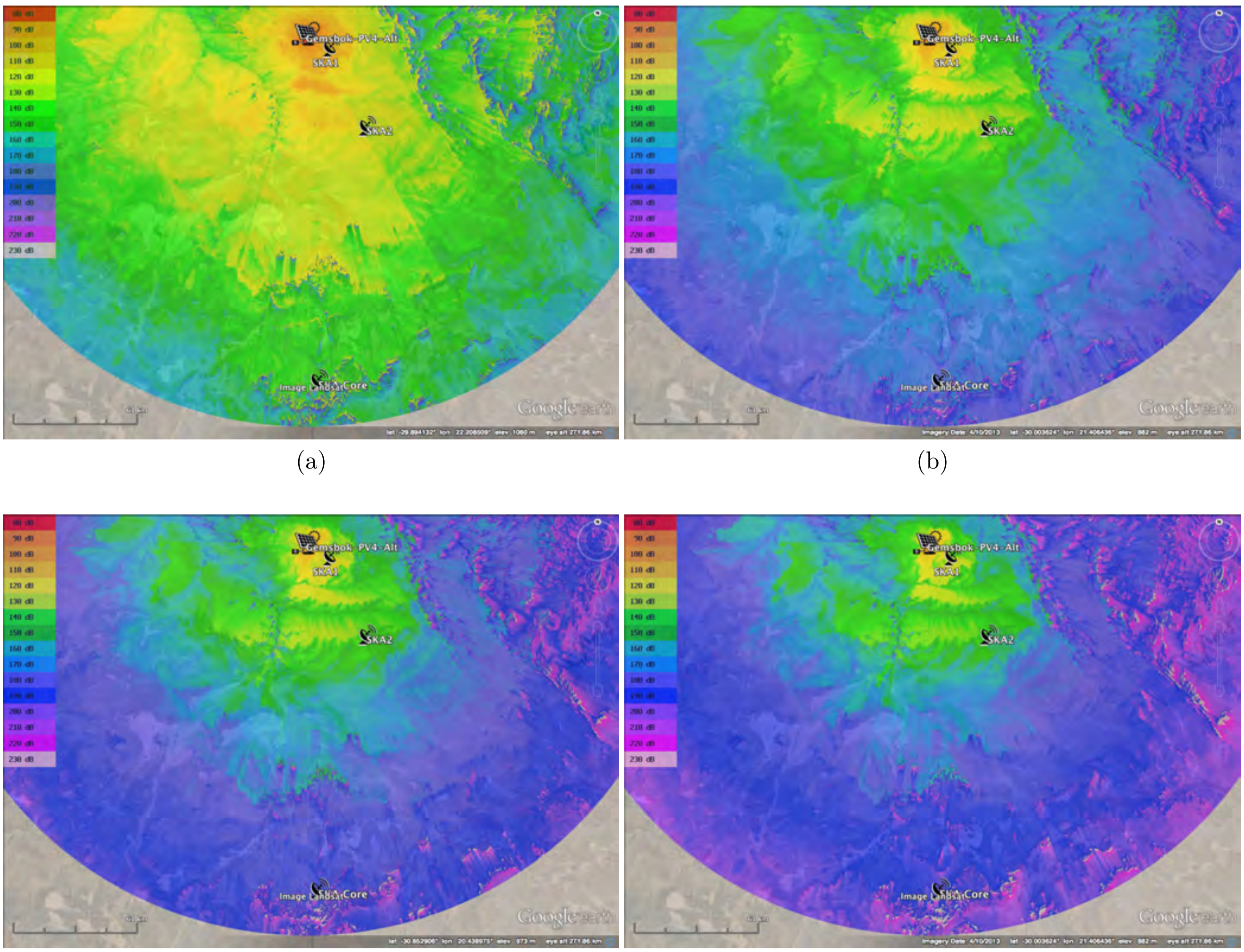
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	95.99dB	13.57dB	**109.56dB**	107.95dB	23.3dB	**131.25dB**	117.51dB	29.92dB	**147.43dB**
300MHz	105.54dB	8.15dB	**113.69dB**	117.49dB	13.5dB	**130.99dB**	127.05dB	30.93dB	**157.98dB**
500MHz	109.97dB	6.76dB	**116.73dB**	121.93dB	11.53dB	**133.46dB**	131.49dB	33.66dB	**165.15dB**
1000MHz	115.99dB	6.87dB	**122.86dB**	127.95dB	12.79dB	**140.74dB**	137.51dB	39.17dB	**176.68dB**
1500MHz	119.51dB	8.7dB	**128.21dB**	131.47dB	14.43dB	**145.9dB**	141.03dB	41.6dB	**182.63dB**
2000MHz	122.01dB	9.91dB	**131.92dB**	133.97dB	15.87dB	**149.84dB**	143.53dB	43.17dB	**186.7dB**
2500MHz	123.95dB	10.9dB	**134.85dB**	135.91dB	17.15dB	**153.06dB**	145.47dB	44.34dB	**189.81dB**
3000MHz	125.54dB	11.74dB	**137.28dB**	137.49dB	18.3dB	**155.79dB**	147.05dB	45.28dB	**192.33dB**

Table 42: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Gemsbok PV4 emissions.



(a) (b) (c) (d)

Figure 64: TPL attenuation maps for **preferred** site location of Gemsbok PV4 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



(a) (b)

(c) (d)

Figure 65: TPL attenuation maps for **alternative** site location of Gemsbok PV4 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.12 Gemsbok PV5 Site Location

5.12.1 Gemsbok PV5 Preferred Site Location

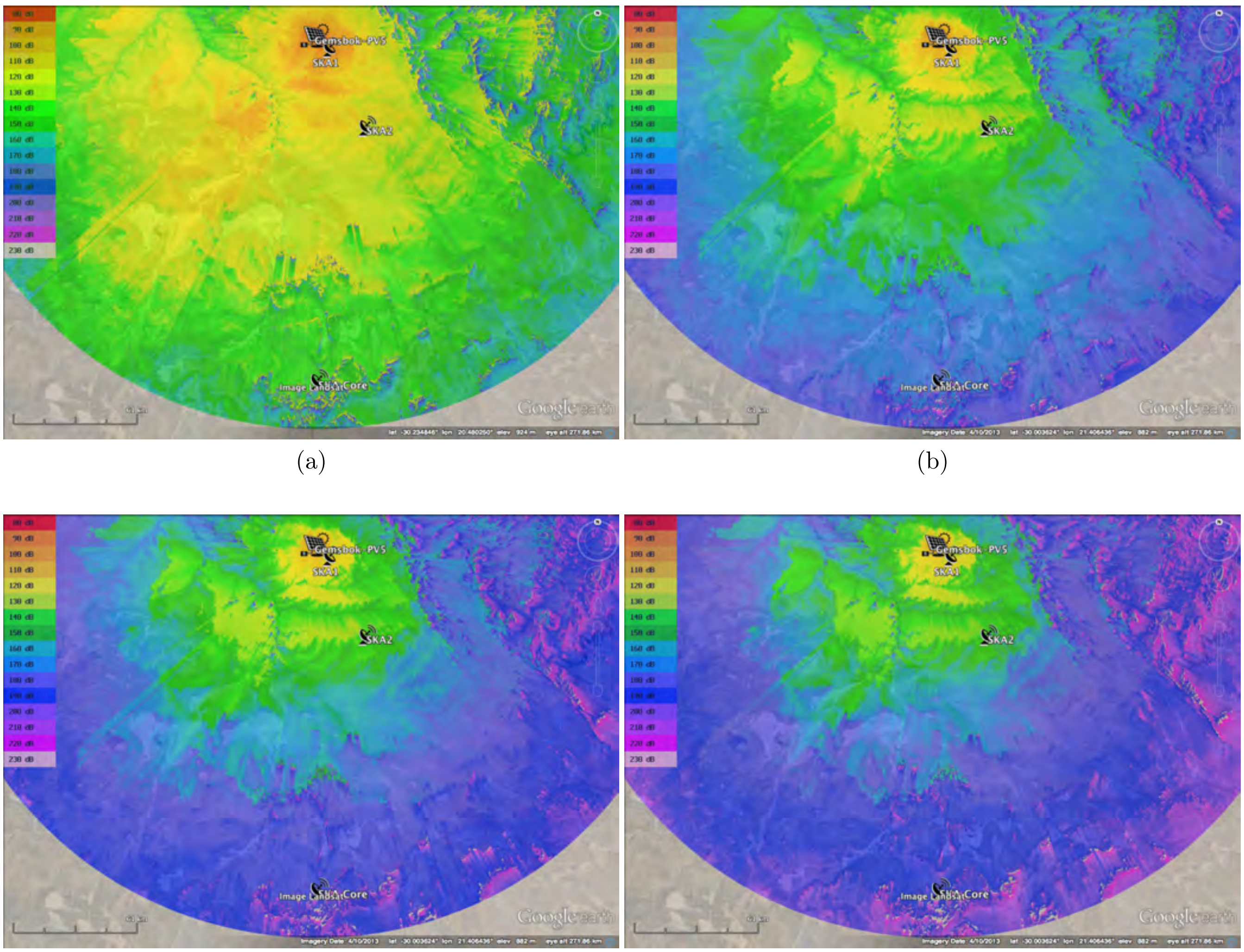
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	92.9dB	7.24dB	**100.14dB**	107.45dB	20.82dB	**128.27dB**	117.45dB	28.14dB	**145.59dB**
300MHz	102.44dB	0.0dB	**102.44dB**	116.99dB	13.65dB	**130.64dB**	126.99dB	30.17dB	**157.16dB**
500MHz	106.88dB	0.0dB	**106.88dB**	121.43dB	12.2dB	**133.63dB**	131.43dB	33.06dB	**164.49dB**
1000MHz	112.9dB	0.0dB	**112.9dB**	127.45dB	13.15dB	**140.6dB**	137.45dB	38.71dB	**176.16dB**
1500MHz	116.42dB	0.0dB	**116.42dB**	130.97dB	14.19dB	**145.16dB**	140.97dB	41.19dB	**182.16dB**
2000MHz	118.92dB	0.0dB	**118.92dB**	133.47dB	15.32dB	**148.79dB**	143.47dB	42.78dB	**186.25dB**
2500MHz	120.86dB	0.0dB	**120.86dB**	135.41dB	16.45dB	**151.86dB**	145.41dB	43.96dB	**189.37dB**
3000MHz	122.44dB	0.0dB	**122.44dB**	136.99dB	17.68dB	**154.67dB**	146.99dB	44.91dB	**191.9dB**

Table 43: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV5 emissions.

5.12.2 Gemsbok PV5 Alternative Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	93.79dB	18.23dB	**112.02dB**	107.45dB	28.16dB	**135.61dB**	117.39dB	36.27dB	**153.66dB**
300MHz	103.33dB	15.23dB	**118.56dB**	116.99dB	21.32dB	**138.31dB**	126.94dB	38.02dB	**164.96dB**
500MHz	107.77dB	15.77dB	**123.54dB**	121.43dB	20.35dB	**141.78dB**	131.37dB	39.27dB	**170.64dB**
1000MHz	113.79dB	18.96dB	**132.75dB**	127.45dB	22.65dB	**150.1dB**	137.39dB	43.16dB	**180.55dB**
1500MHz	117.31dB	22.04dB	**139.35dB**	130.97dB	24.96dB	**155.93dB**	140.91dB	44.95dB	**185.86dB**
2000MHz	119.81dB	24.86dB	**144.67dB**	133.47dB	26.79dB	**160.26dB**	143.41dB	46.22dB	**189.63dB**
2500MHz	121.75dB	27.33dB	**149.08dB**	135.41dB	28.31dB	**163.72dB**	145.35dB	47.22dB	**192.57dB**
3000MHz	123.33dB	29.32dB	**152.65dB**	136.99dB	29.63dB	**166.62dB**	146.94dB	48.04dB	**194.98dB**

Table 44: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Gemsbok PV5 emissions.



(a) (b)

(c) (d)

Figure 66: TPL attenuation maps for **preferred** site location of Gemsbok PV5 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

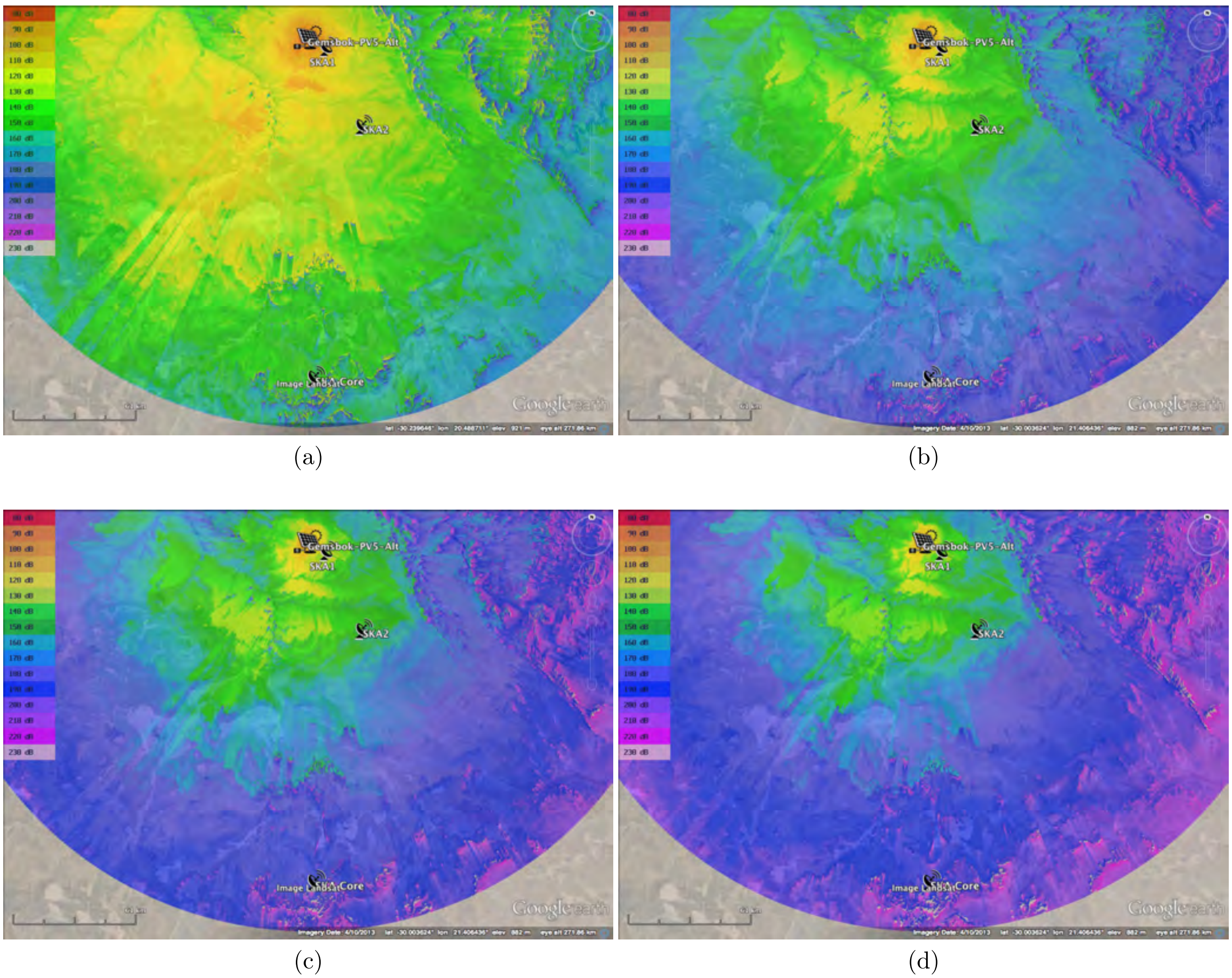


Figure 67: TPL attenuation maps for **alternative** site location of Gemsbok PV5 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

5.13 Gemsbok PV6 Site Location

5.13.1 Gemsbok PV6 Preferred Site Location

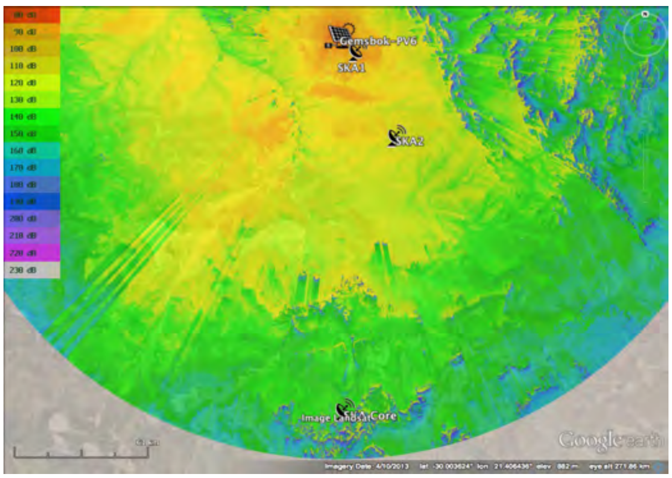
	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	93.64dB	19.39dB	**113.03dB**	107.64dB	23.34dB	**130.98dB**	117.52dB	29.84dB	**147.36dB**
300MHz	103.18dB	13.52dB	**116.7dB**	117.18dB	13.78dB	**130.96dB**	127.06dB	30.93dB	**157.99dB**
500MHz	107.62dB	11.93dB	**119.55dB**	121.62dB	11.78dB	**133.4dB**	131.5dB	33.61dB	**165.11dB**
1000MHz	113.64dB	11.22dB	**124.86dB**	127.64dB	12.63dB	**140.27dB**	137.52dB	39.09dB	**176.61dB**
1500MHz	117.16dB	11.7dB	**128.86dB**	131.16dB	14.04dB	**145.2dB**	141.04dB	41.54dB	**182.58dB**
2000MHz	119.66dB	12.51dB	**132.17dB**	133.66dB	15.39dB	**149.05dB**	143.54dB	43.12dB	**186.66dB**
2500MHz	121.6dB	13.19dB	**134.79dB**	135.6dB	16.69dB	**152.29dB**	145.48dB	44.3dB	**189.78dB**
3000MHz	123.18dB	13.98dB	**137.16dB**	137.18dB	17.89dB	**155.07dB**	147.06dB	45.24dB	**192.3dB**

Table 45: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **preferred** site Gemsbok PV6 emissions.

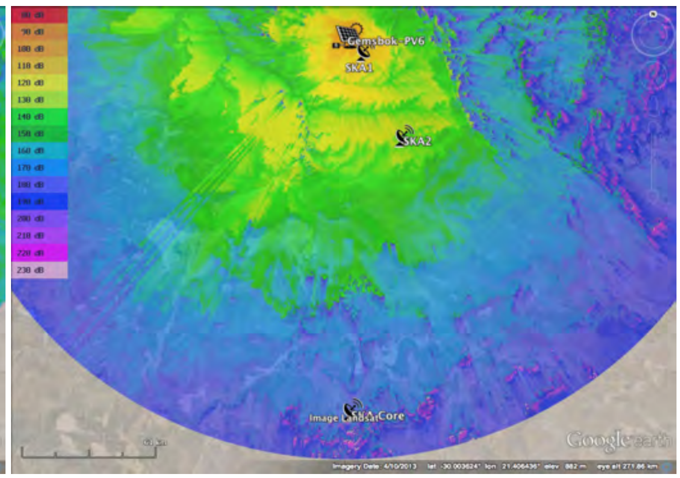
5.13.2 Gemsbok PV6 Alternative Site Location

	Closest Telescope 1			Closest Telescope 2			SKA Core Site		
Frequency	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**	**FSPL**	**TL**	**TPL**
100MHz	94.3dB	15.79dB	**110.09dB**	107.68dB	27.14dB	**134.82dB**	117.49dB	32.67dB	**150.16dB**
300MHz	103.84dB	11.16dB	**115.0dB**	117.23dB	17.25dB	**134.48dB**	127.03dB	32.01dB	**159.04dB**
500MHz	108.28dB	10.33dB	**118.61dB**	121.66dB	15.36dB	**137.02dB**	131.47dB	34.33dB	**165.8dB**
1000MHz	114.3dB	10.76dB	**125.06dB**	127.68dB	17.13dB	**144.81dB**	137.49dB	39.51dB	**177.0dB**
1500MHz	117.82dB	12.25dB	**130.07dB**	131.21dB	18.9dB	**150.11dB**	141.01dB	41.82dB	**182.83dB**
2000MHz	120.32dB	13.61dB	**133.93dB**	133.7dB	20.34dB	**154.04dB**	143.51dB	43.39dB	**186.9dB**
2500MHz	122.26dB	14.71dB	**136.97dB**	135.64dB	21.62dB	**157.26dB**	145.45dB	44.56dB	**190.01dB**
3000MHz	123.84dB	15.65dB	**139.49dB**	137.23dB	22.76dB	**159.99dB**	147.03dB	45.5dB	**192.53dB**

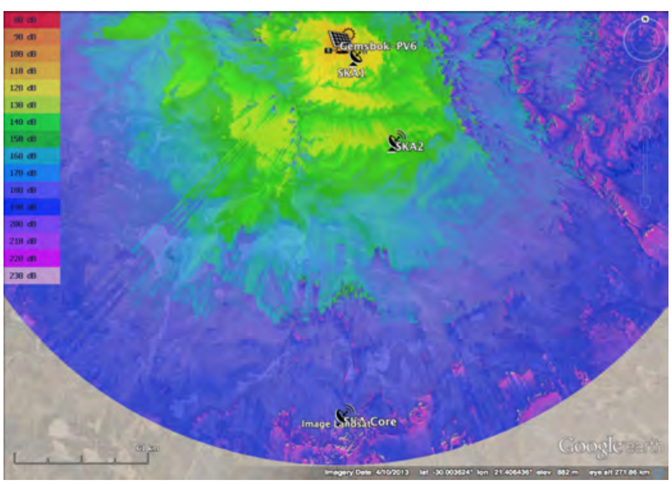
Table 46: SPLAT! Free Space Path Loss (FSPL), Terrain Loss (TL) and Total Path Loss (TPL) for vertical polarisation **alternative** site Gemsbok PV6 emissions.



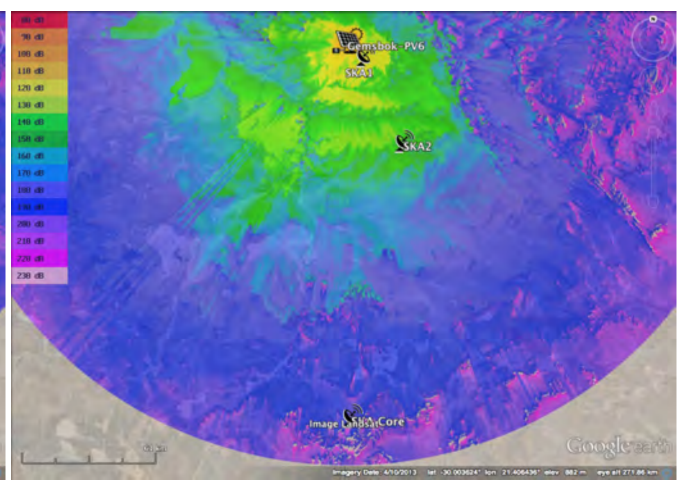
(a)



(b)

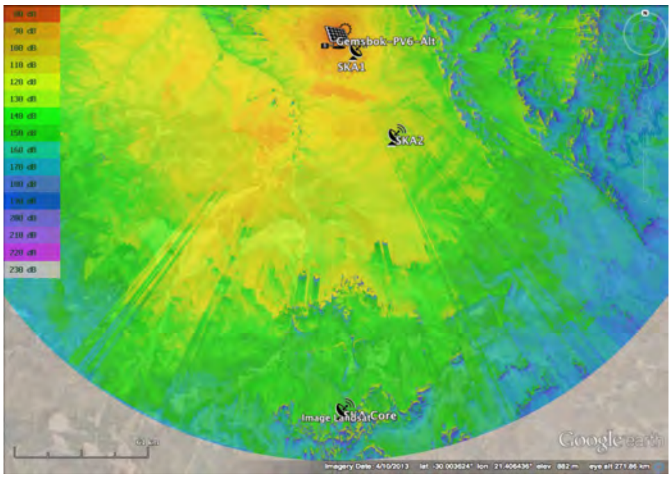


(c)

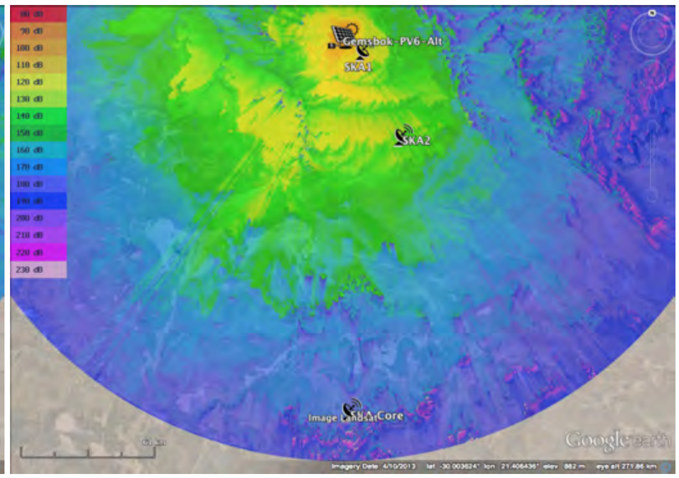


(d)

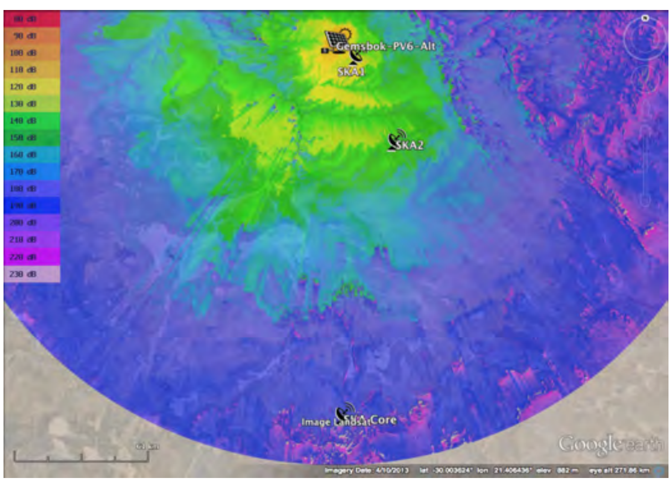
Figure 68: TPL attenuation maps for **preferred** site location of Gemsbok PV6 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.



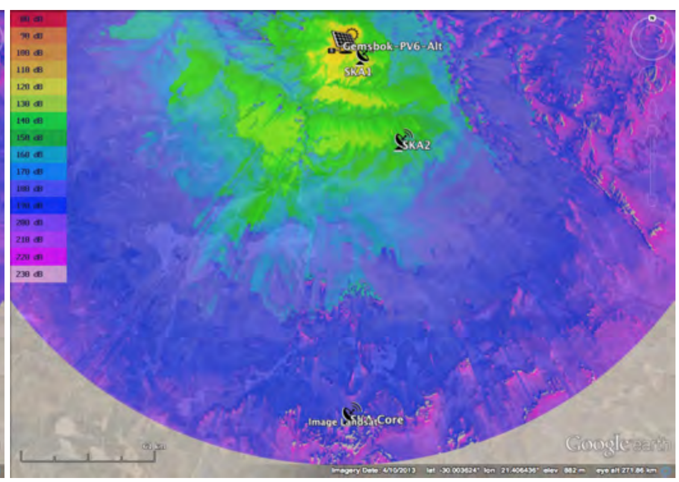
(a)



(b)



(c)



(d)

Figure 69: TPL attenuation maps for **alternative** site location of Gemsbok PV6 to the closest and core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

6 SKA Threshold Limits

SKA threshold limits are defined as *Protection Limits* (dBm/Hz as defined by SARAS) and *Receiver Saturation Limits* (-100 dBm). Using the attenuation maps and topographical profiles calculated in Section 5 , we next compare the acceptable levels as measured at 10 m from each plant (according to CISPR 11/22 class B) that will produce radiated emission levels 10 dB below the SKA threshold as defined by SARAS. The 10 dB theoretical value is a safety margin to ensure that each of the plants complies with the SKA threshold, and attempts to take into account any multi-path effects (6 dB variation) and any measurement uncertainties. The required level 10 dB below the threshold takes into account the TPL calculated by SPLAT! and are indicated as *Required Radiation Levels After Propagation Loss*. The required PSD of the radiated emission levels experienced at each telescope are given by Eq. 2 below. The required levels are represented by the *black squares* in Figs. 70 (b) to 72 (b) for projects to the closest and core SKA telescope sites respectively.

$$PSD_{\text{Required}}\,[dBm/Hz] = PSD_{\text{SARAS Continuum}}\,[dBm/Hz] - 10\,dB \tag{2}$$

Considering the TPL, the required PSD at the source of the interference, indicated as *Required Radiation Levels Before Propagation Loss at PV Plant* in Figs. 70 (b) to 72 (b), is given by:

$$PSD_{\text{Source}}\,[dBm/Hz] = PSD_{\text{Required}}\,[dBm/Hz] + TPL\,[dB] \tag{3}$$

The effective isotropic radiated power (EIRP) level at the source, that will result in an E-field E_0 as measured according to the CSIPR 11/22 Class B standard with a RBW and separation distance of 120 kHz and 10 m for f $<$ 1 GHz, and 1 MHz and 3 m for f $>$ 1 GHz respectively, is given by:

$$EIRP\,[dBm] = PSD_{\text{Source}}\,[dBm/Hz] + 10\log_{10}(RBW)\,[Hz] \tag{4}$$

The electric field (E_0) levels associated with the EIRP defined in Eq. 4, again as measured according to the CISPR 11/22 Class B standard, are shown in Figs. 70 (c) to 72 (c) and given by:

$$E_0\,[dB\mu V/m] = EIRP - 20\log_{10} D + 104.8 \tag{5}$$

The maximum EIRP levels of the source, to ensure the *Receiver Saturation Limit* of -100 dBm is met, are shown in Figs. 70 (a) to 72 (a) and given by:

$$EIRP_{\max}\,[dBm] = -100\,dBm + TPL\,[dB] \tag{6}$$

6.1 Cumulative Impact Assessment

In the case where there are more than one source of interference for a specific frequency, the cumulative effect should be considered by taking into account:

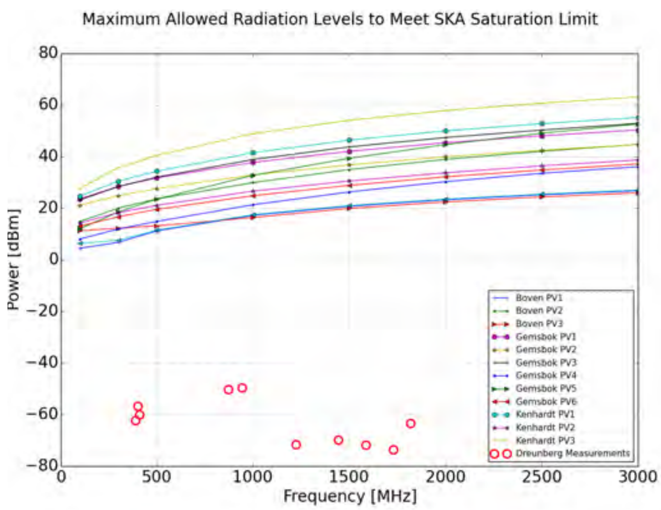
$$P_{\text{Cumulative}} = 10\log_{10}(N) \tag{7}$$

where $N = 13$ is the number of PV plants. This implies an increase in interference levels of up to 11.1 dB and is therefore subtracted from the maximum allowable radiated limits in Figs 70 to 72.

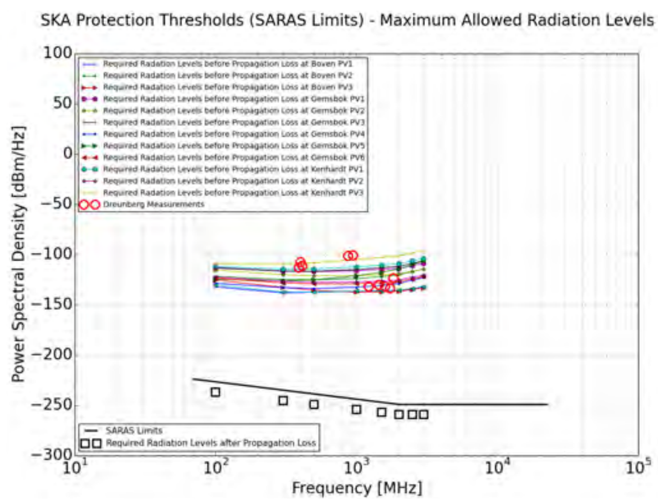
6.2 Maximum Allowed Radiation Levels

Below are given the maximum allowed radiation levels to meet both SKA *Saturation* and *Protection Threshold* (SARAS) limits for the two closest and core site telescopes for each of the proposed sites.

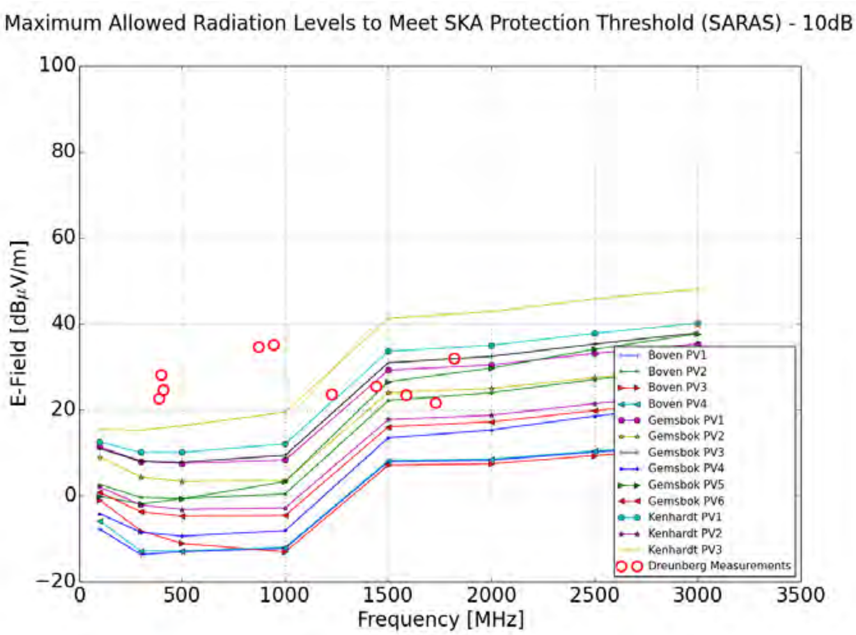
6.2.1 Closest SKA Telescope



(a)



(b)



(c)

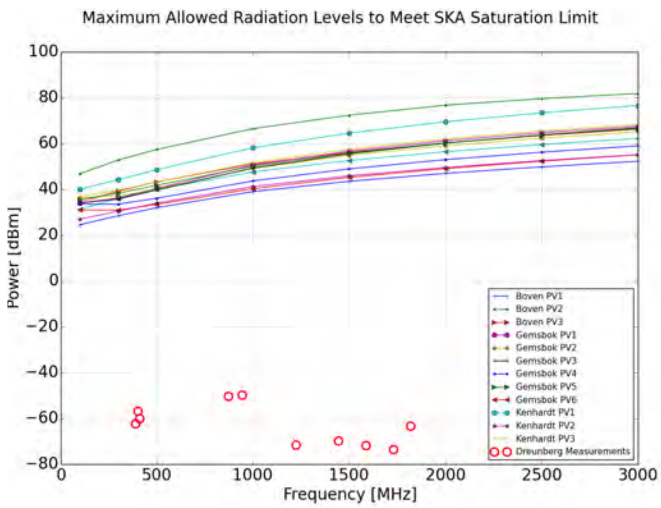
Figure 70: Closest SKA telescope receiver: (a) Maximum allowed EIRP to ensure levels are below the SKA saturation limit of -100 dBm at the telescope receiver; (b) Maximum allowed PSD to ensure levels are 10 dB below SARAS protection levels; (c) Maximum allowed measured E-Field (CISPR 22 Class B) to ensure levels are 10 dB below SARAS protection levels.

Given in Table 47 is a comparison between measured plant RFI and maximum allowed emission levels as shown in Fig. 70. It shows the approximate required mitigation (red), or surplus attenuation (green) for each recommended plant in relation to the closest SKA telescope. Required mitigation or surplus attenuation varies based on plant location and frequency. However, mitigation measures will have to be applied based on the highest required level. The required 50 dB of shielding at Boven PV1 @ 942 MHz, for example, would require significant attention to detail to achieve.

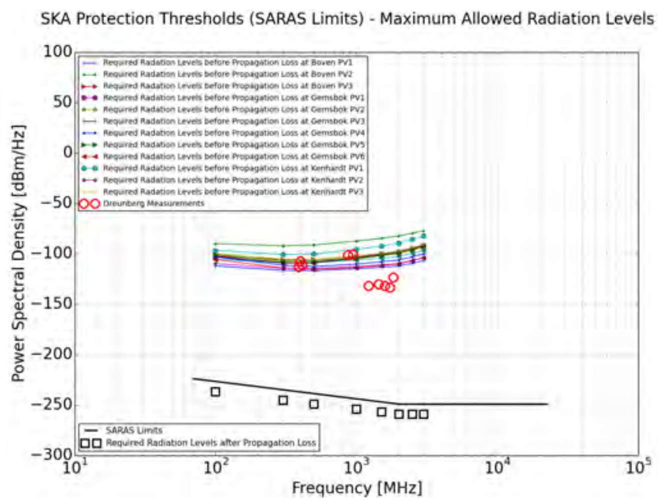
Site Location	387.38 MHz	399.19 MHz	409.52 MHz	871.57 MHz	942.42 MHz	1223.81 MHz	1441.27 MHz	1584.12 MHz	1728.57 MHz	1819.05 MHz
Kenhardt PV1	12.55	18.03	14.58	23.06	23.28	1.96	-5.57	-10.4	-12.54	-2.51
Kenhardt PV2	25.23	30.77	27.38	37.53	37.99	17.28	10.17	5.52	3.5	13.6
Kenhardt PV3	6.94	12.37	8.87	15.98	16.03	-5.57	-13.22	-18.11	-20.3	-10.3
Boven PV1	36.02	41.47	37.99	47.05	47.43	26.85	19.92	15.43	13.61	23.82
Boven PV2	23.16	28.66	25.23	34.35	34.79	13.48	5.88	0.97	-1.29	8.67
Boven PV3	32.07	37.73	34.44	47.17	47.95	27.69	20.76	16.27	14.45	24.66
Boven PV4	35.48	40.95	37.5	46.79	47.17	26.59	19.66	15.17	13.35	23.56
Gemsbok PV1	14.85	20.36	16.94	26.52	26.91	5.98	-1.29	-6.01	-8.08	1.99
Gemsbok PV2	18.72	24.26	20.87	31.2	31.68	11.01	3.92	-0.72	-2.73	7.38
Gemsbok PV3	14.75	20.25	16.81	25.63	25.9	4.6	-2.93	-7.77	-9.92	0.09
Gemsbok PV4	31.52	37.06	33.66	43.06	43.38	22.1	14.54	9.64	7.38	17.34
Gemsbok PV5	24.01	29.42	25.92	32.36	32.29	9.96	1.69	-3.63	-6.27	3.43
Gemsbok PV6	26.8	32.34	28.94	39.25	39.73	19.02	11.88	7.2	5.14	15.21

Table 47: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the closest SKA telescope.

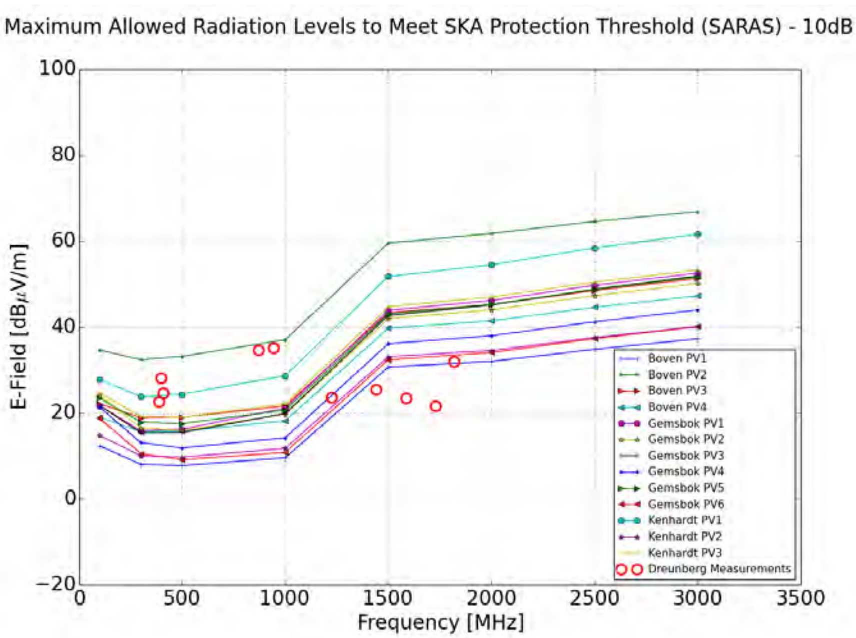
6.2.2 2nd Closest SKA Telescope



(a)



(b)



(c)

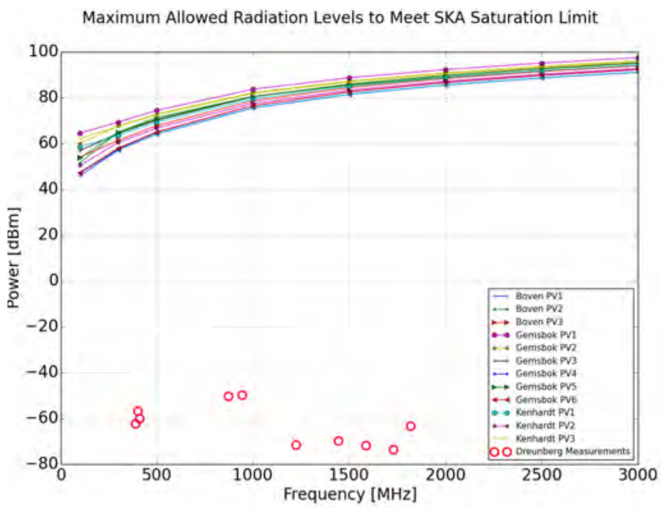
Figure 71: 2nd closest SKA telescope receiver: (a) Maximum allowed EIRP to ensure levels are below the SKA saturation limit of -100 dBm at the telescope receiver; (b) Maximum allowed PSD to ensure levels are 10 dB below SARAS protection levels; (c) Maximum allowed measured E-Field (CISPR 22 Class B) to ensure levels are 10 dB below SARAS protection levels.

Given in Table 48 is a comparison between measured plant RFI and maximum allowed emission levels as shown in Fig. 71. It shows the approximate required mitigation (red), or surplus attenuation (green) for each recommended plant in relation to the second closest SKA telescope. Required mitigation or surplus attenuation varies based on plant location and frequency. However, mitigation measures will have to be applied based on the highest required level. The required 50 dB of shielding at Boven PV1 @ 942 MHz, for example, would require significant attention to detail to achieve.

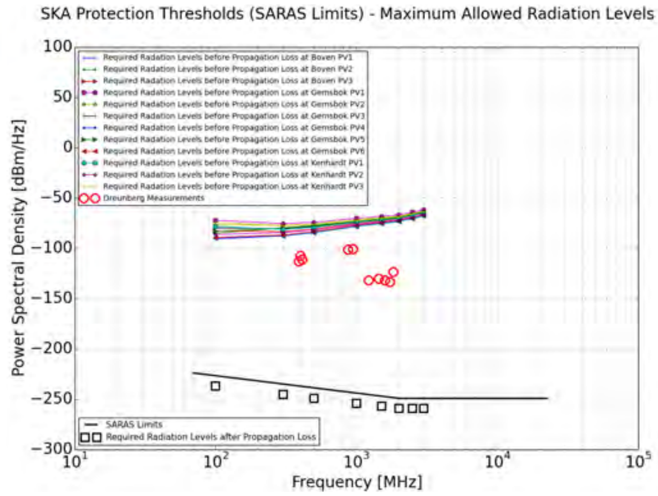
Site Location	387.38 MHz	399.19 MHz	409.52 MHz	871.57 MHz	942.42 MHz	1223.81 MHz	1441.27 MHz	1584.12 MHz	1728.57 MHz	1819.05 MHz
Kenhardt PV1	-1.38	4.07	0.59	7.05	6.94	-15.35	-23.55	-28.78	-31.31	-21.52
Kenhardt PV2	12.74	18.24	14.81	23.39	23.6	2.36	-5.07	-9.89	-12.05	-2.03
Kenhardt PV3	3.57	9.07	5.63	13.31	13.36	-8.6	-16.59	-21.69	-24.06	-14.19
Boven PV1	14.73	20.23	16.8	25.52	25.77	4.64	-2.72	-7.48	-9.58	0.46
Boven PV2	3.73	9.21	5.76	13.68	13.81	-7.7	-15.32	-20.25	-22.51	-12.57
Boven PV3	3.73	9.21	5.76	13.68	13.81	-7.7	-15.32	-20.25	-22.51	-12.57
Boven PV4	6.95	12.43	8.98	17.08	17.24	-4.17	-11.73	-16.61	-18.82	-8.84
Gemsbok PV1	6.64	12.1	8.64	14.75	14.56	-7.66	-15.72	-20.84	-23.23	-13.37
Gemsbok PV2	6.39	11.91	8.49	15.91	15.87	-6.01	-13.88	-18.9	-21.21	-11.29
Gemsbok PV3	7.22	12.7	9.25	15.89	15.77	-6.42	-14.51	-19.67	-22.11	-12.27
Gemsbok PV4	10.1	15.65	12.27	21.01	21.18	-0.36	-8.05	-13.0	-15.27	-5.33
Gemsbok PV5	4.92	10.42	6.99	14.78	14.84	-7.04	-14.98	-20.04	-22.4	-12.51
Gemsbok PV6	12.72	18.28	14.91	24.24	24.5	3.19	-4.35	-9.23	-11.45	-1.48

Table 48: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the second closest SKA telescope.

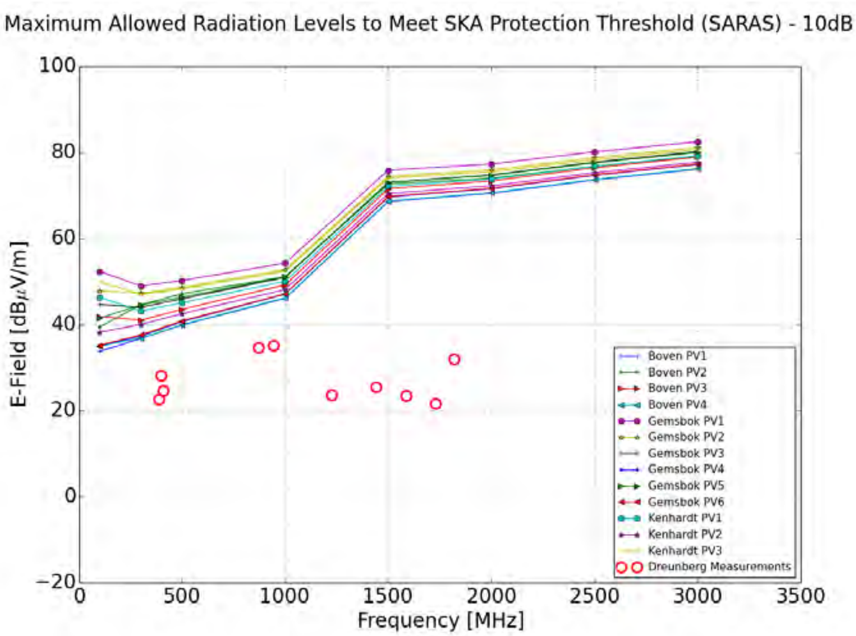
6.2.3 Core SKA Telescopes



(a)



(b)



(c)

Figure 72: Core SKA telescope receivers: (a) Maximum allowed EIRP to ensure levels are below the SKA saturation limit of -100 dBm at the telescope receiver; (b) Maximum allowed PSD to ensure levels are 10 dB below SARAS protection levels; (c) Maximum allowed measured E-Field (CISPR 22 Class B) to ensure levels are 10 dB below SARAS protection levels.

Given in Table 49 is a comparison between measured plant RFI and maximum allowed emission levels as shown in Fig. 72. It shows the approximate required mitigation (red), or surplus attenuation (green) for each recommended plant in relation to the closest SKA telescope. Required mitigation or surplus attenuation varies based on plant location and frequency. However, mitigation measures will have to be applied based on the highest required level. Towards the core site sufficient path attenuation exist to ensure emissions are below required limits.

Site Location	**387.38 MHz**	**399.19 MHz**	**409.52 MHz**	**871.57 MHz**	**942.42 MHz**	**1223.81 MHz**	**1441.27 MHz**	**1584.12 MHz**	**1728.57 MHz**	**1819.05 MHz**
Kenhardt PV1	-21.33	-15.96	-19.51	-14.15	-14.35	-36.27	-44.03	-48.97	-51.19	-41.21
Kenhardt PV2	-18.46	-13.12	-16.7	-12.06	-12.35	-34.46	-42.33	-47.32	-49.57	-39.61
Kenhardt PV3	-24.93	-19.53	-23.04	-16.73	-16.81	-38.43	-46.01	-50.85	-52.99	-42.97
Boven PV1	-15.48	-10.18	-13.79	-9.87	-10.25	-32.51	-40.46	-45.49	-47.77	-37.84
Boven PV2	-19.45	-14.12	-17.69	-13.13	-13.44	-35.56	-43.45	-48.44	-50.7	-40.74
Boven PV3	-19.45	-14.12	-17.69	-13.13	-13.44	-35.56	-43.45	-48.44	-50.7	-40.74
Boven PV4	-15.58	-10.28	-13.89	-10.0	-10.38	-32.64	-40.59	-45.62	-47.89	-37.95
Gemsbok PV1	-26.86	-21.45	-24.96	-18.6	-18.67	-40.28	-47.85	-52.69	-54.83	-44.81
Gemsbok PV2	-25.18	-19.78	-23.3	-17.06	-17.15	-38.81	-46.41	-51.27	-53.42	-43.41
Gemsbok PV3	-22.2	-16.84	-20.39	-15.06	-15.27	-37.2	-44.97	-49.91	-52.13	-42.16
Gemsbok PV4	-16.1	-10.82	-14.44	-10.79	-11.19	-33.51	-41.49	-46.53	-48.82	-38.89
Gemsbok PV5	-22.7	-17.32	-20.87	-15.26	-15.43	-37.26	-44.97	-49.88	-52.07	-42.09
Gemsbok PV6	-16.36	-11.07	-14.68	-10.91	-11.31	-33.62	-41.61	-46.65	-48.94	-39.0

Table 49: Required (red) and surplus (green) attenuation levels [dB] to meet SARAS protection limits at the core-site SKA telescopes.

7 Plant Design Overview

RFI associated with the regular switching of relays and contactors to operate the single axis tracking systems has subsequently been found by MESA Solutions to be contributors of significant levels of broadband interference. Assuming a tracking PV plant design, significant care and effort will be required to shield the broadband interference generated during operation of the tracking units.

7.1 Expected Sources of Interference

The biggest RFI producing culprits for a plant layout incorporating a similar tracking philosophy were identified to be the inverter units and solar power tracker and monitoring controllers. Coupled to this is the way cabling is distributed throughout the plant. The combination of all three factors will influence the level of interference each plant is likely to produce.

- **Inverters**
  - The inverters are considered to be the main source of interference due to their switching operation through which the direct current (DC) from the panels is converted to alternating current (AC) supplied to the transformers. This interference can be in the form of CM current present on the cables connected to the units, or through direct radiation.
- **Solar Power Tracker and Monitoring Controller**
  - RFI associated with the regular switching of relays and contactors to operate the single axis tracking systems has recently been found to be prominent sources of interference. These relays will switch the motors or hydraulic pumps on and off on a regular basis during the day, resulting in broadband interference with substantial frequency content. Furthermore, RFI generated by the tracking controller is typically due to the default system operation implementing a wireless mesh network for communication purposes between units. A number of other electrical components, which are also likely sources of interference, form part of the controller.
- **Cable Routing and Earthing**
  - The way noise-producing equipment in the plant are interconnected has a significant influence on the level of RFI emitted. Cabling is the means by which interference in the form of common mode current (CM) is distributed. When sections of cabling become resonant, the interference is radiated into the environment. Depending on a number of factors such as height of transmission, frequency, emission level at source and topography, the interference will have a certain severity at the nearest SKA telescope as well as the core-site.

7.2 Mitigating Measures

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 the seams and doors. Furthermore, RFI Honeycomb filtering should be placed on all ventilation openings. It is important to ensure that the 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 to shunt CM interference currents to ground. In the case of a tracking PV plant design, care will have to be taken to shield the noise associated with the relays, contactors and hydraulic pumps/motors of the tracking units. It is recommended that data communications to and from the plants to be via fibre optic.

DIRECTORS: H. C. Reader, A. J. Otto and P. S. van der Merwe | www.mesasolutions.co.za | EMAIL: info@mesasolutions.co.za
REG NO: 2002/025186/07 | POSTAL ADDRESS: P.O. Box 12572, Die Boord, Stellenbosch, 7613

7.3 Expected RFI Reductions due to Mitigation Measures

By simply following good practices such as implementing an adequate earthing philosophy, and paying attention to the cabling interconnections and layout below ground, a reduction of at least 20 dB in the typical plant emissions across the frequency range of interest can be achieved. With added attention to detail, particularly regarding the shielding of enclosures, defining cable interfaces by correctly terminating cable screens or armouring, and the use of galvanic earthed cable trays for short cable runs above ground, a total reduction of 40 dB is likely. A further 20 dB reduction would require detailed analysis of the required enclosure shielding and gasketting, more stringent filtering at all cable interfaces, and implementing additional cable screening that could include using fully enclosed metallic cable conduits. It is therefore MESA's expectations that if the mitigation measures specified are implemented correctly, an improvement of between 20 and 40 dB in emissions levels are likely. The required maximum mitigation of 50 dB towards the closest telescopes for some plant locations would therefore require significant care. **It is important to note that this is purely predicted values and cannot be guaranteed or confirmed until measurements on operating plants (or representative installations) with recommended mitigation measures have been performed.**

8 Conclusions

MESA Solutions was asked by *Scatec Solar* to do a cumulative topographical analysis of the terrain profile between three proposed *Scatec Solar* PV projects, as well as ten proposed *Mulilo* PV projects, towards the closest and core-site SKA Telescopes. The purpose of the investigation is to define a level that can be verified through measurements which will result in an equivalent emission level that is 10 dB below the SKA threshold limit. This measurement level is influenced by the TPL between both telescope locations. However, the TPL is a function of topography and frequency as well as characteristics such as the transmitter and receiver heights. The measurement level is related to the well-known CISPR 11/22 Class B standard that is defined at a measurement distance of 10 m for frequencies below 1 GHz and at 3 m for frequencies above 1 GHz.

From the results in Section 6 it is clear that radiated emissions at levels below that of CISPR 11/22 Class B are required (especially in the case of the closest telescope). This is mainly due to the absence of any TL over this short distance. This requirement relaxes slightly toward the second closest telescope, while allowable measured levels increase to slightly above the CISPR limit due to the additional TL toward the core. The possibility exists that, due to the large number of sites that are proposed in that area, the overall lower levels would have to be achieved to limit interference to the closest telescopes as much as possible. A comparison between measured plant RFI and required mitigation or surplus attenuation have been provided for the closest and core site 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.
  - 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/motors of the tracking units.

The three proposed Kenhardt plants are shown in Table 47 to exceed the SARAS protection levels by up to 38 dB toward the closest SKA telescope. This includes the cumulative effect of a total of $N = 13$ PV plants developed.

However, Boven PV1, PV3 and PV4 exceed this limit by approximately 50 dB in this scenario. For the case where only the three Kenhardt plants are developed, the exceedance will reduce to 31.6 dB with a cumulative effect for $N = 3$ plants considered.

It is MESA's expectations that, if the mitigation measures that are specified are implemented correctly, an improvement of between 20 and 40 dB in emissions levels are likely. However the maximum required attenuation for some of the plants towards the closest telescope would require significant attention to detail to achieve shielding levels of 50 dB. If required attenuation for the closest telescope is achieved, the second closest and core site will comply. *It is important to note that this is purely predicted values and cannot be guaranteed or confirmed until measurements on a representative mock-up installation with mitigation measures implemented are performed. It remain the developers responsibility to ensure that compliance to SKA requirements is met and MESA Solutions cannot accept responsibility for any assessments made in this report which could cause non-compliance.*

MESA Solutions
Drs A. J. Otto and P. S. van der Merwe
January 2016

References

[1] *Astronomy Geographic Advantage Act, 2007*, No. 21 of 2007, Government Gazette, Vol. 516, No. 31157, Cape Town, Republic of South Africa, 17 June 2008.

[2] P. Dewdney and G. Han Tan, *SKA EMI/EMC Standards and Procedures*, Technical Report SKA-TEL-SKO-0000202, Revision 1, Square Kilometre Array (SKA) Organisation, Jodrell Bank Observatory, UK, 10 January 2015.

[3] A. J. Otto and P. S. van der Merwe, *Topographical Analysis of Proposed Nieuwehoop PV Projects*, Technical Report, MUL/NH/15/07/28, MESA Solutions (Pty) Ltd., Stellenbosch, Western Cape, South Africa, 7600, 31 July 2015.

[4] A. J. Otto and P. S. van der Merwe, *Basic Site Assesment of Proposed Prieska Photovoltaic Plant*, Technical Report, SUN/14/08/22, Revision 0, MESA Solutions Pty (Ltd), Stellenbosch, South Africa, 22 August 2014.

Appendix

A Fresnel Zones and Line of Sight

The Fresnel zones and elevation profiles, including the earth curvature, are shown in Figs. 73 to 132. In all case the profiles are given towards the two closest and core-site SKA telescopes. A more detailed terrain profile shows features not visible in a normal Google Earth profile. This profile is then compensated for the earth curvature, clearly visible for the longer distance toward the core site. Important to note is the scale used in these figures. The elevation change is in meters but the separation distance varies in kilometres. The earth curvature representation is therefore somewhat enhanced.

A.1 Boven PV1 to Closest SKA

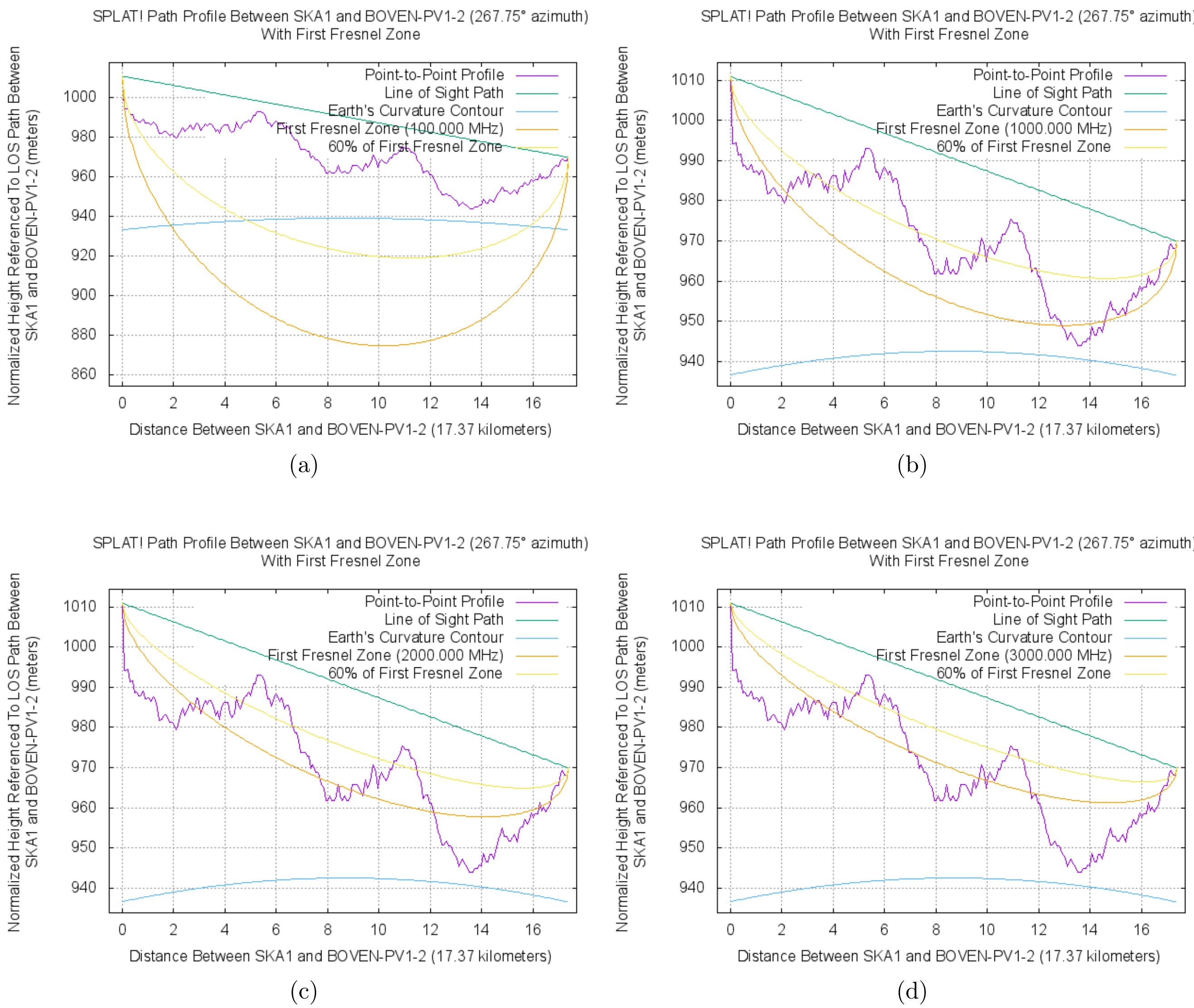
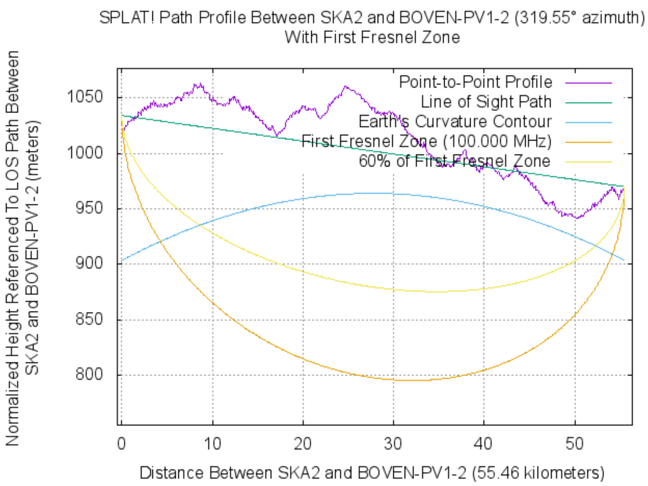
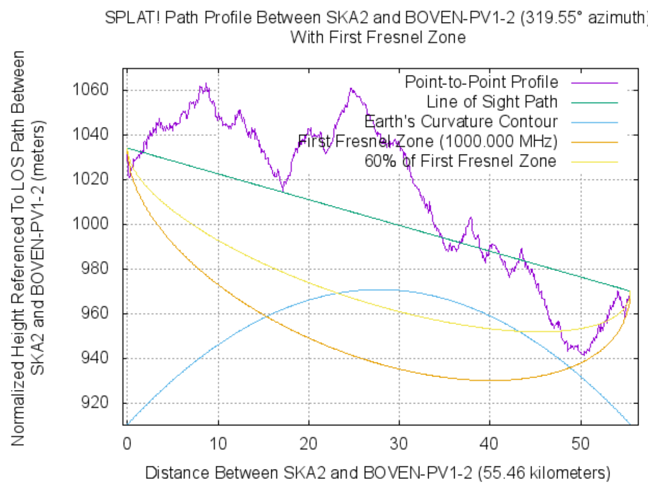


Figure 73: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV1 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

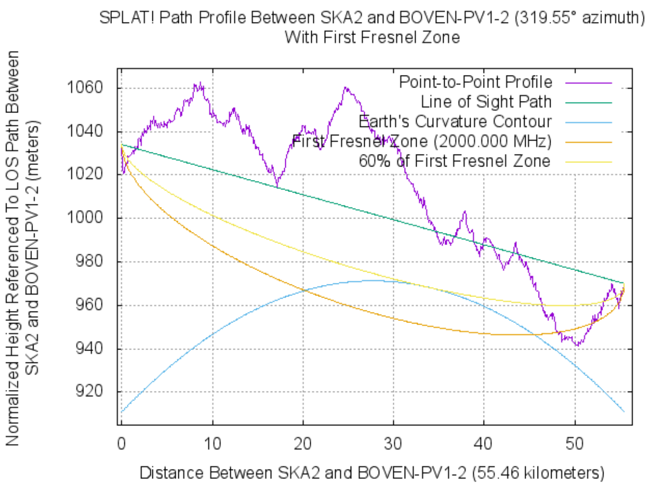
A.2 Boven PV1 to 2nd Closest SKA



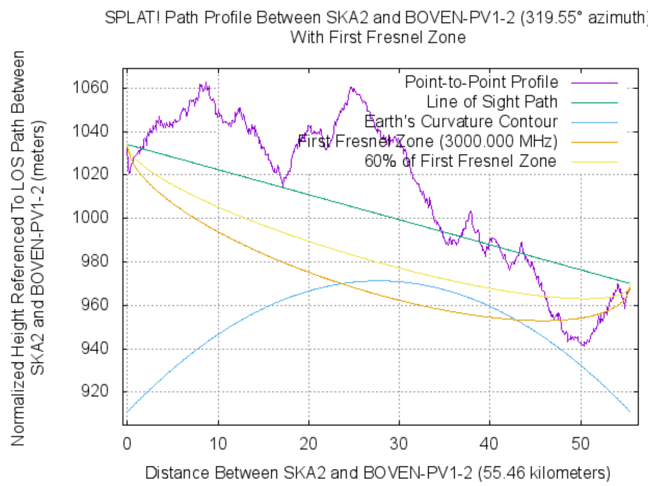
(a)



(b)



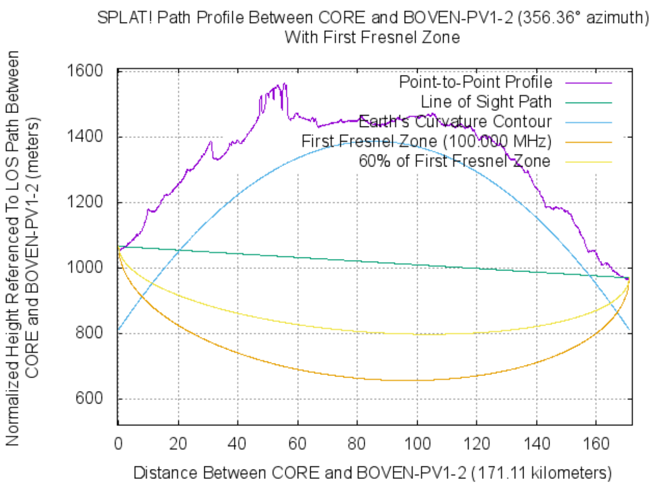
(c)



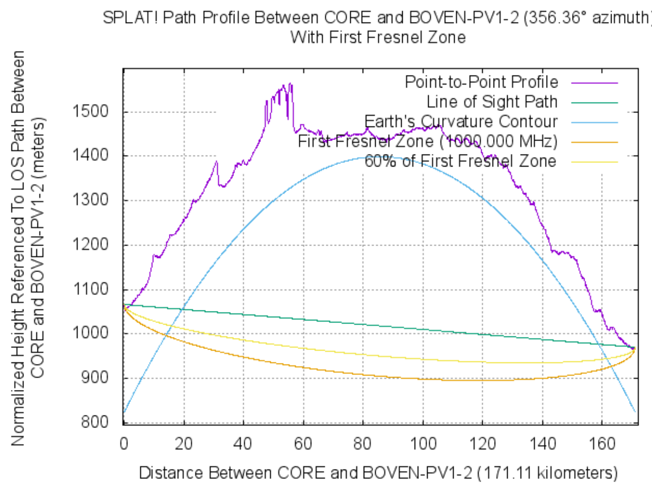
(d)

Figure 74: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV1 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

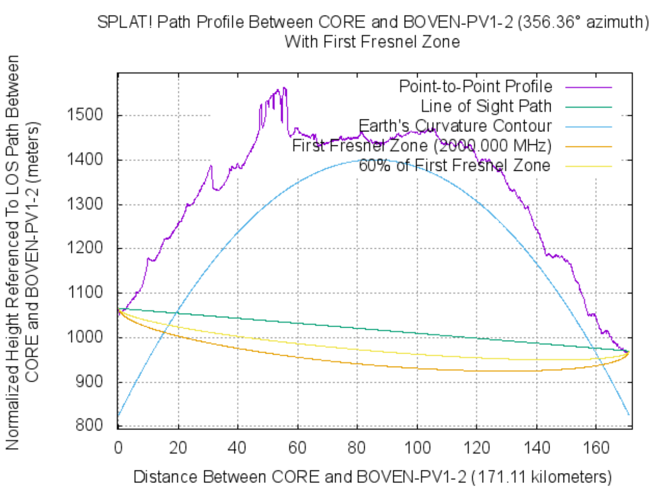
A.3 Boven PV1 to Core SKA



(a)



(b)



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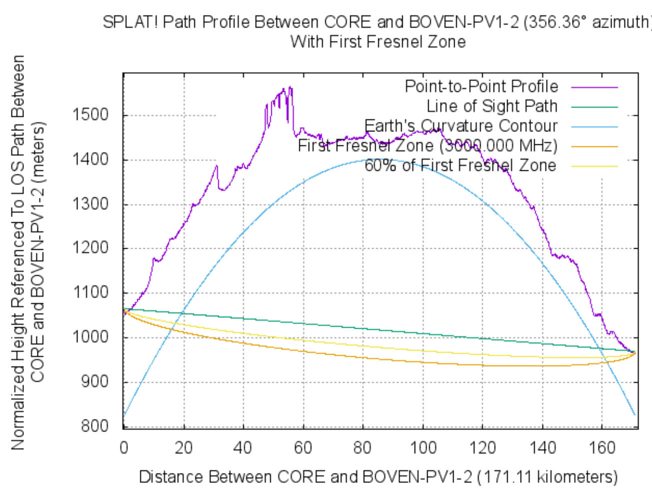


(d)

Figure 75: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV1 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.4 Boven PV2 to Closest SKA

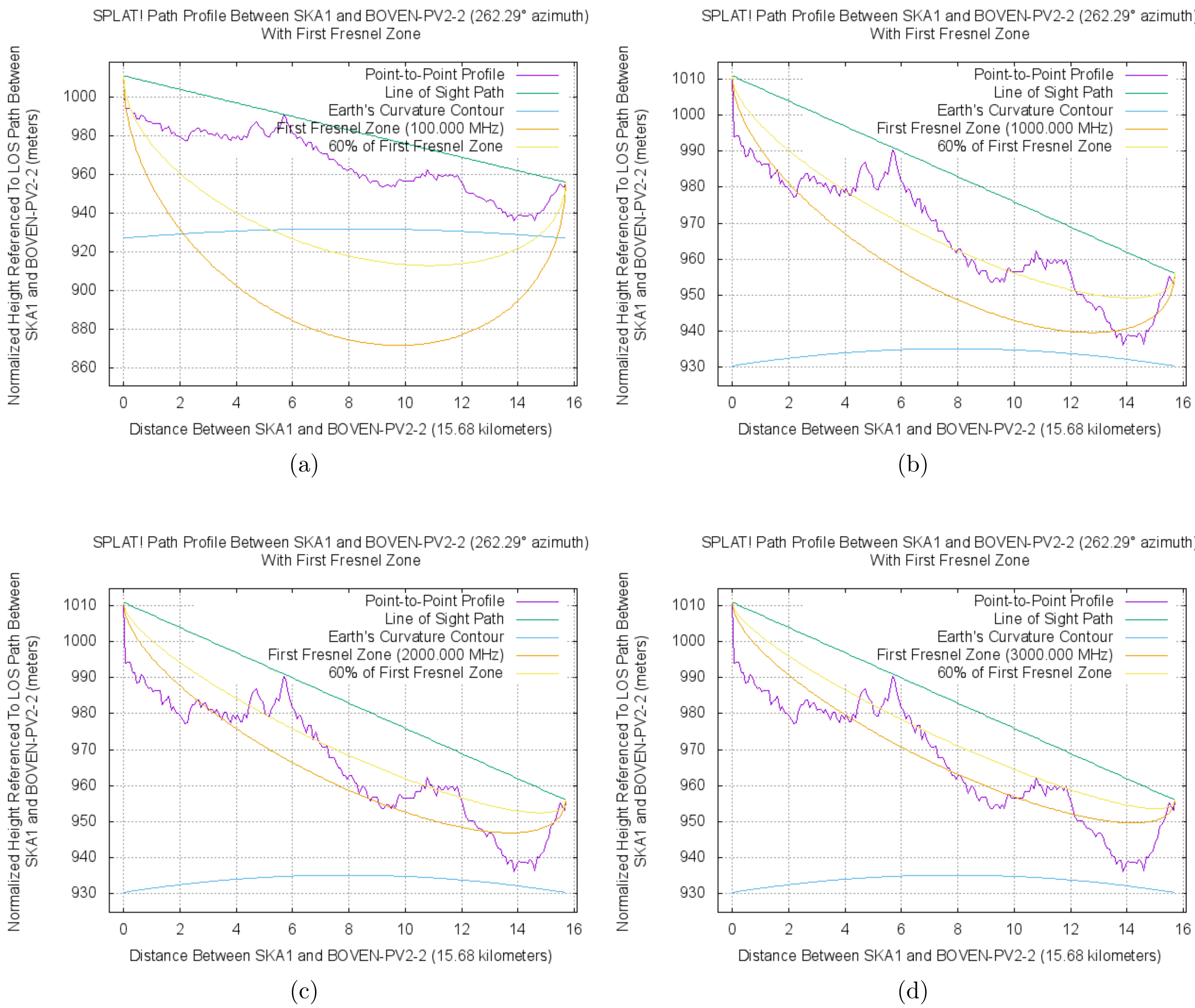
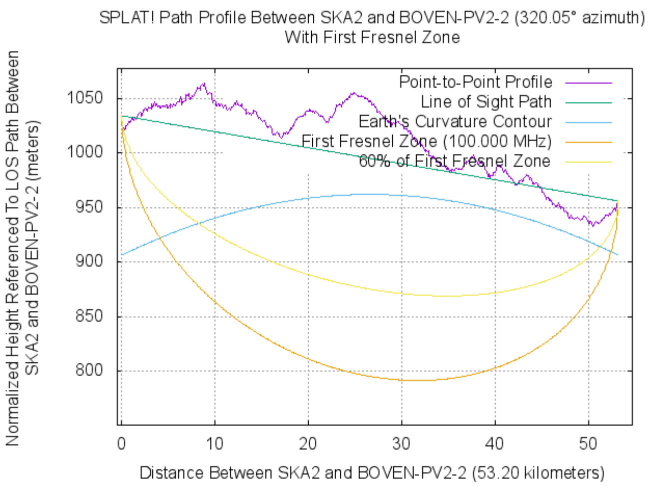
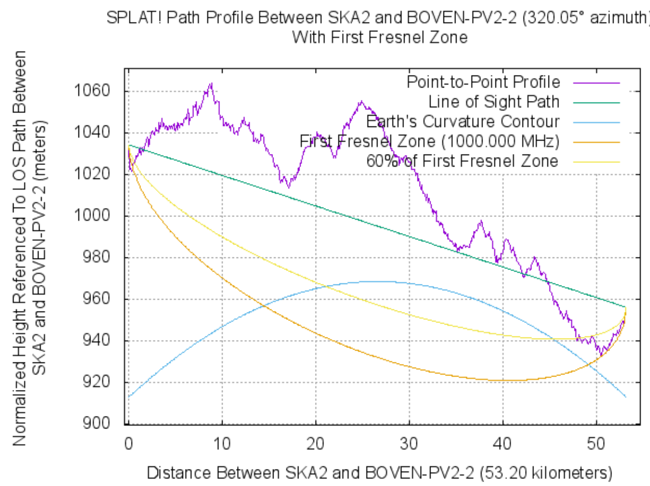


Figure 76: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

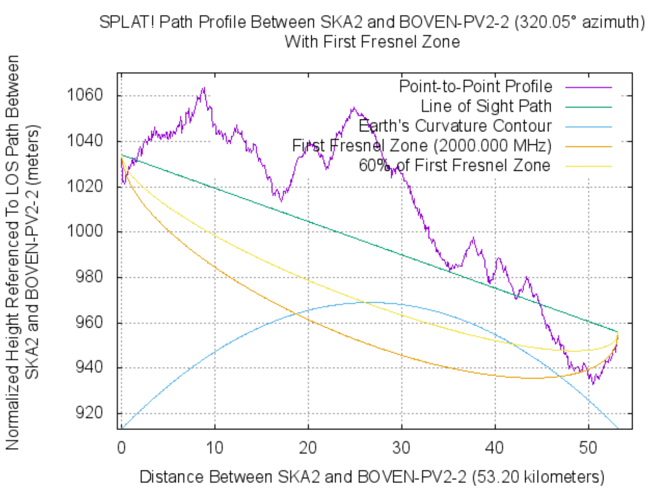
A.5 Boven PV2 to 2nd Closest SKA



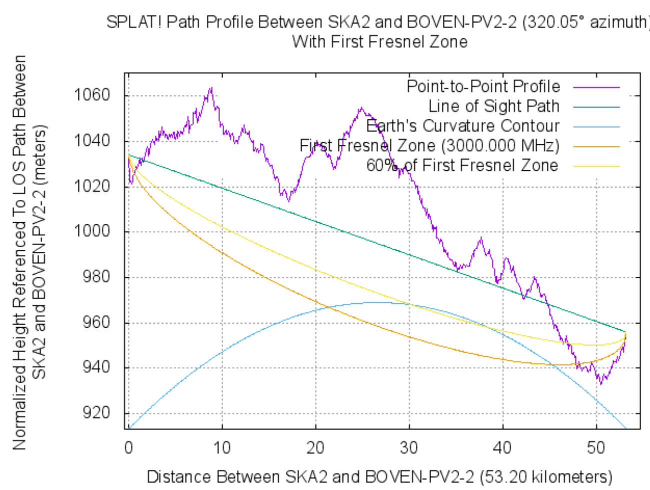
(a)



(b)



(c)



(d)

Figure 77: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.6 Boven PV2 to Core SKA

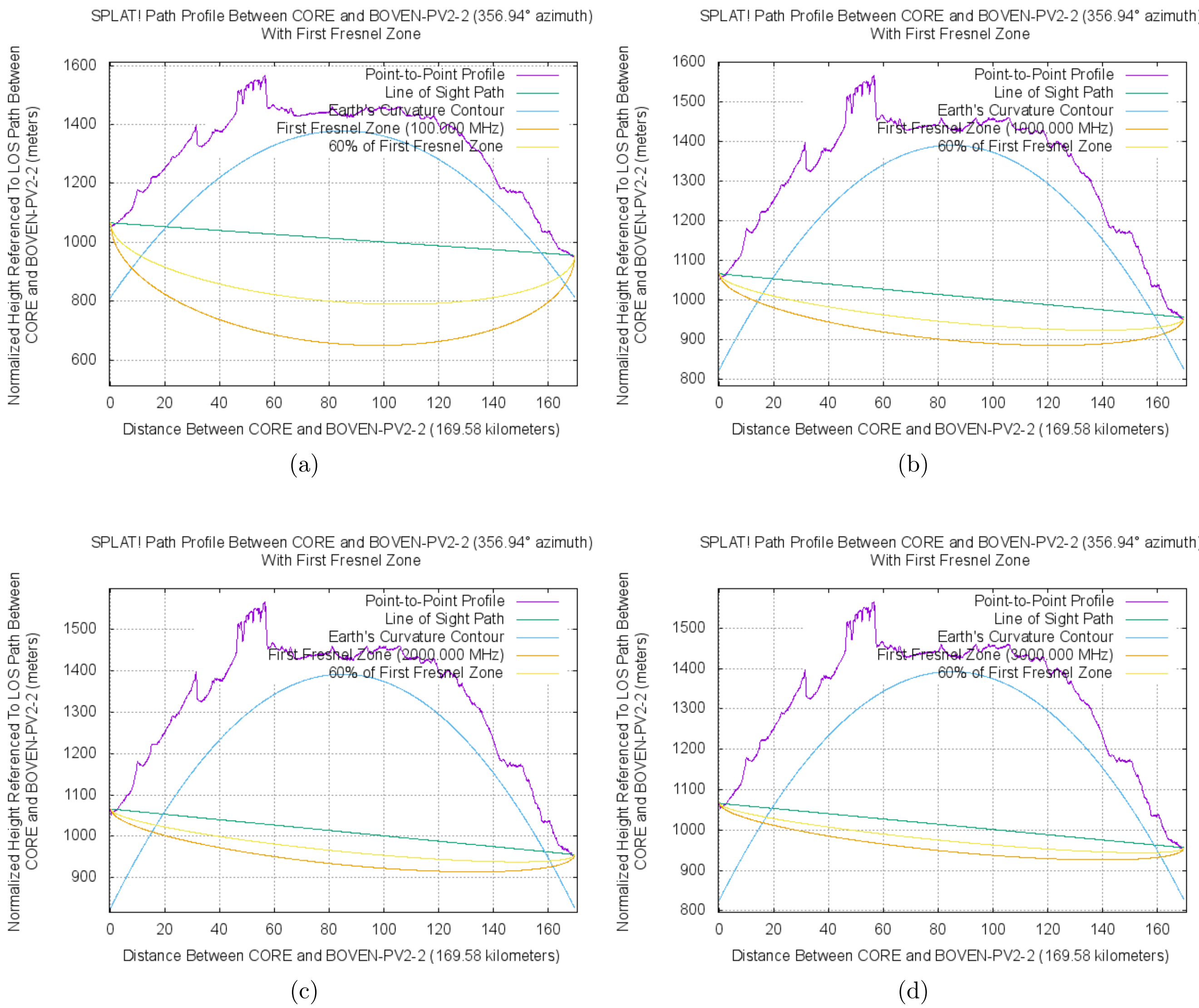
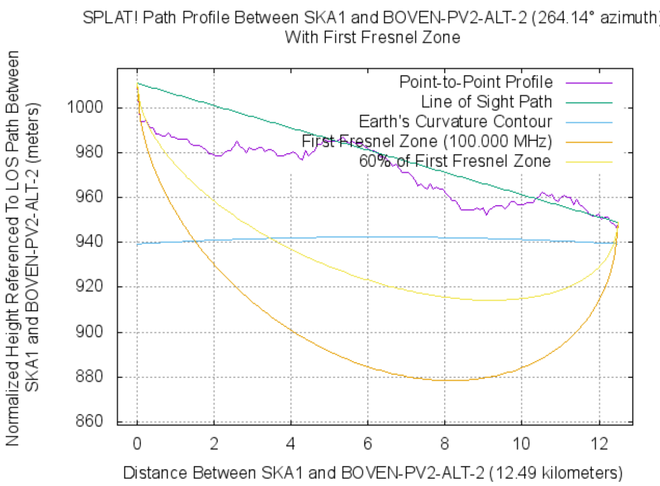
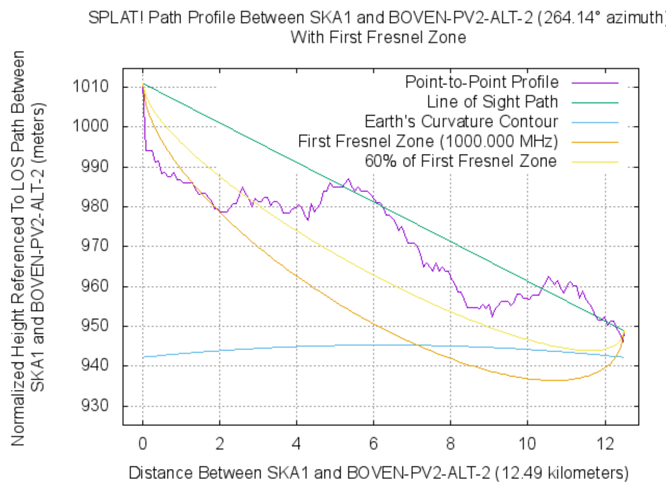


Figure 78: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

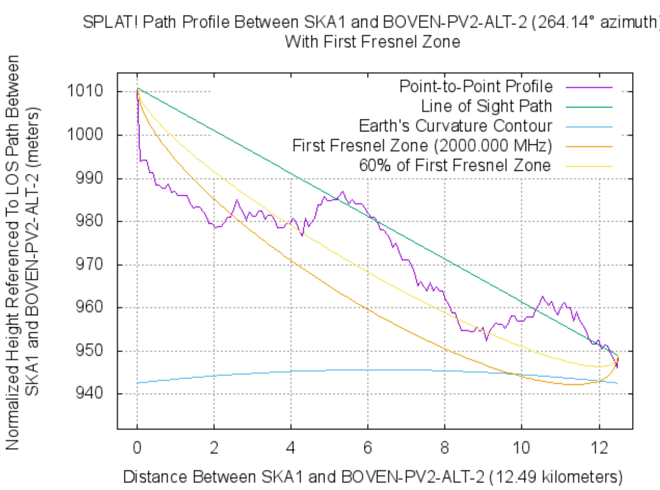
A.7 Boven PV2 Alternative to Closest SKA



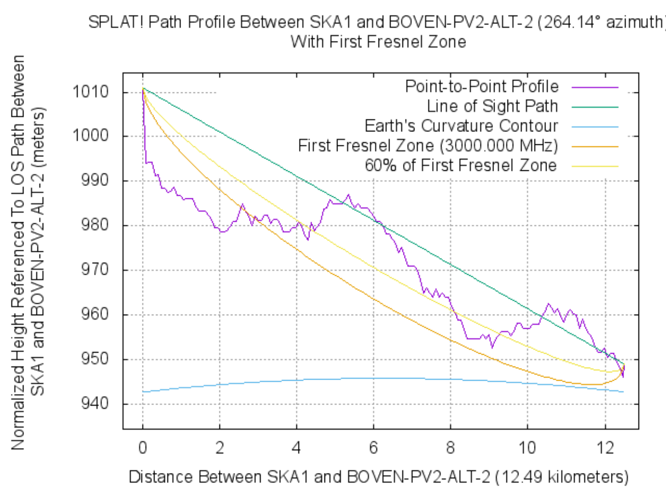
(a)



(b)



(c)



(d)

Figure 79: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.8 Boven PV2 Alternative to 2nd Closest SKA

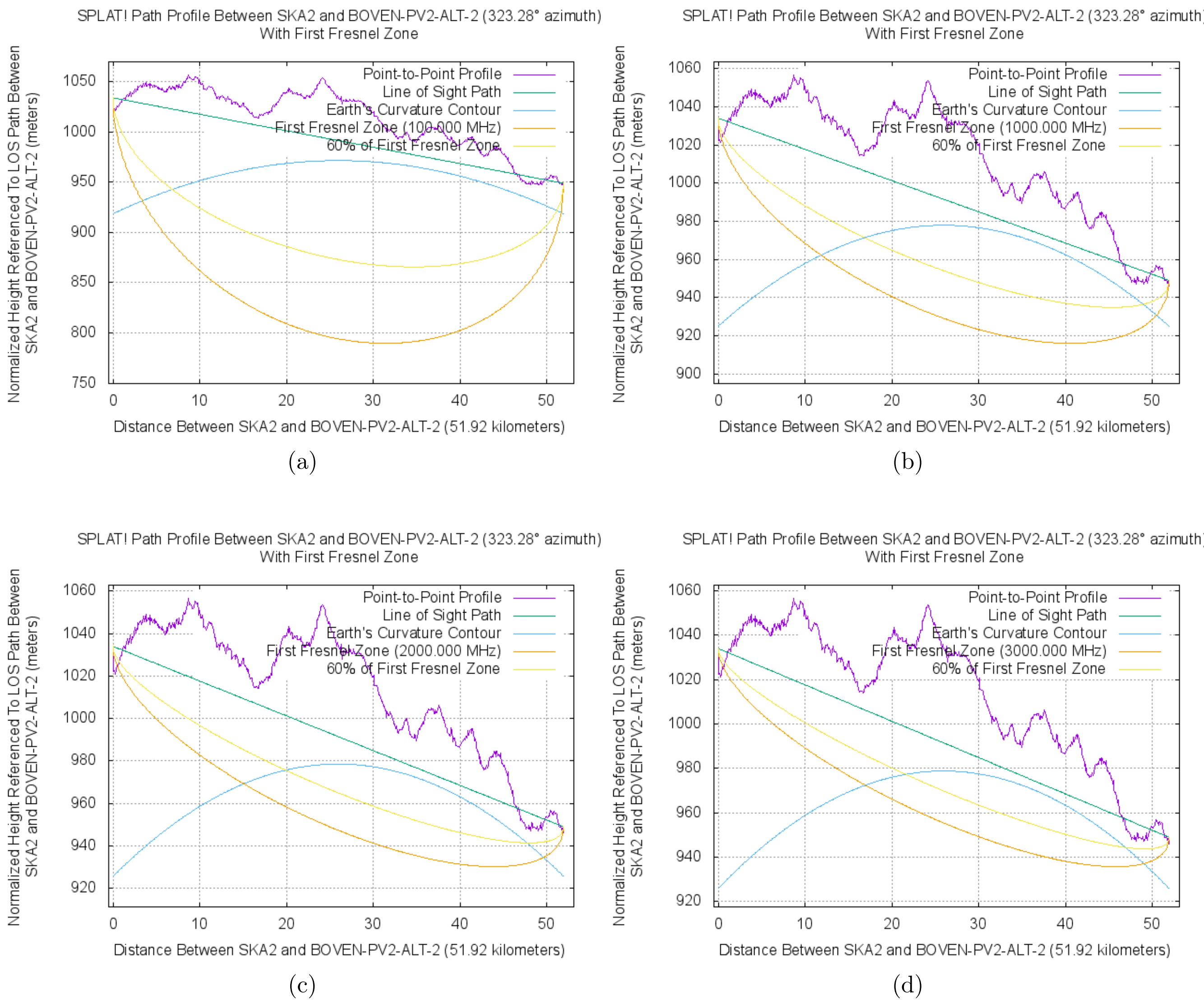
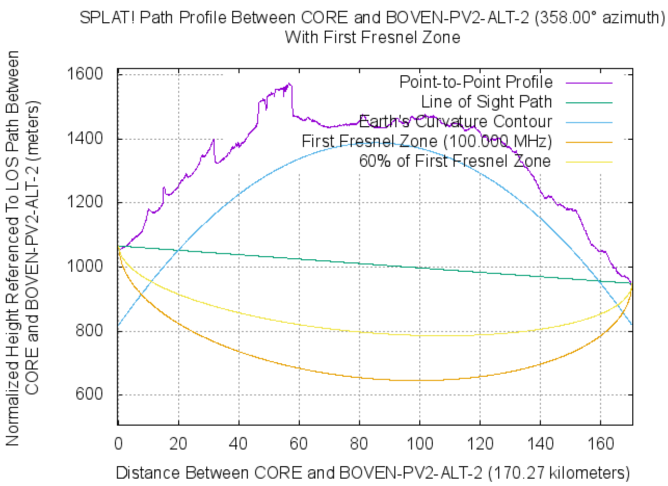
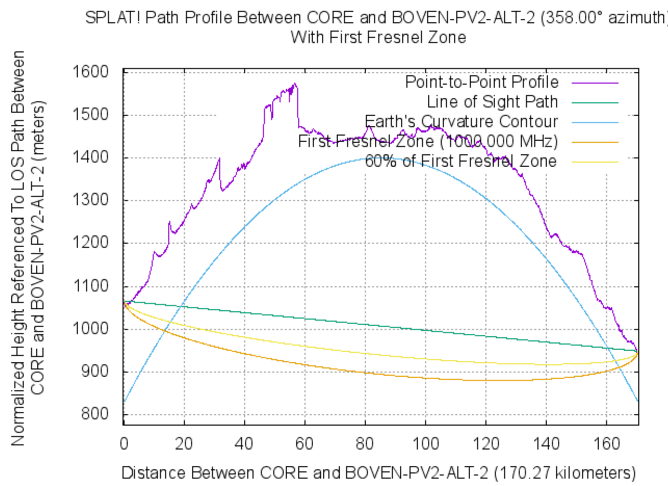


Figure 80: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

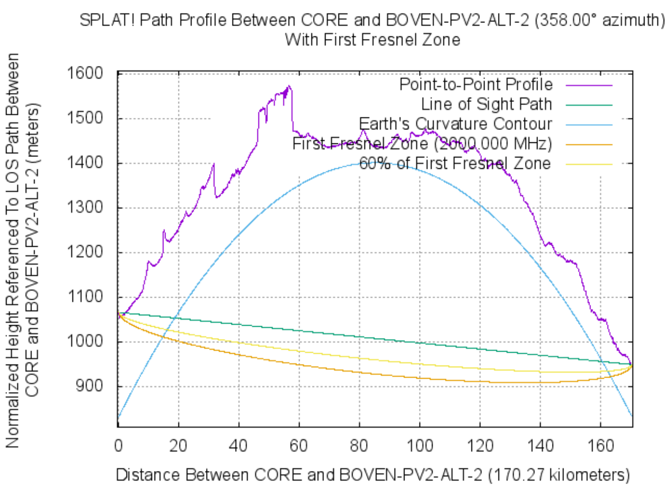
A.9 Boven PV2 Alternative to Core SKA



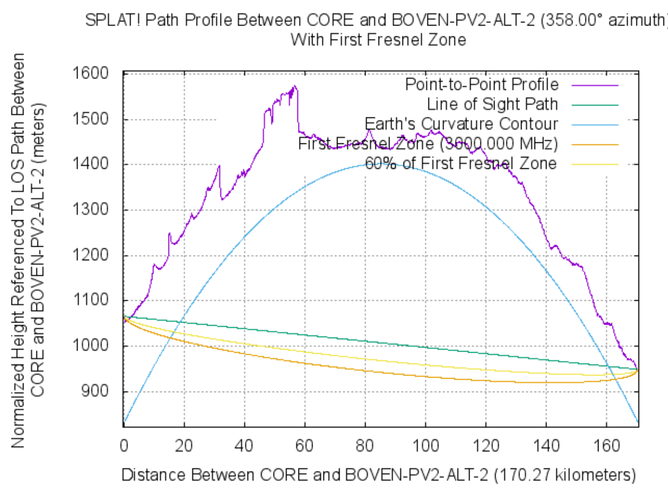
(a)



(b)



(c)



(d)

Figure 81: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV2 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.10 Boven PV3 to Closest SKA

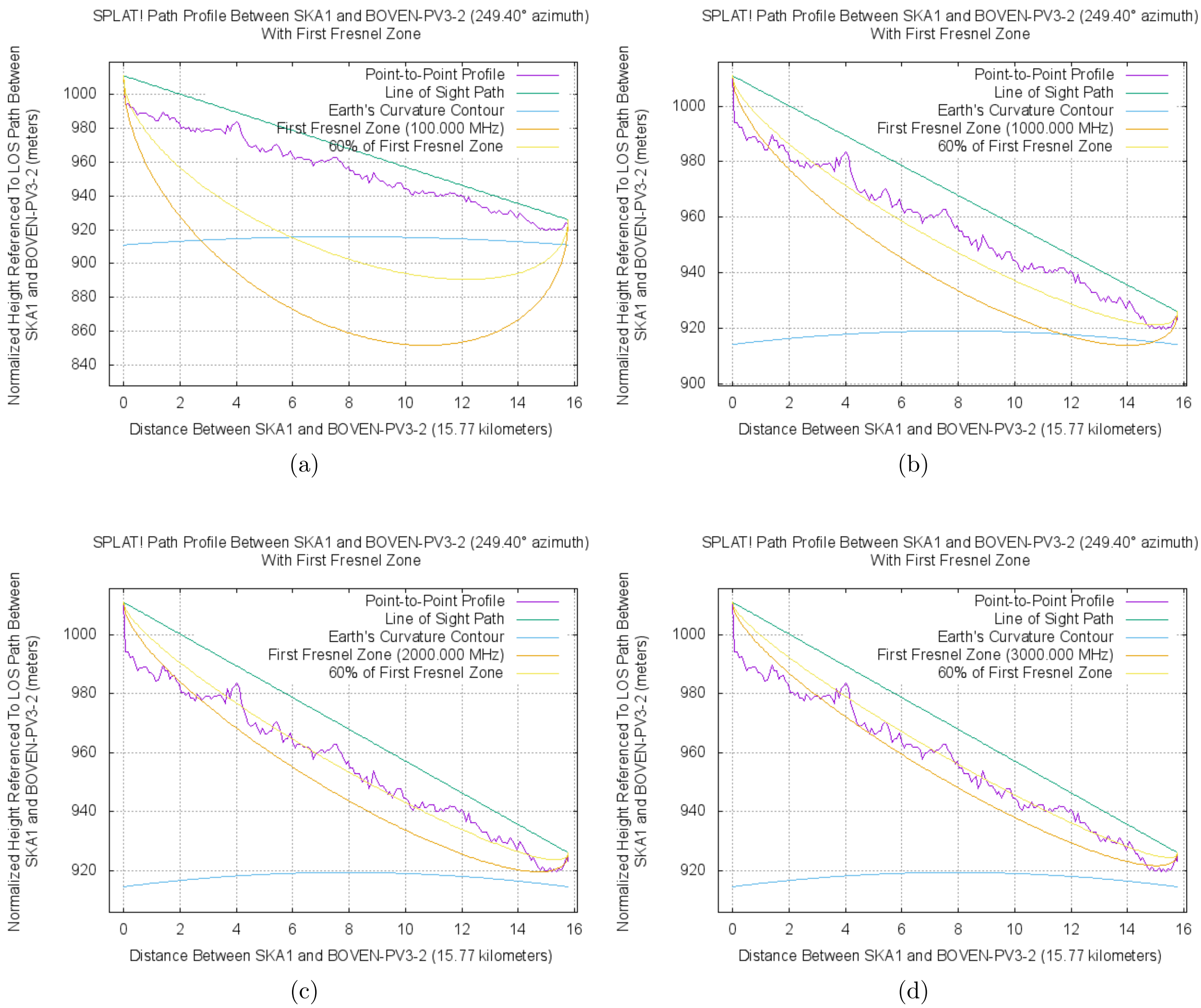


Figure 82: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.11 Boven PV3 to 2nd Closest SKA

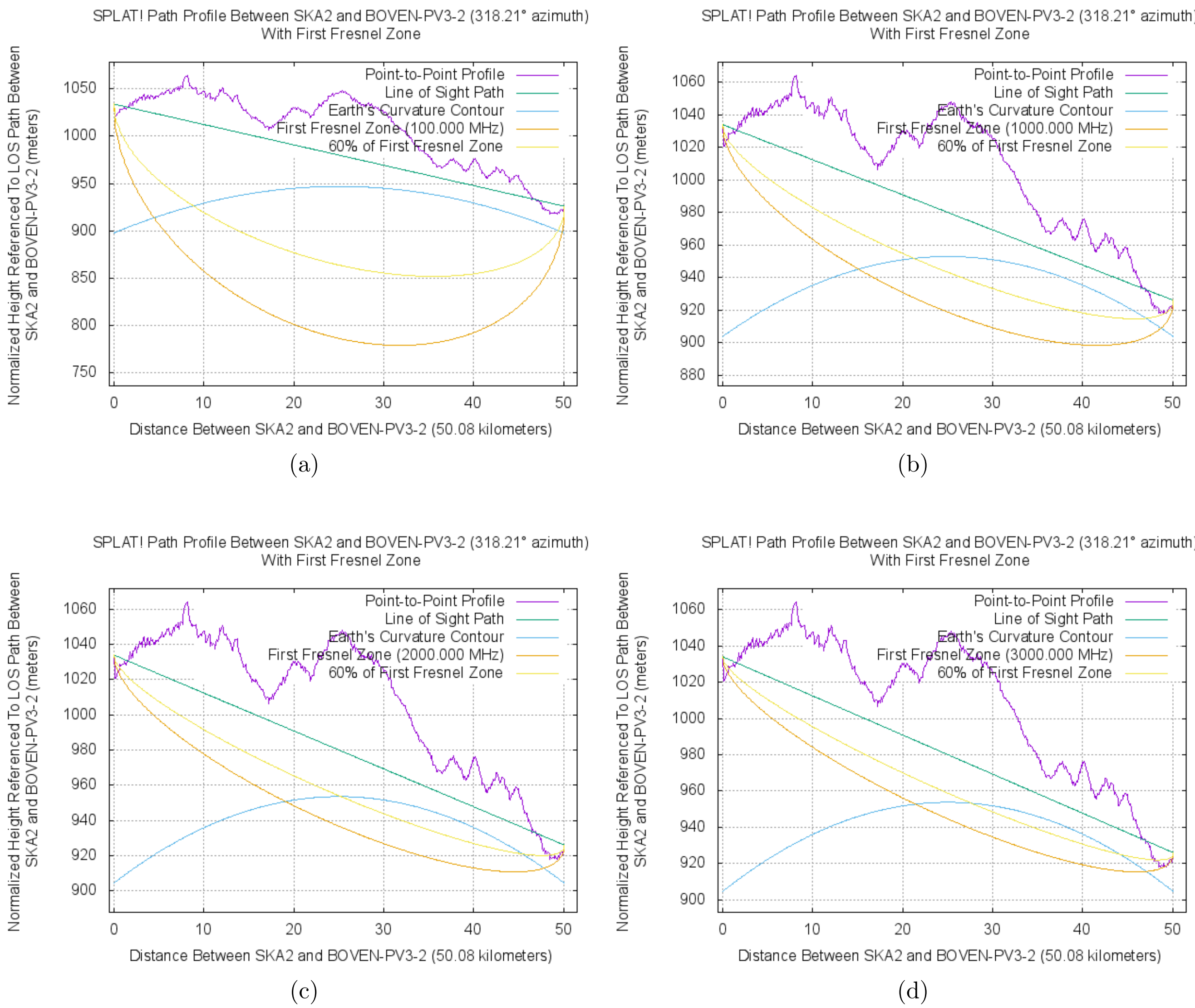


Figure 83: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.12 Boven PV3 to Core SKA

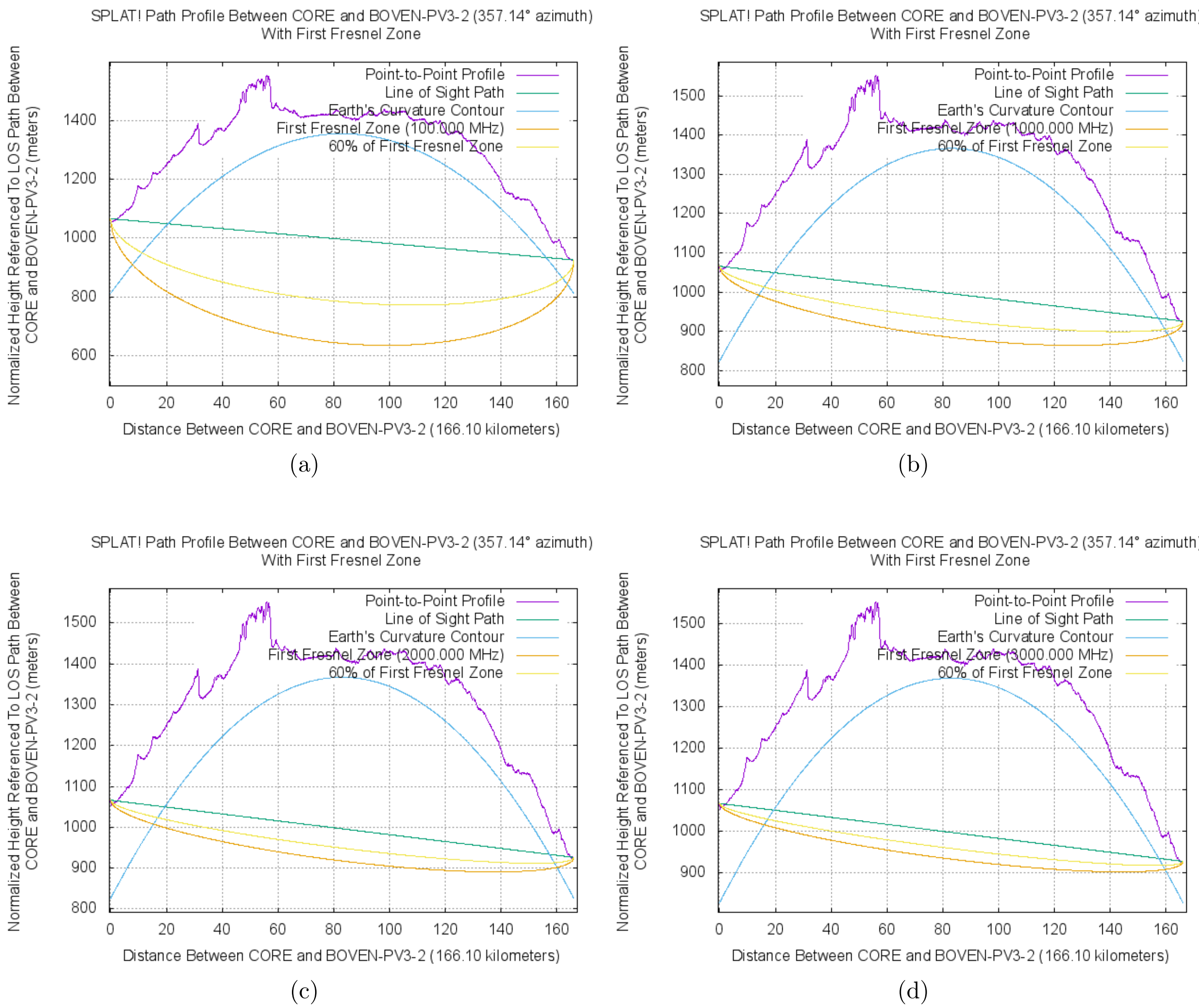
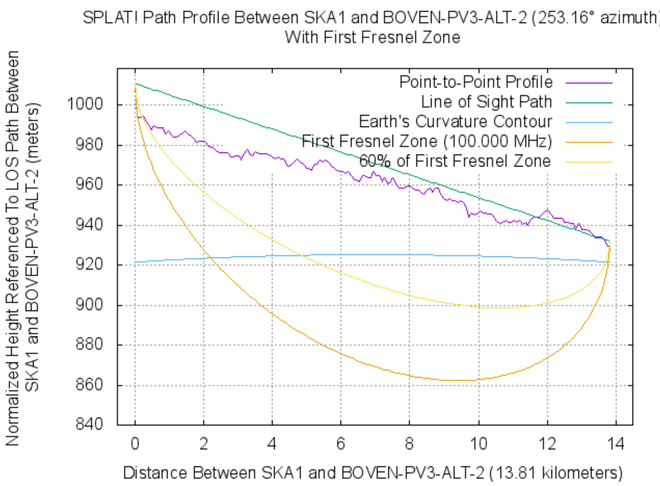
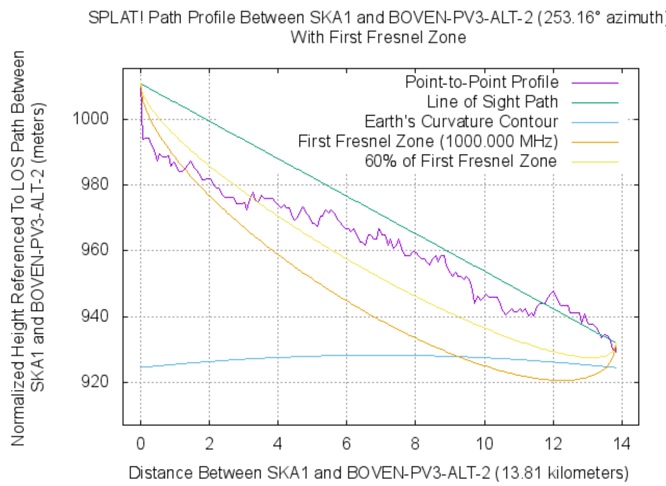


Figure 84: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

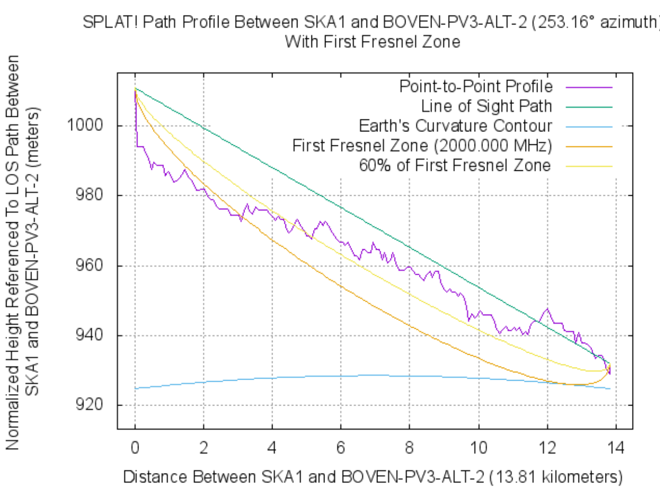
A.13 Boven PV3 Alternative to Closest SKA



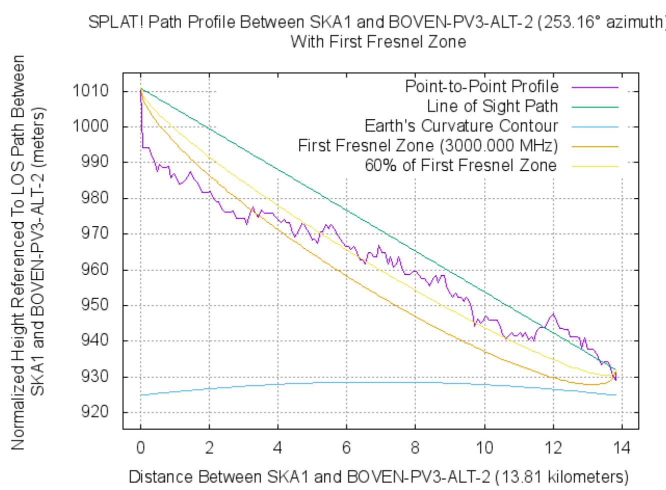
(a)



(b)



(c)



(d)

Figure 85: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.14 Boven PV3 Alternative to 2nd Closest SKA

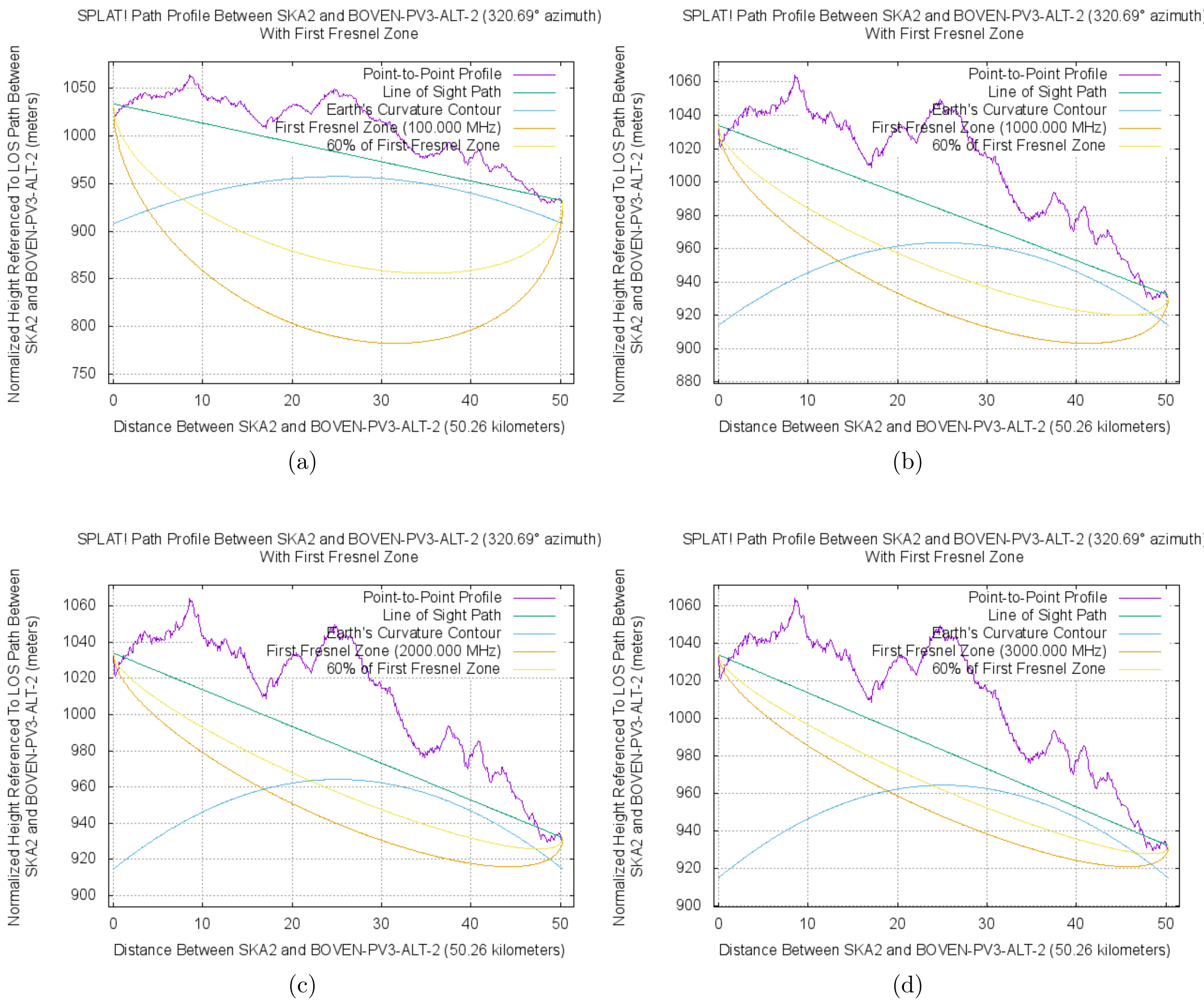


Figure 86: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.15 Boven PV3 Alternative to Core SKA

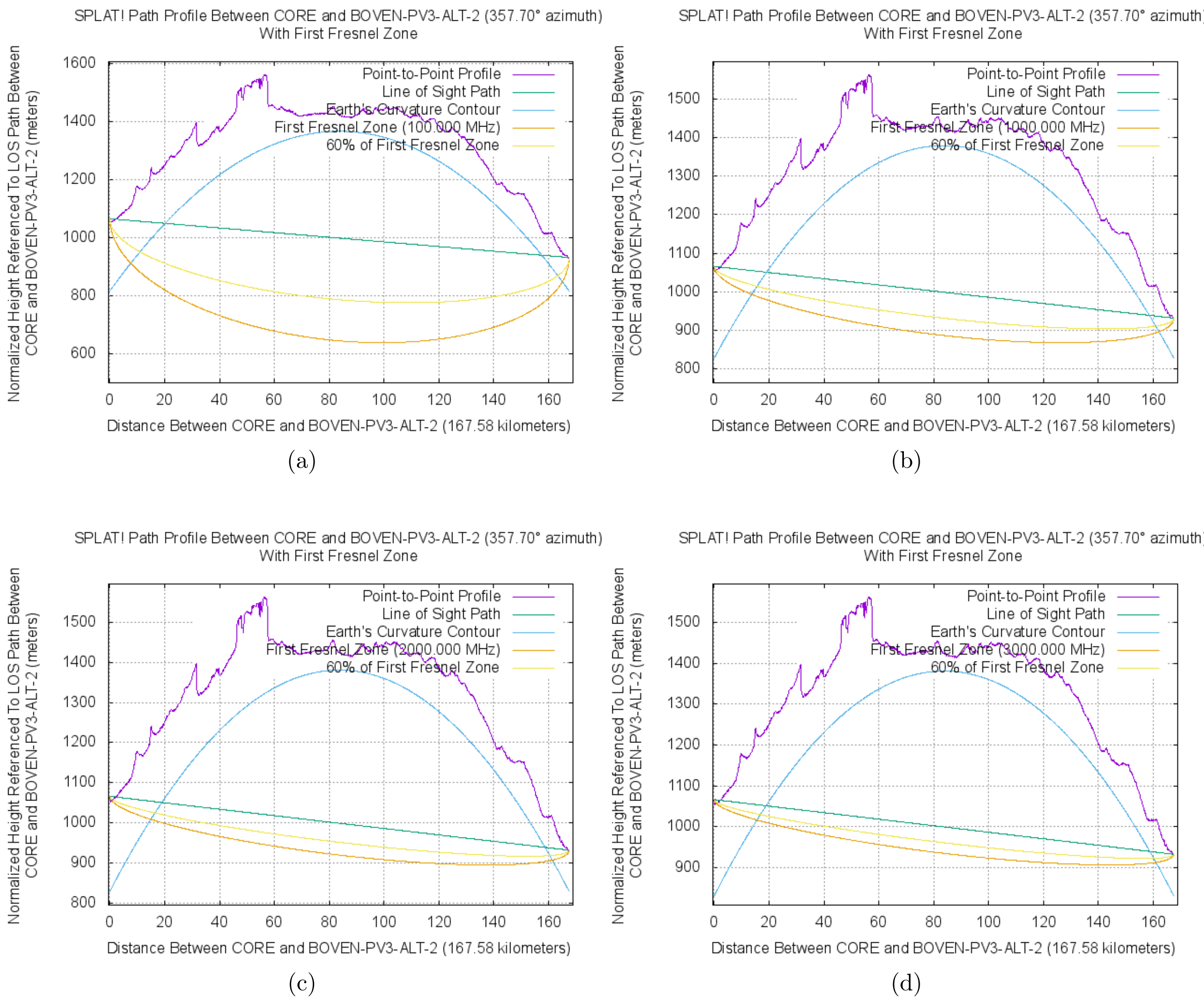


Figure 87: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV3 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.16 Boven PV4 to Closest SKA

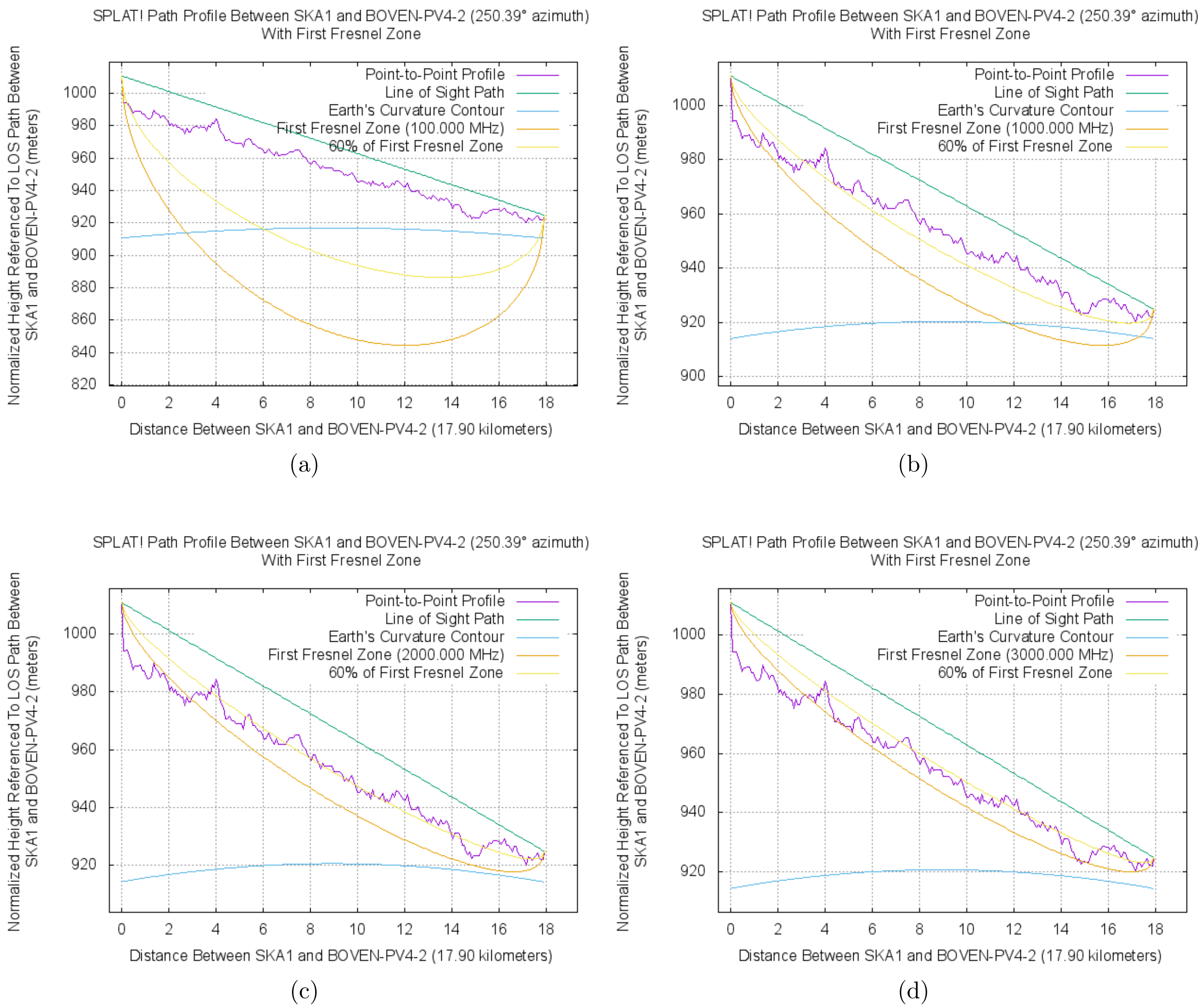


Figure 88: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.17 Boven PV4 to 2nd Closest SKA

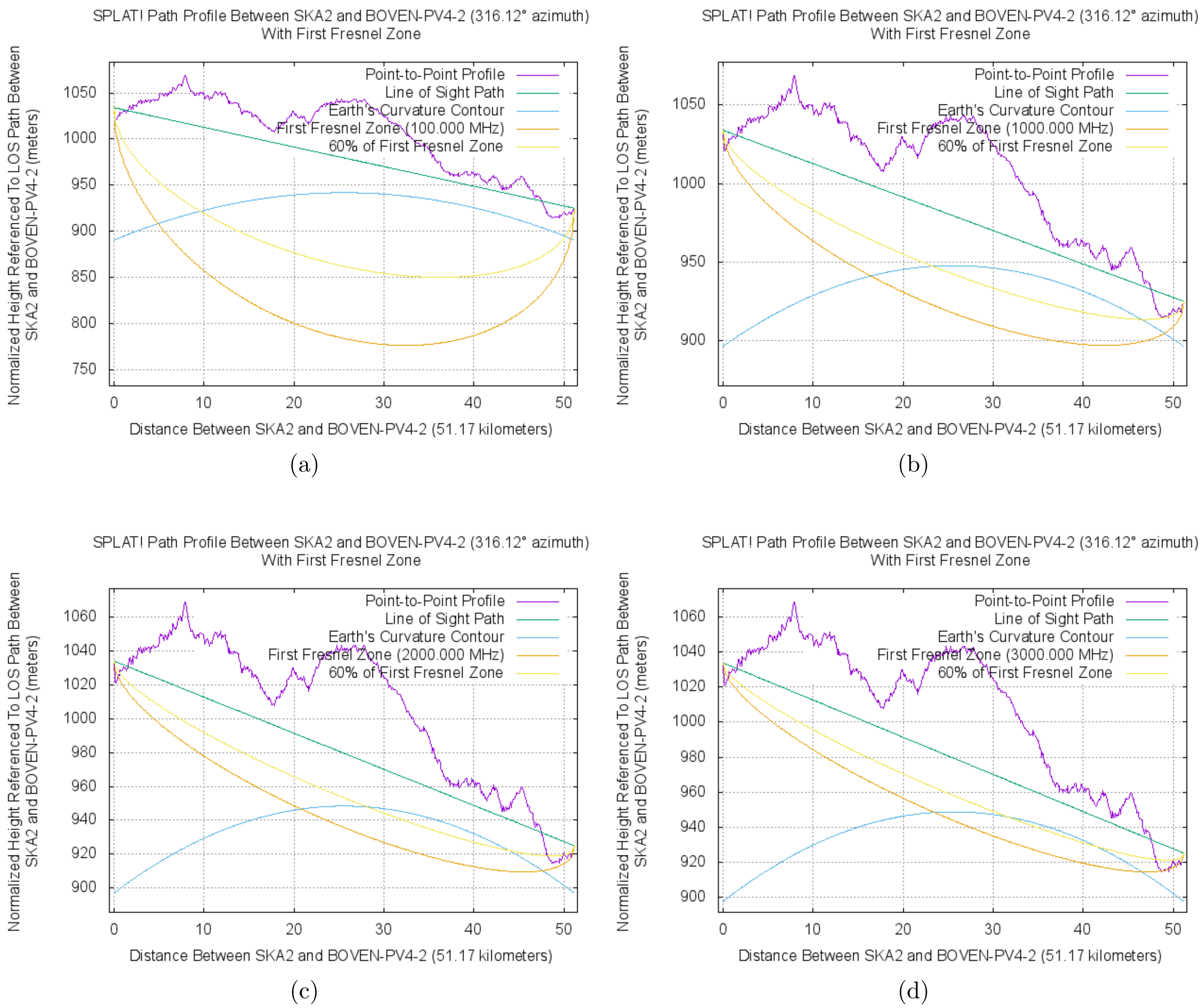
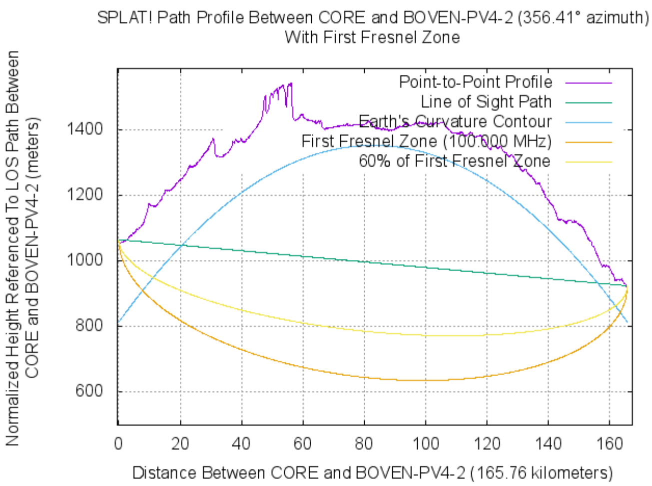
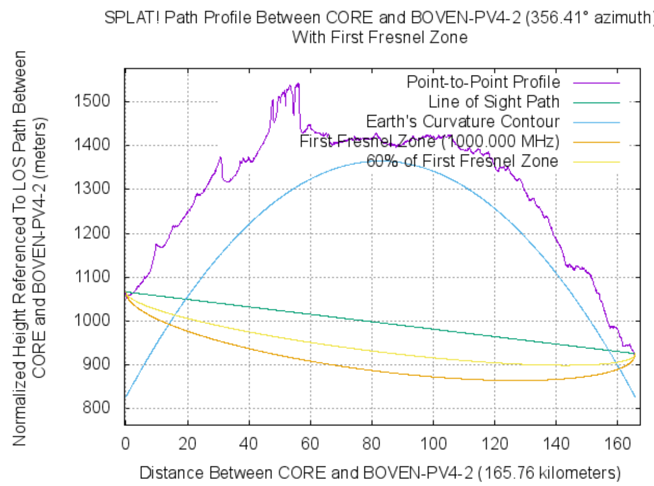


Figure 89: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

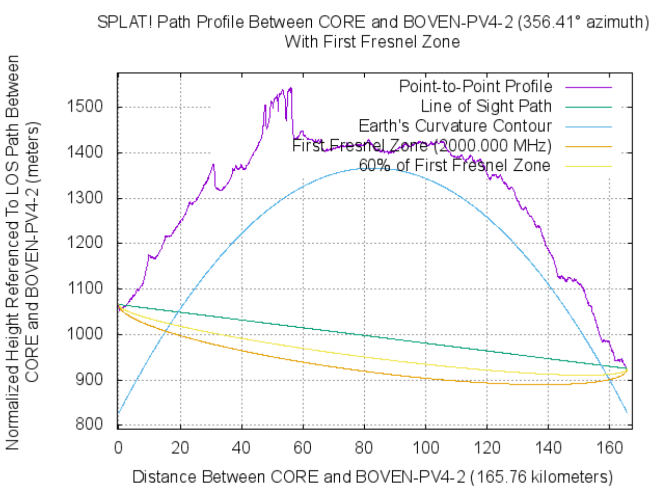
A.18 Boven PV4 to Core SKA



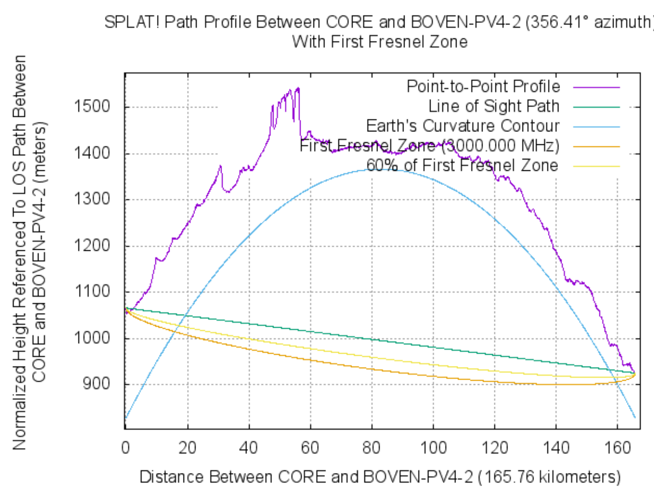
(a)



(b)



(c)



(d)

Figure 90: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.19 Boven PV4 Alternative to Closest SKA

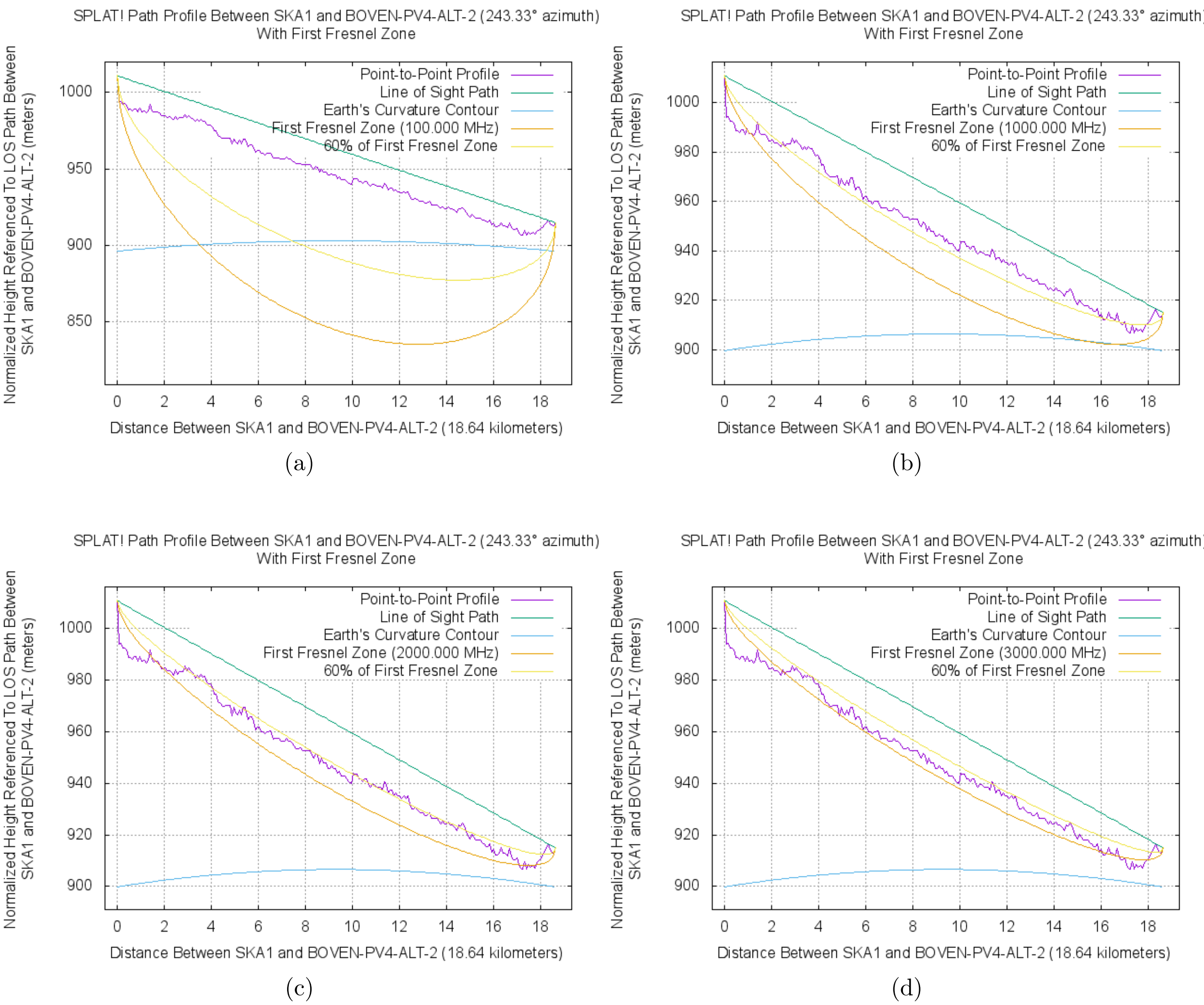


Figure 91: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.20 Boven PV4 Alternative to 2nd Closest SKA

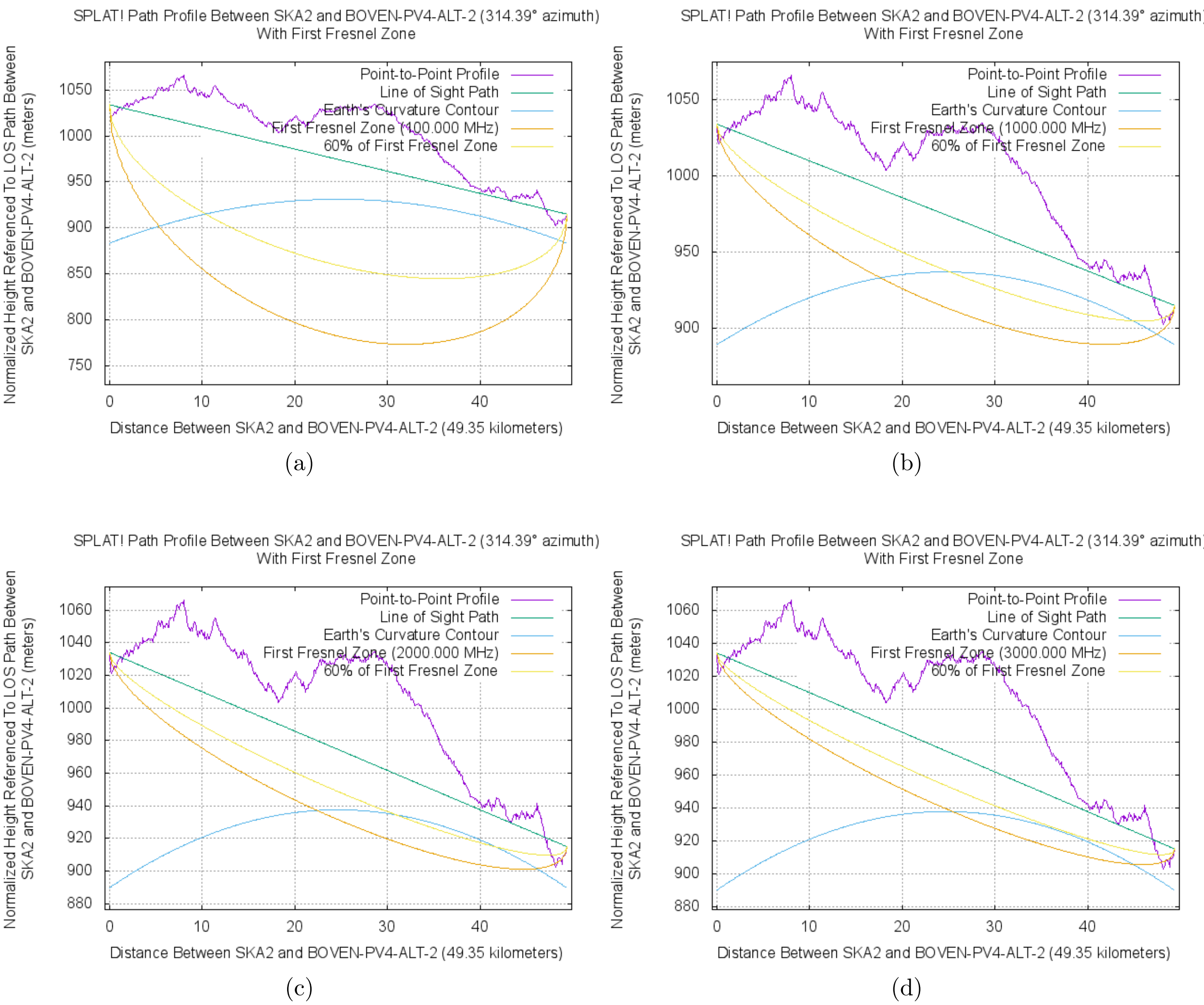
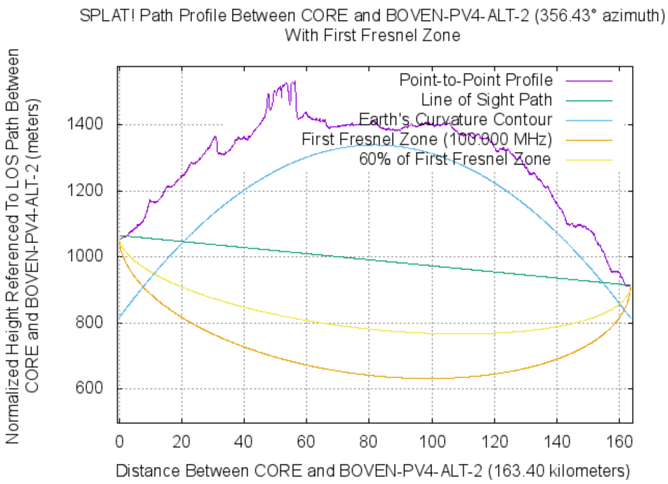
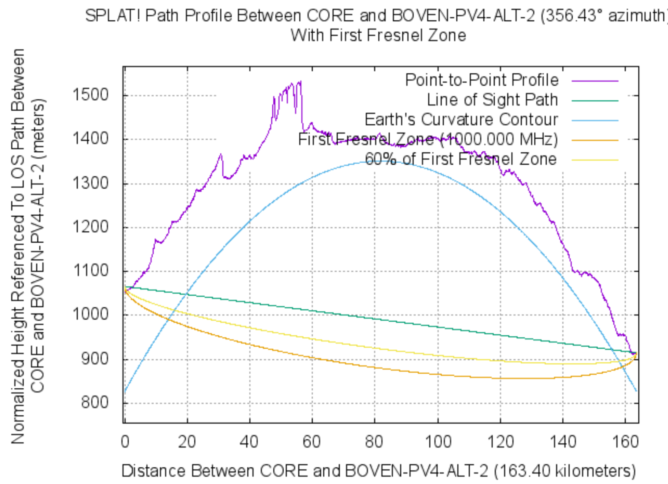


Figure 92: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

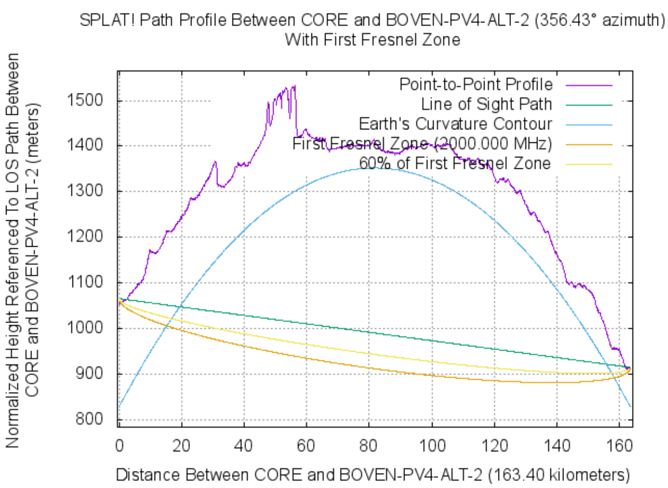
A.21 Boven PV4 Alternative to Core SKA



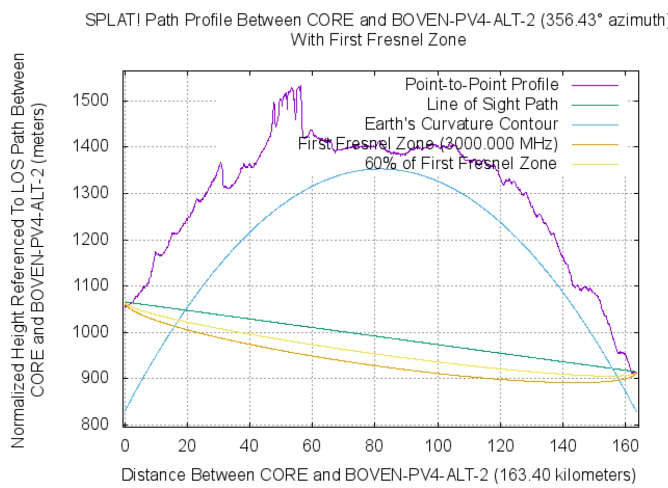
(a)



(b)



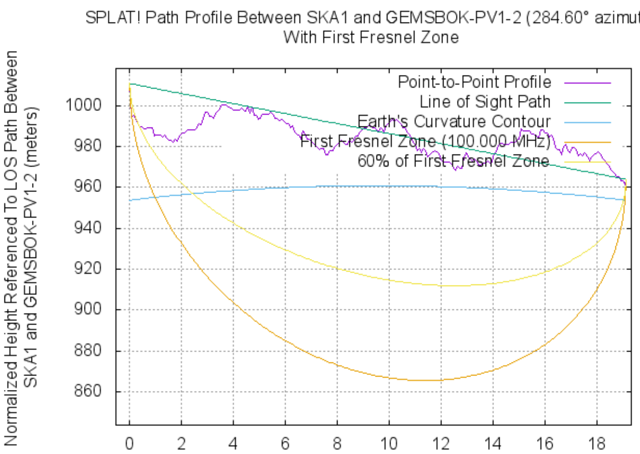
(c)



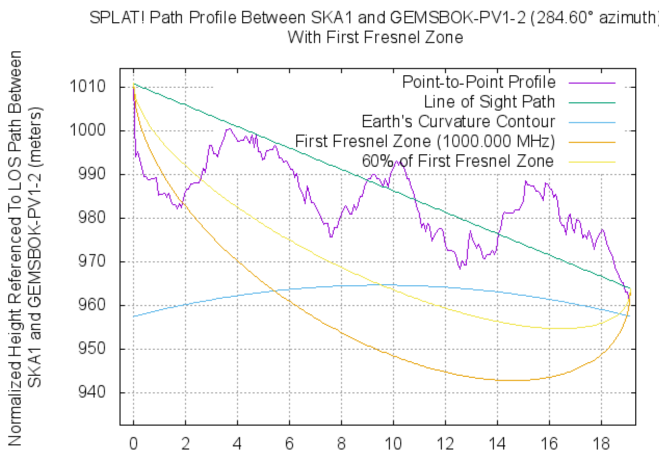
(d)

Figure 93: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Boven PV4 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

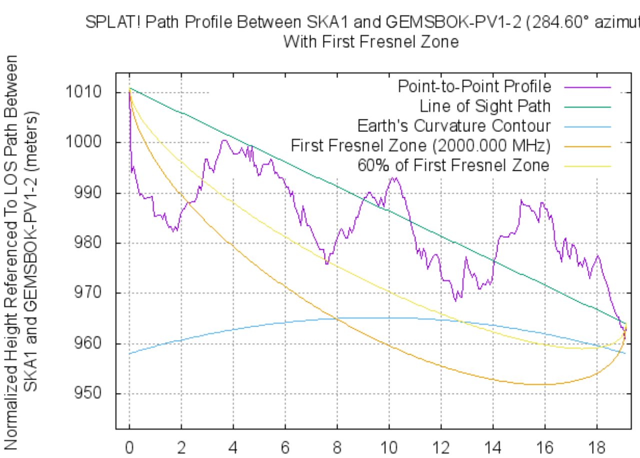
A.22 Gemsbok PV1 to Closest SKA



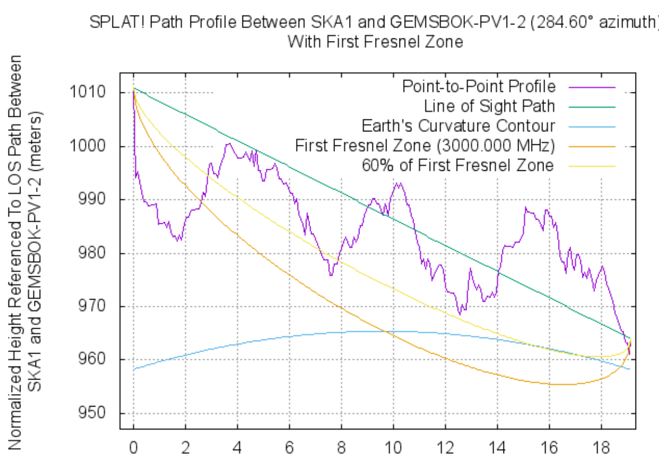
(a)



(b)



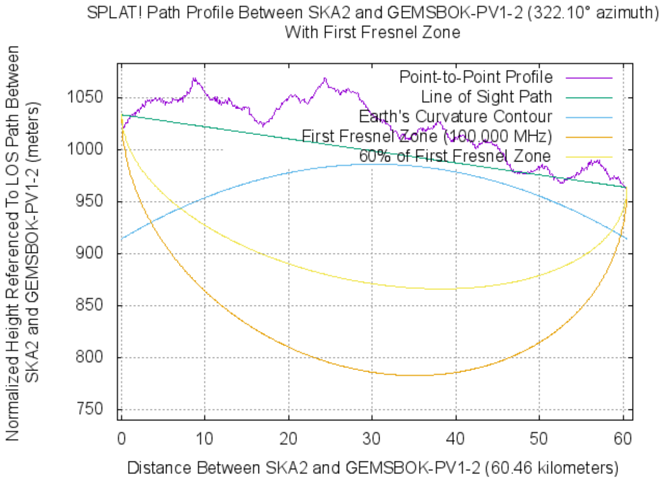
(c)



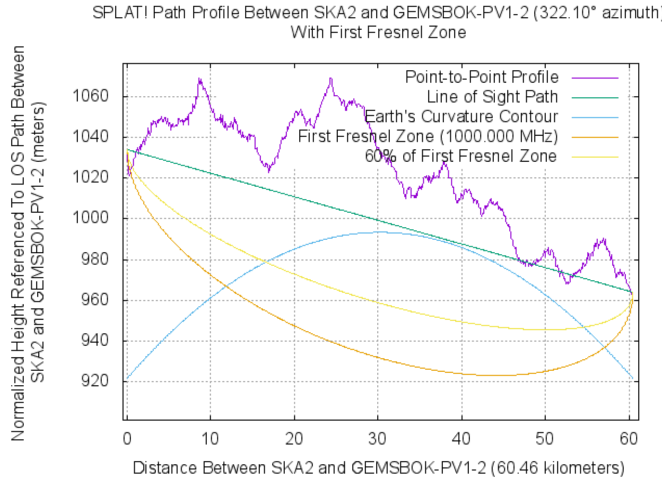
(d)

Figure 94: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV1 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

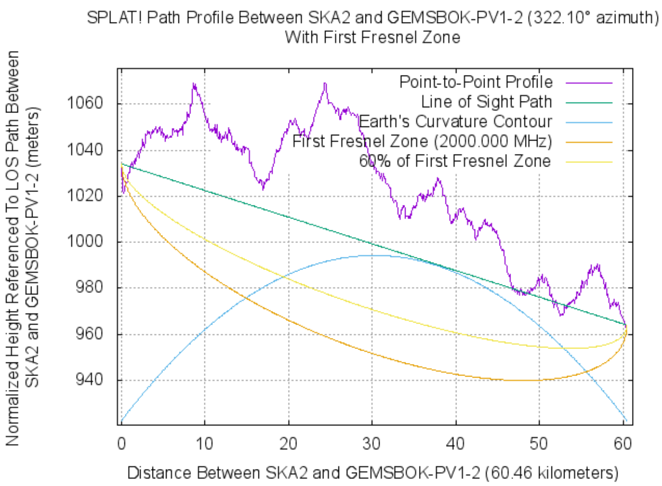
A.23 Gemsbok PV1 to 2nd Closest SKA



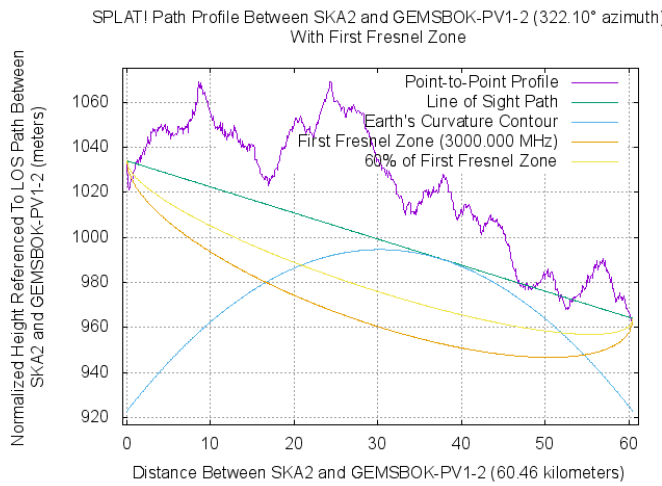
(a)



(b)



(c)



(d)

Figure 95: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV1 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.24 Gemsbok PV1 to Core SKA

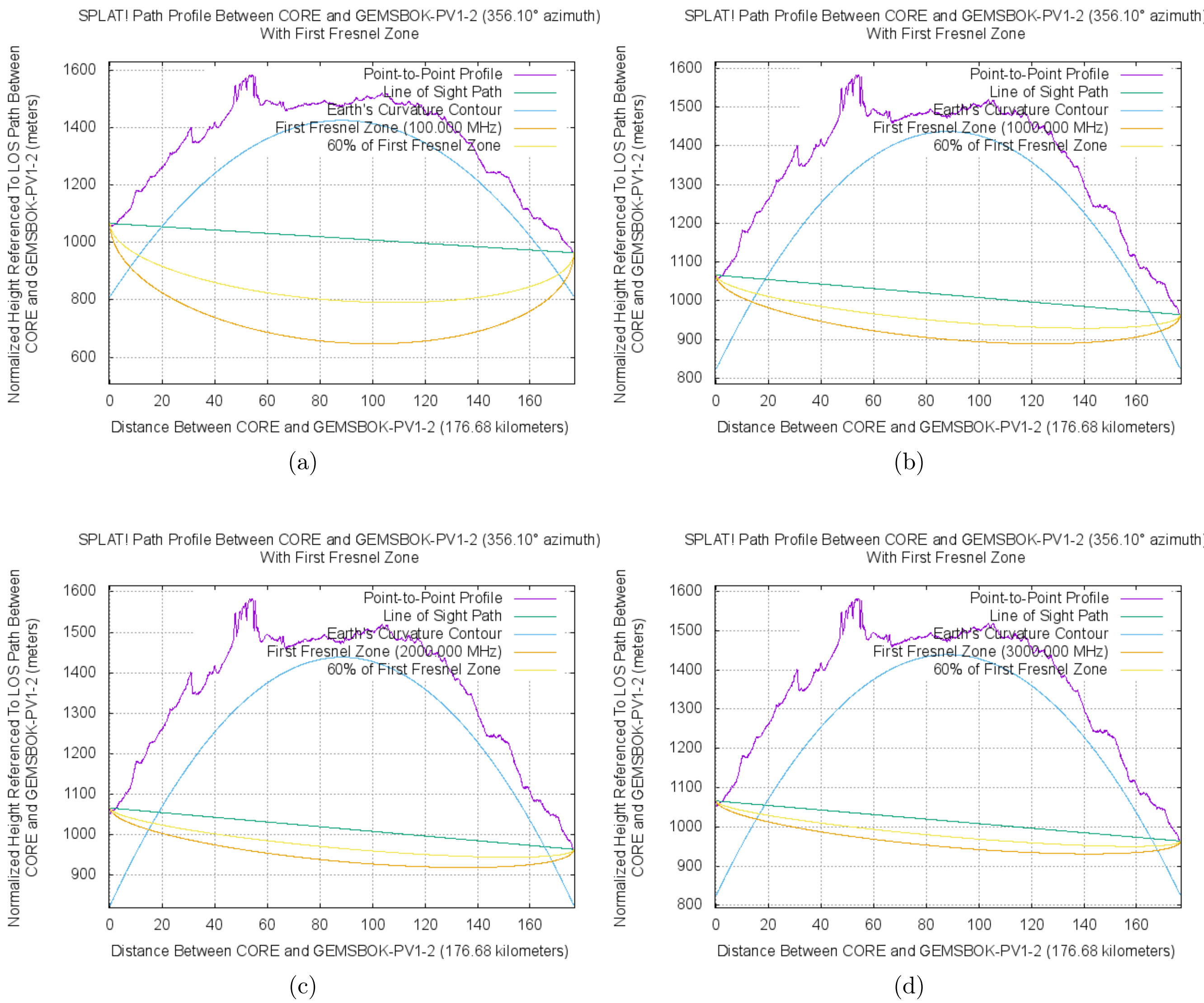
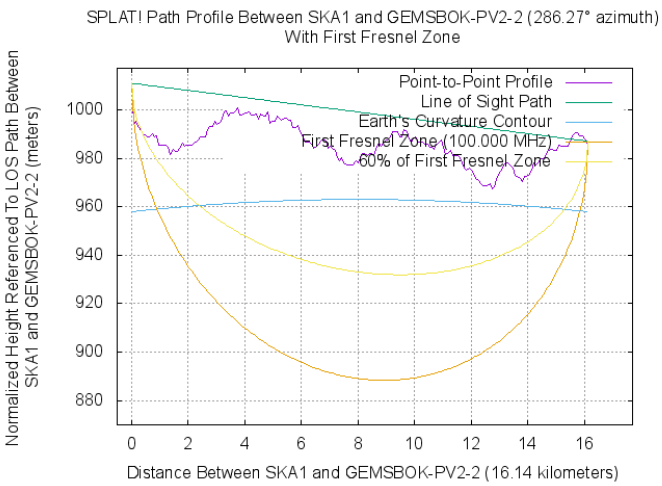
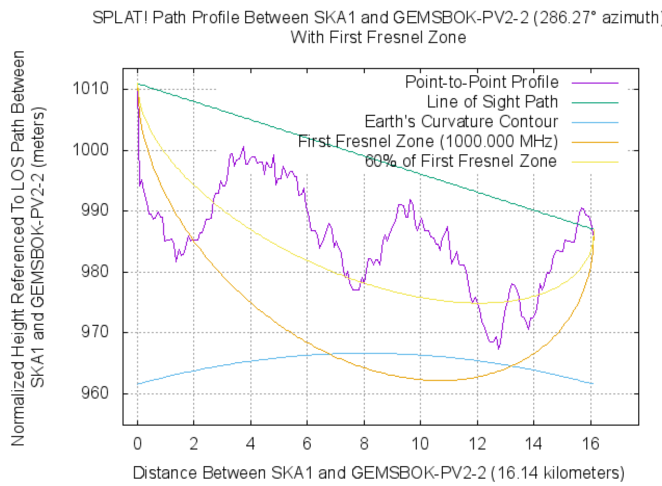


Figure 96: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV1 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

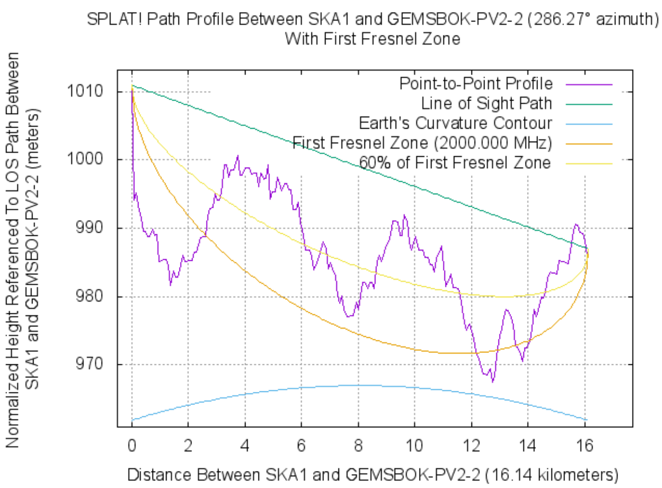
A.25 Gemsbok PV2 to Closest SKA



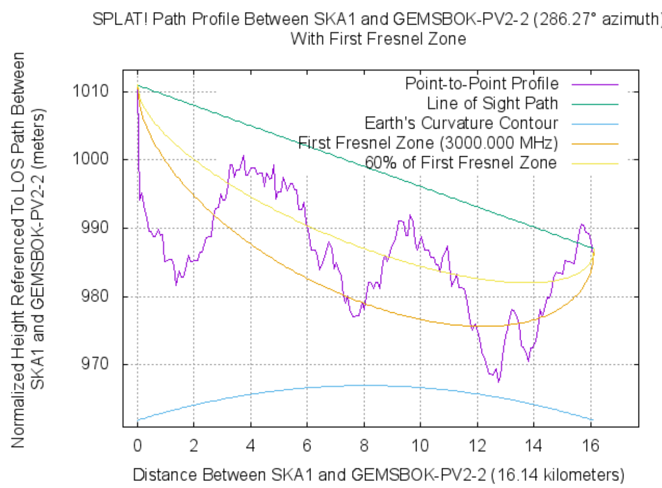
(a)



(b)



(c)



(d)

Figure 97: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV2 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.26 Gemsbok PV2 to 2nd Closest SKA

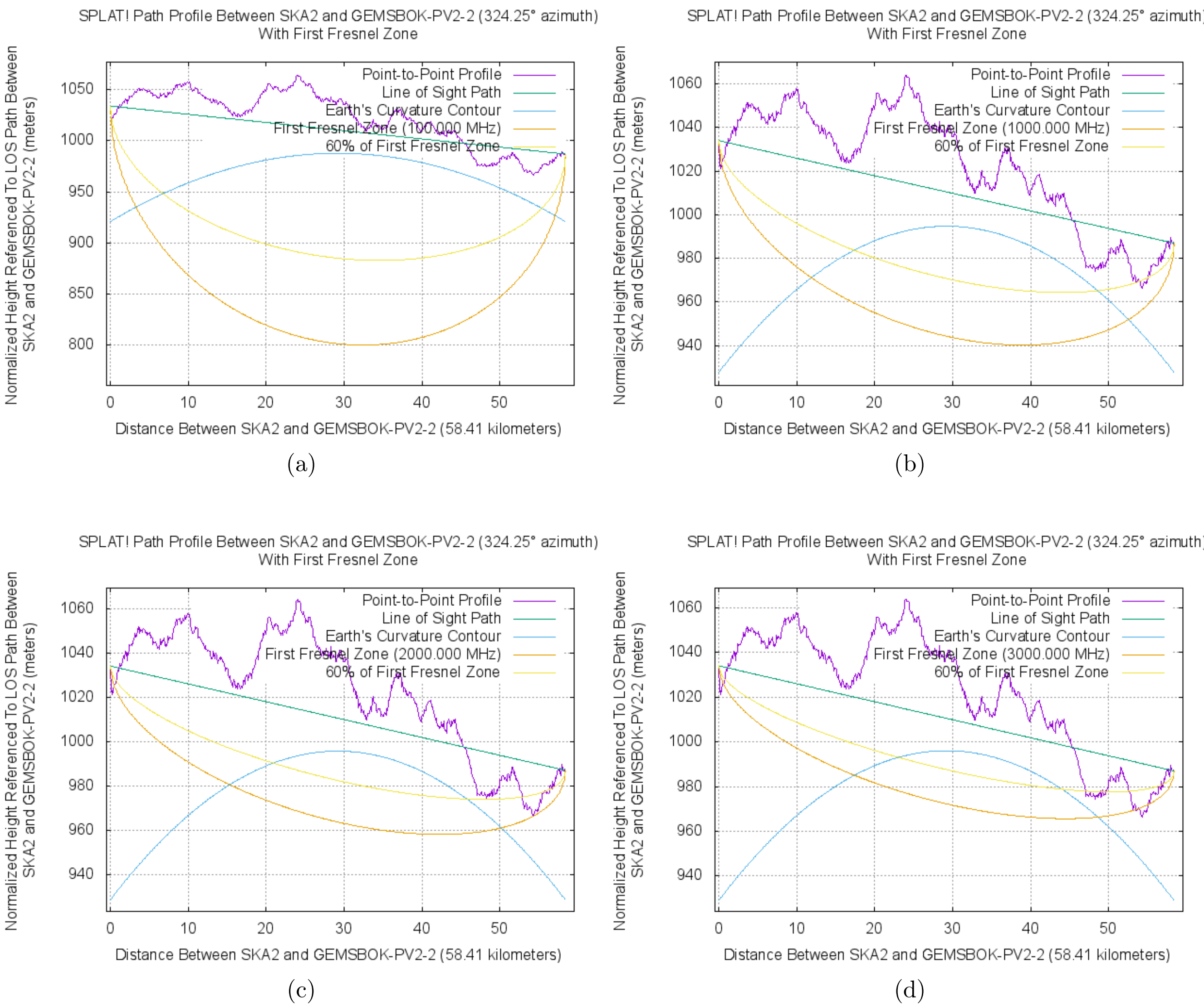
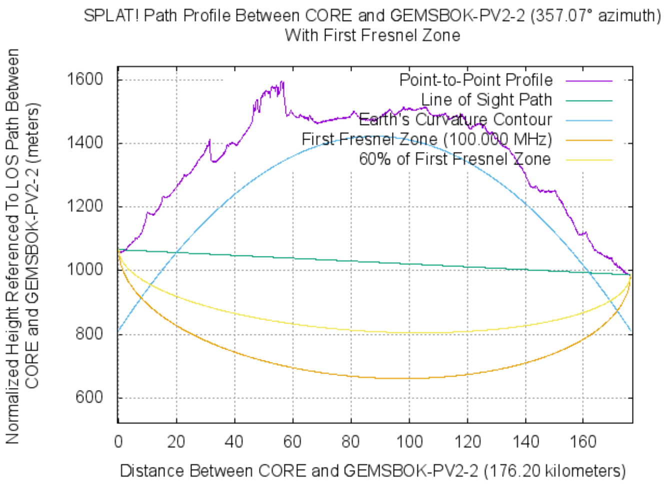
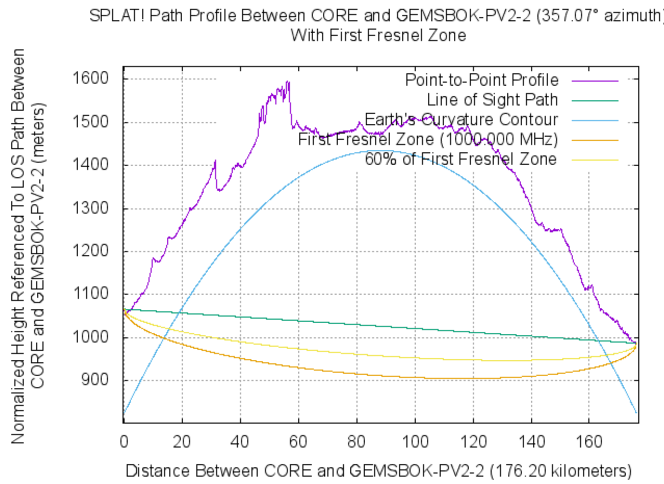


Figure 98: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV2 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

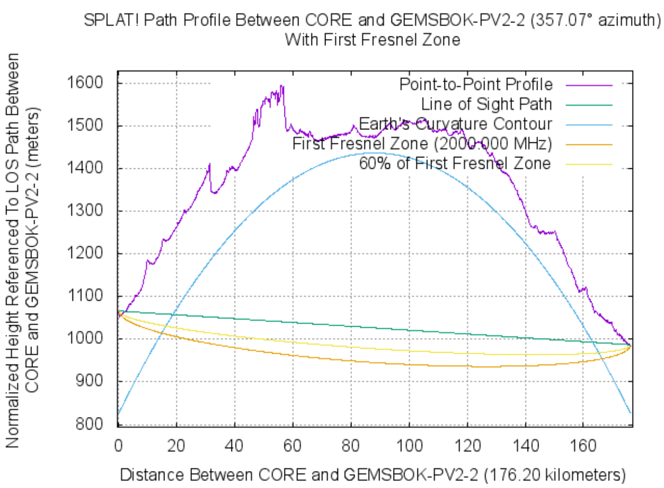
A.27 Gemsbok PV2 to Core SKA



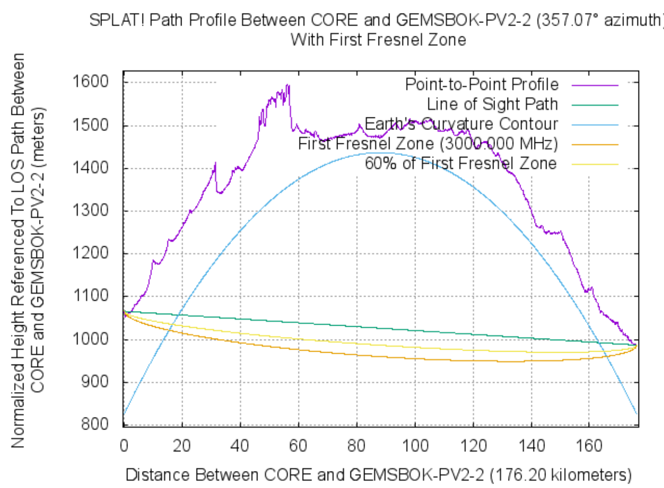
(a)



(b)



(c)



(d)

Figure 99: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV2 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.28 Gemsbok PV3 to Closest SKA

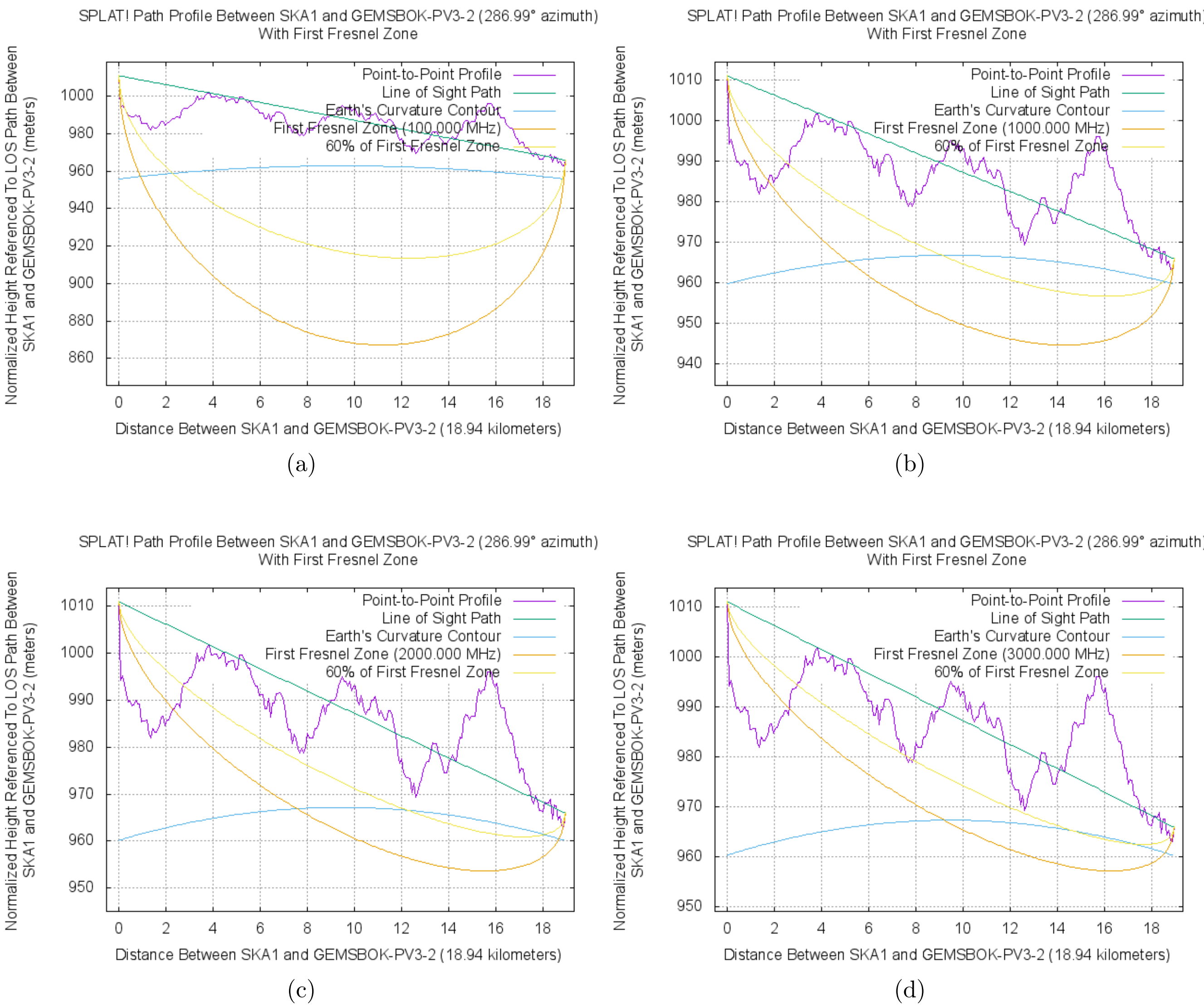
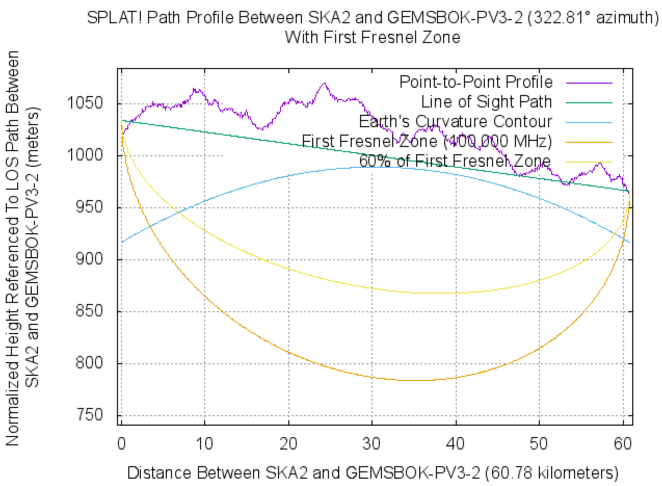
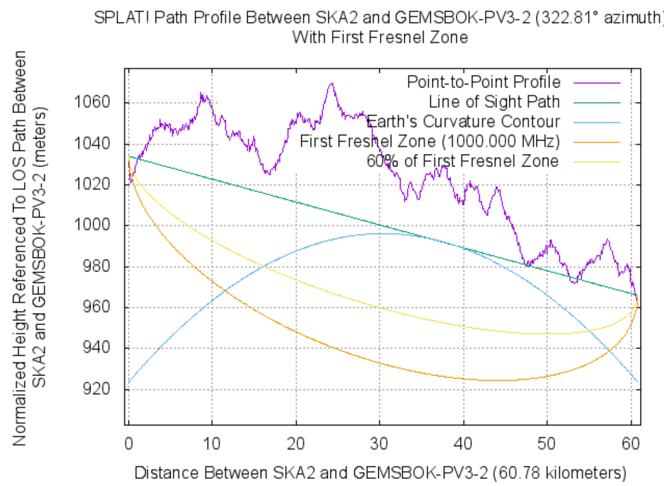


Figure 100: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

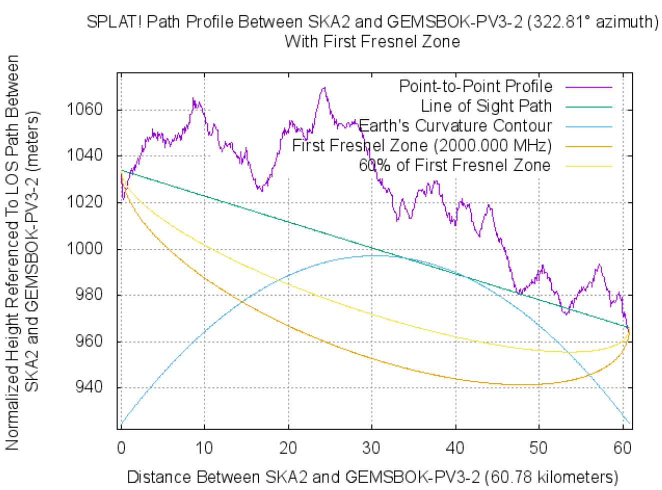
A.29 Gemsbok PV3 to 2nd Closest SKA



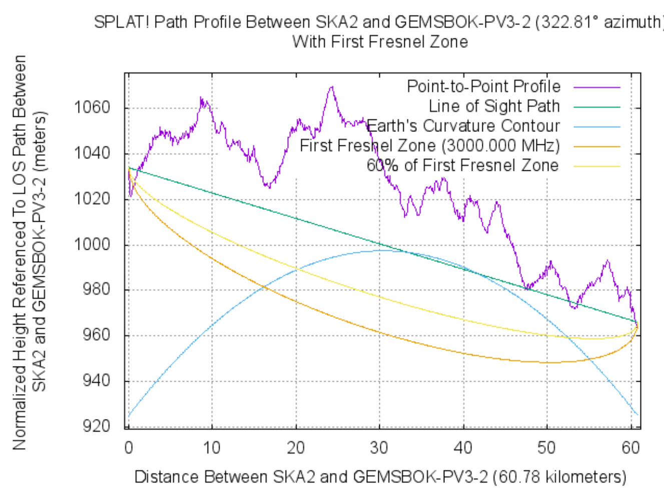
(a)



(b)



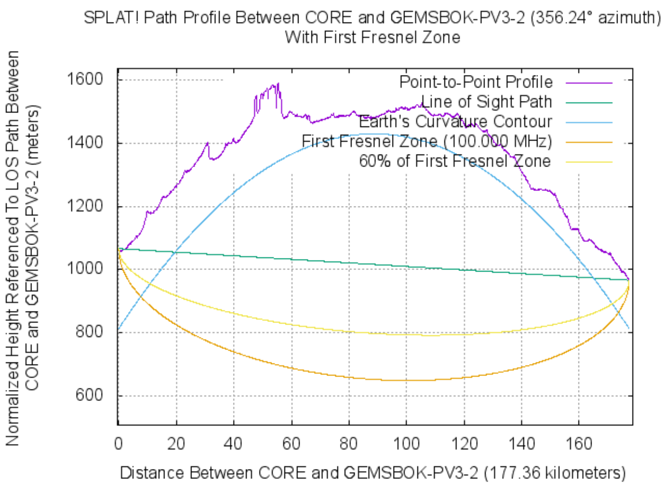
(c)



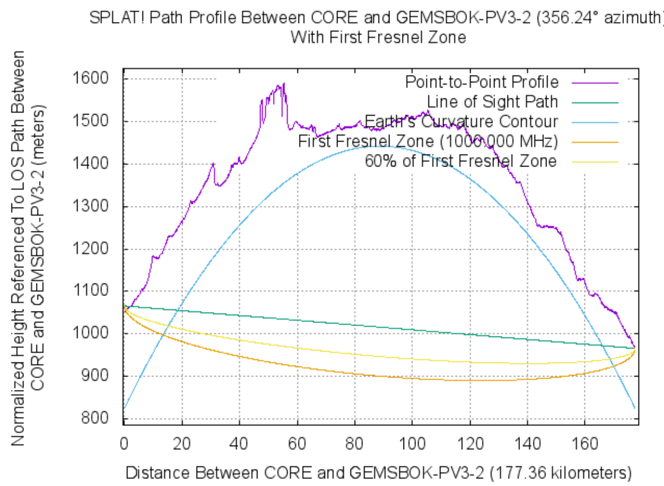
(d)

Figure 101: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

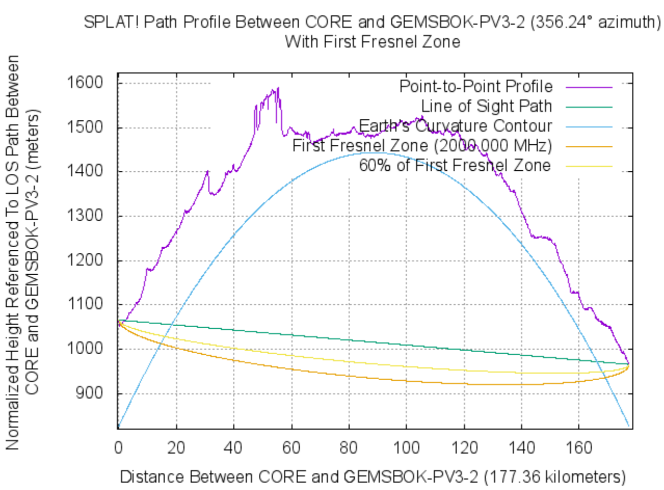
A.30 Gemsbok PV3 to Core SKA



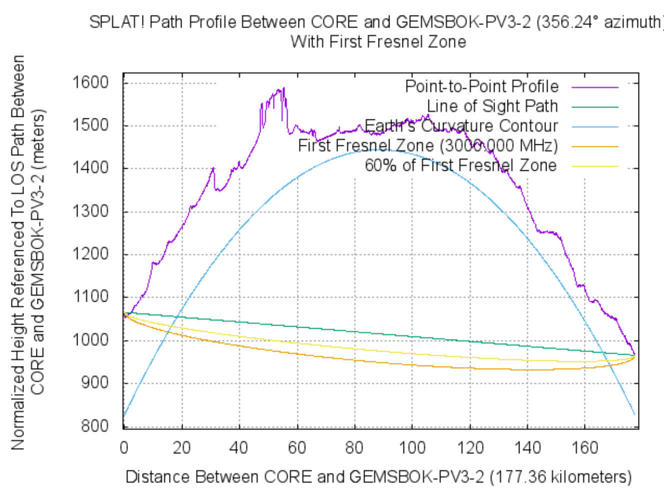
(a)



(b)



(c)



(d)

Figure 102: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.31 Gemsbok PV3 Alternative to Closest SKA

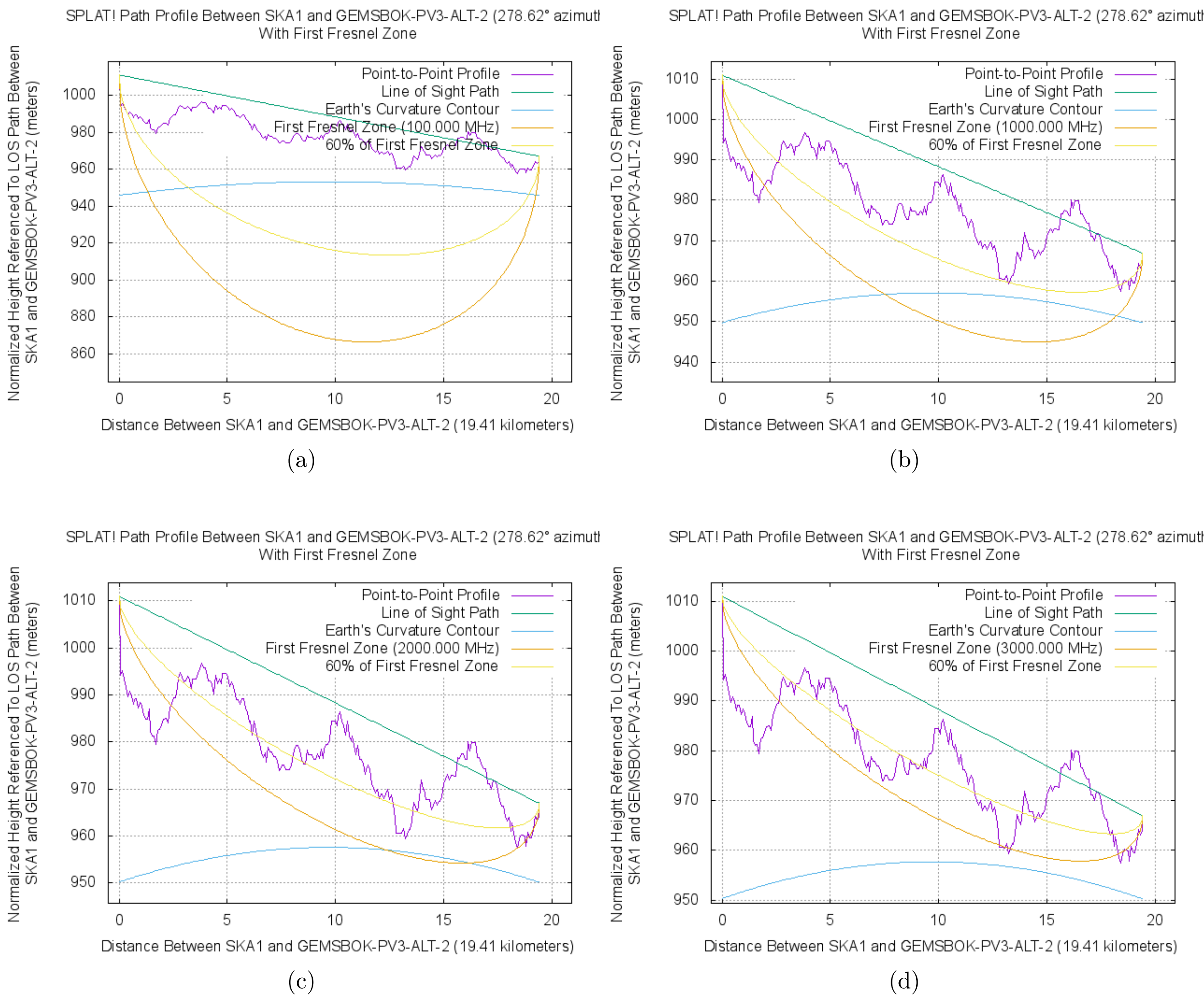


Figure 103: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.32 Gemsbok PV3 Alternative to 2nd Closest SKA

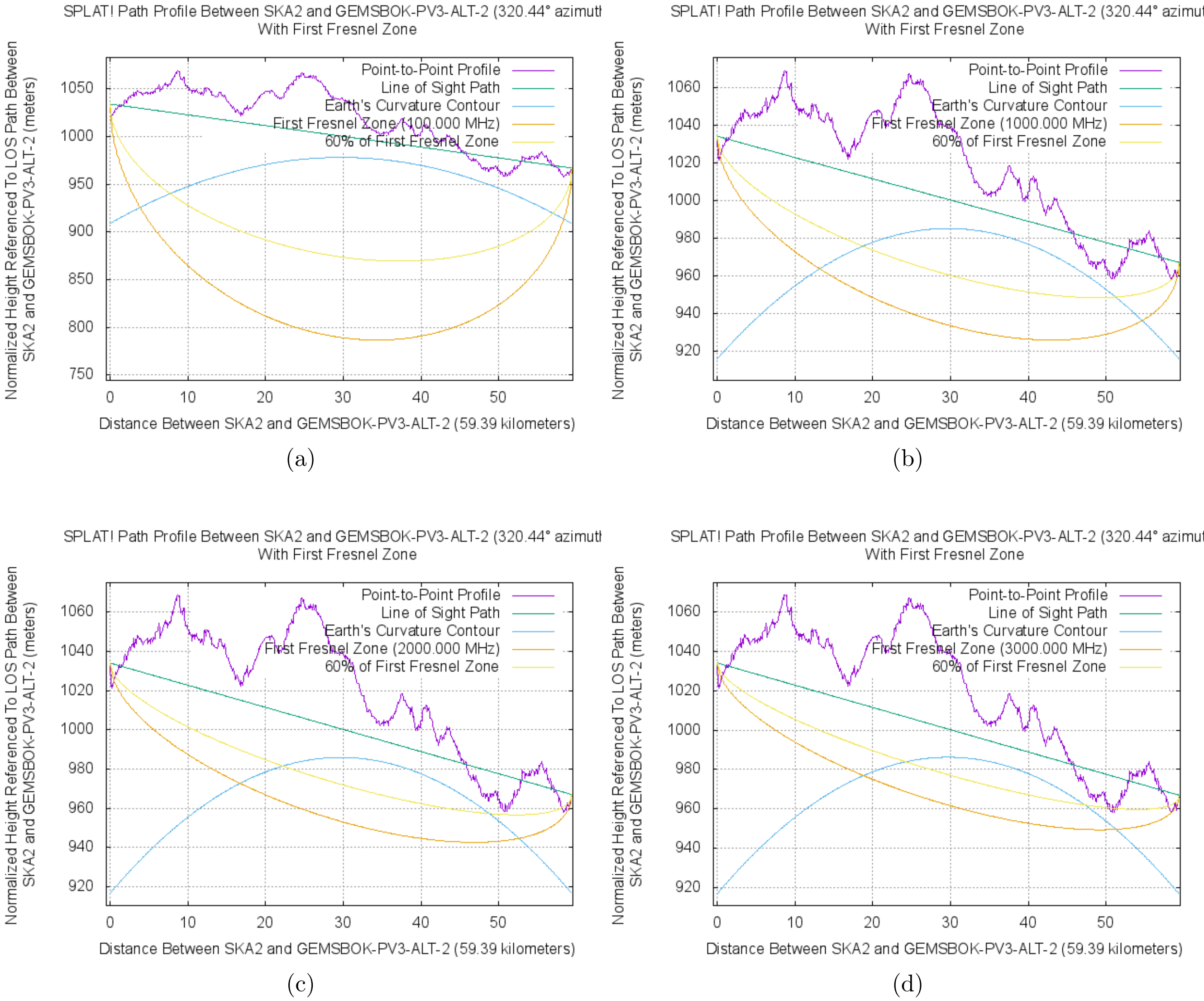


Figure 104: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.33 Gemsbok PV3 Alternative to Core SKA

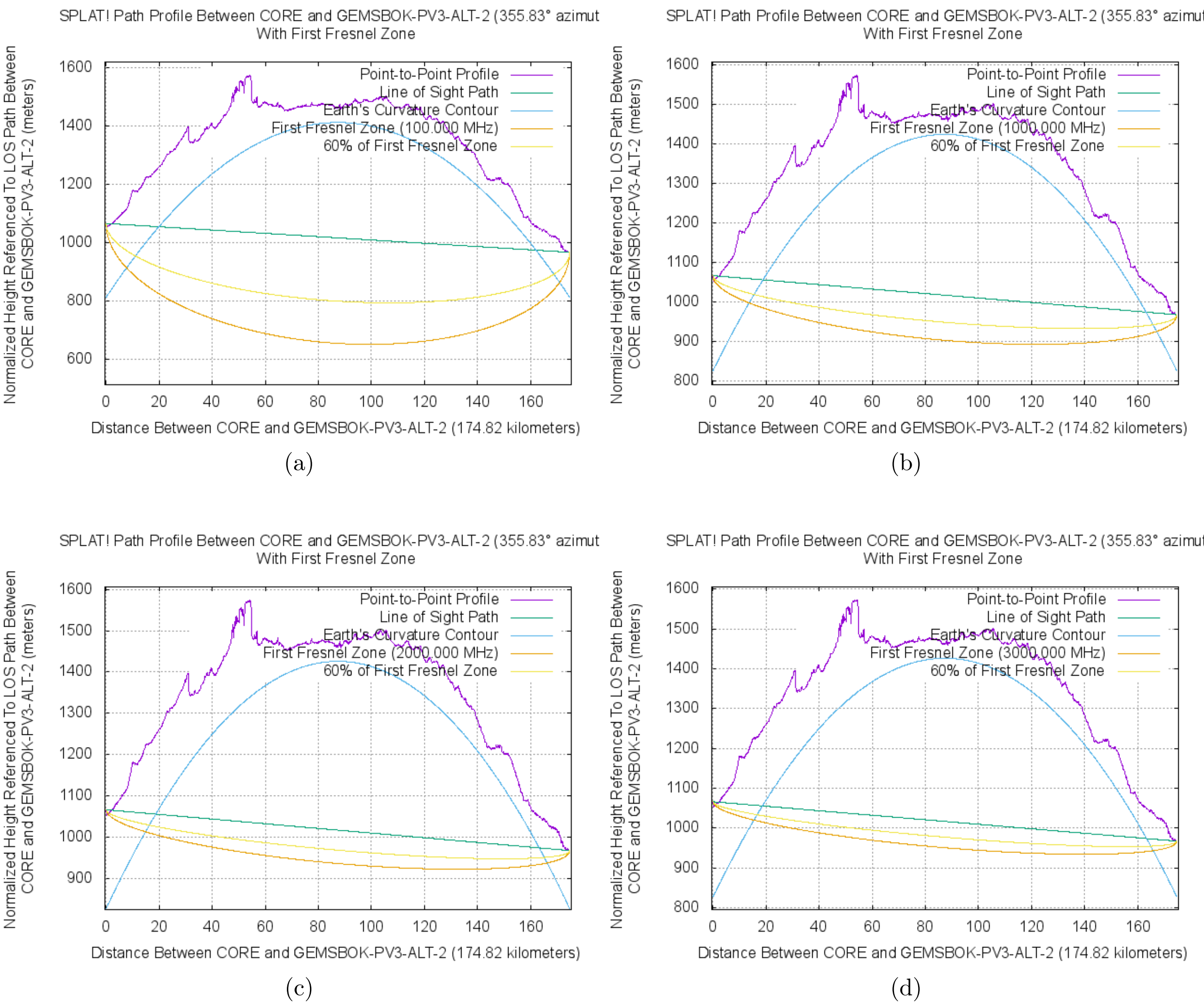


Figure 105: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV3 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.34 Gemsbok PV4 to Closest SKA

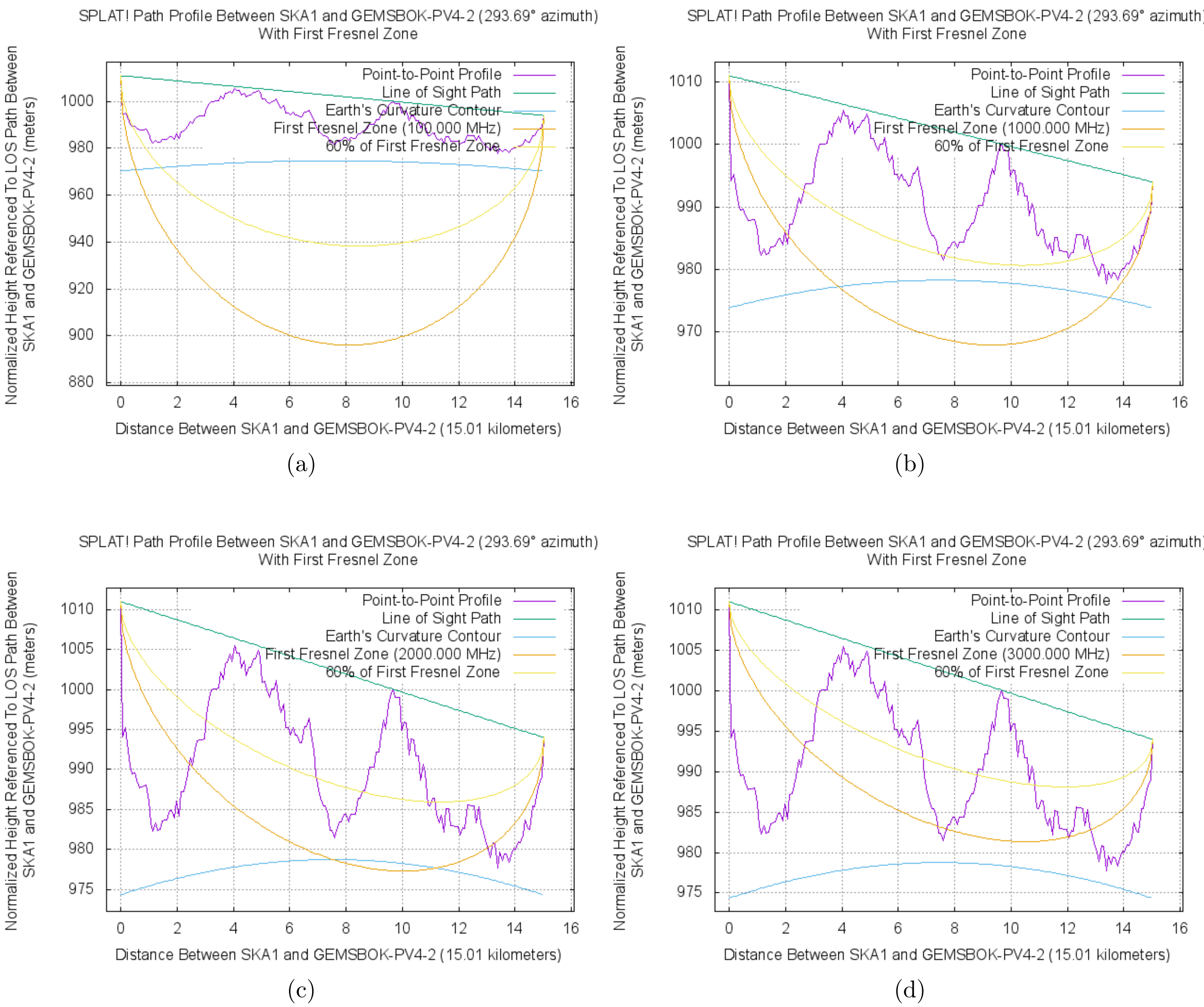
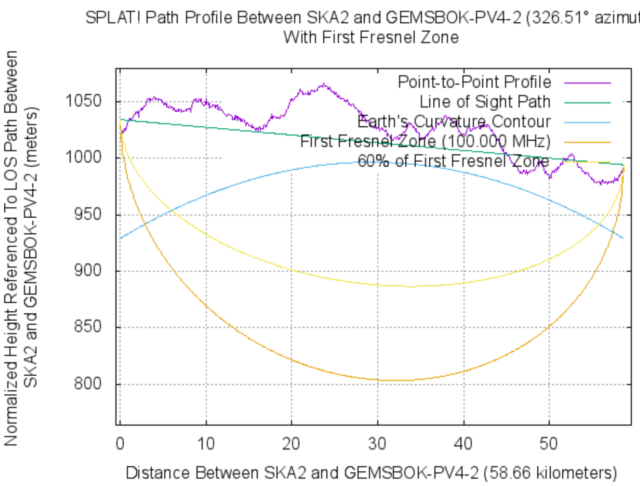
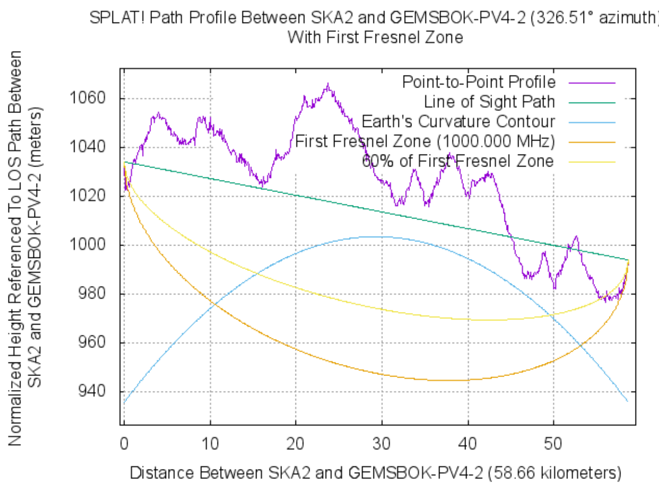


Figure 106: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

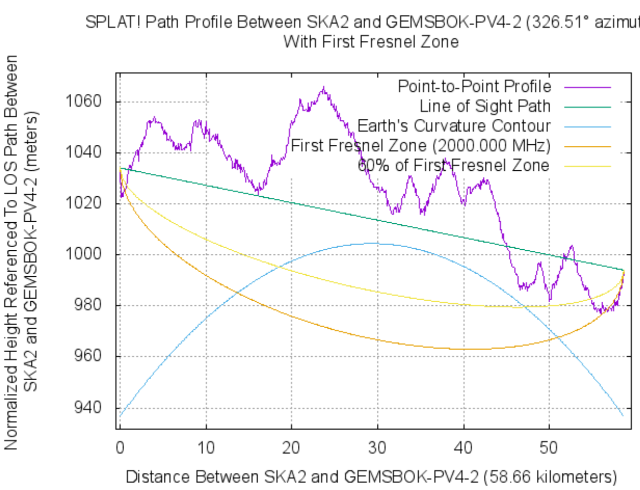
A.35 Gemsbok PV4 to 2nd Closest SKA



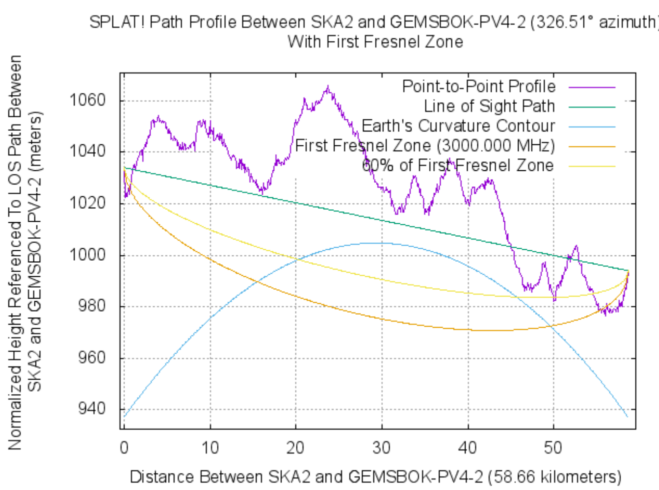
(a)



(b)



(c)



(d)

Figure 107: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.36 Gemsbok PV4 to Core SKA

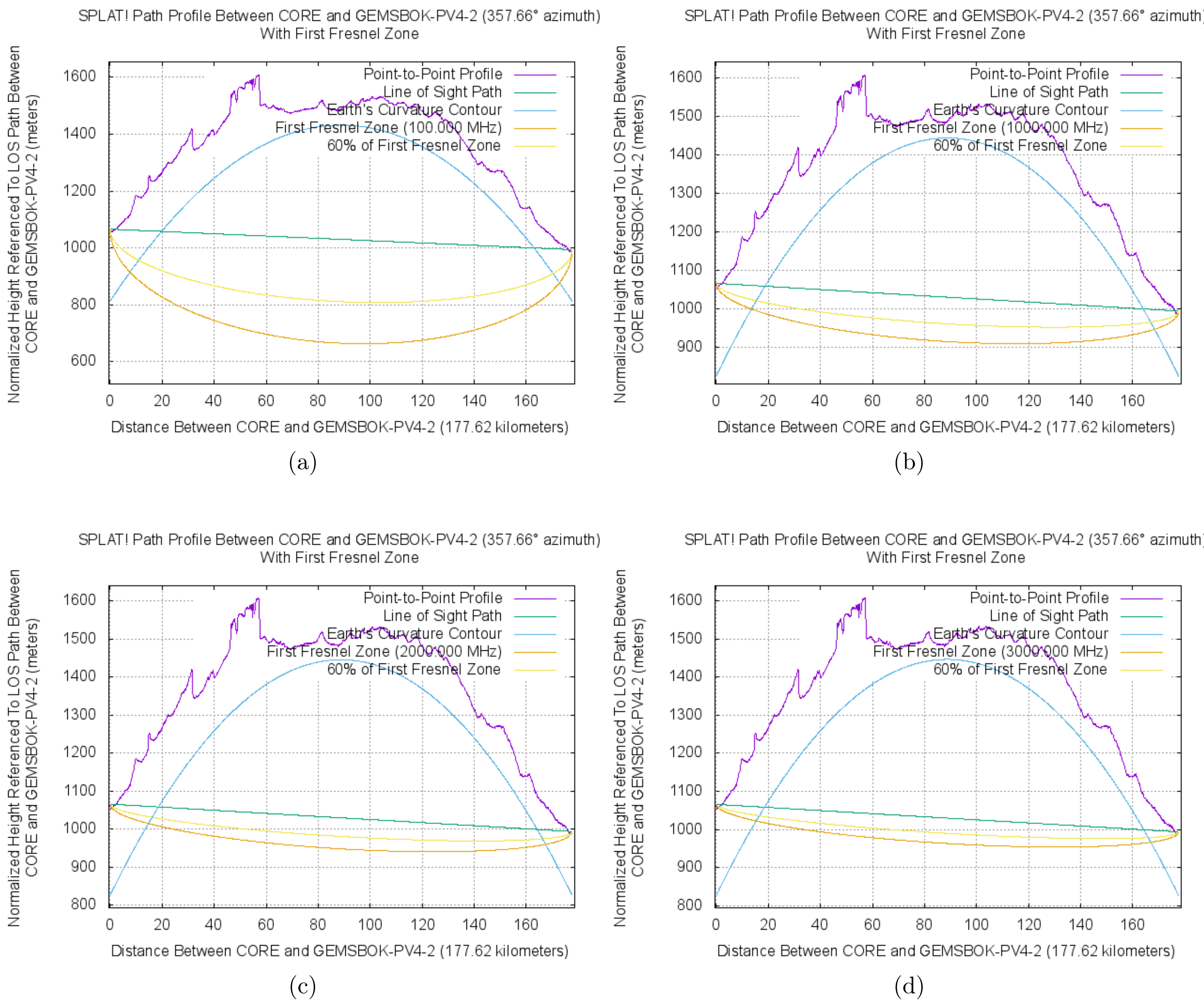


Figure 108: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.37 Gemsbok PV4 Alternative to Closest SKA

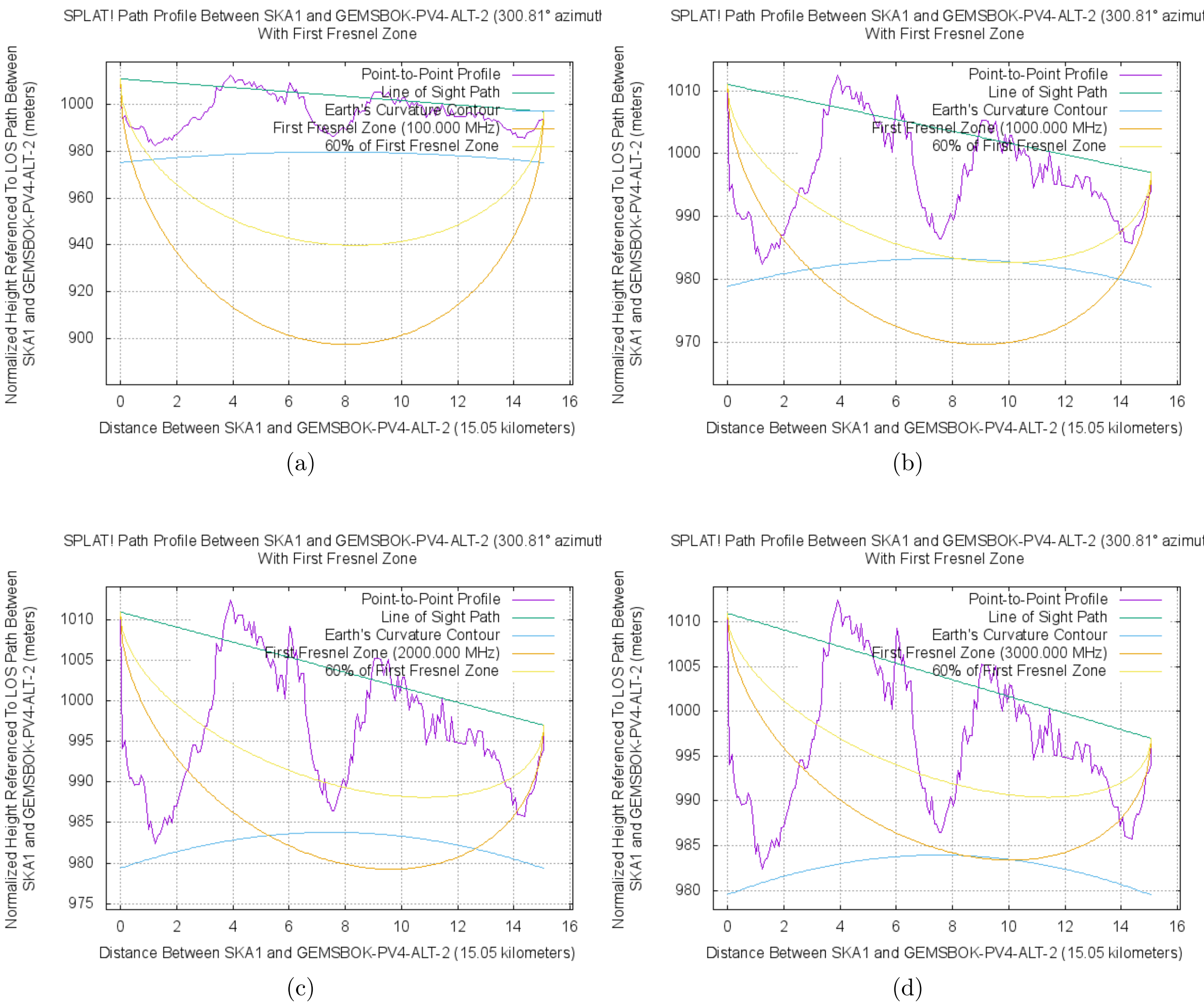
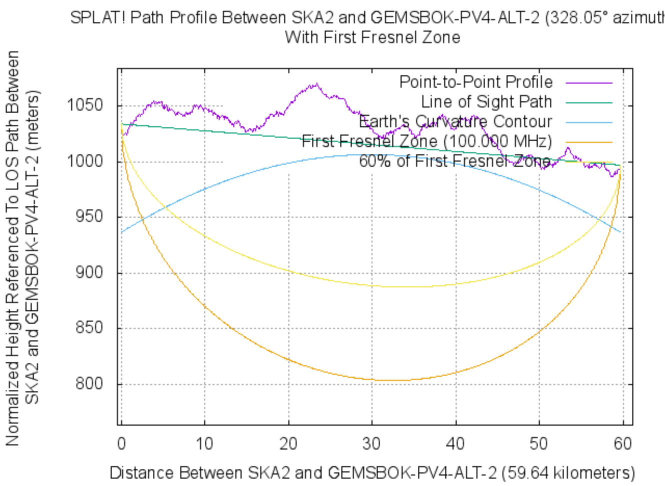
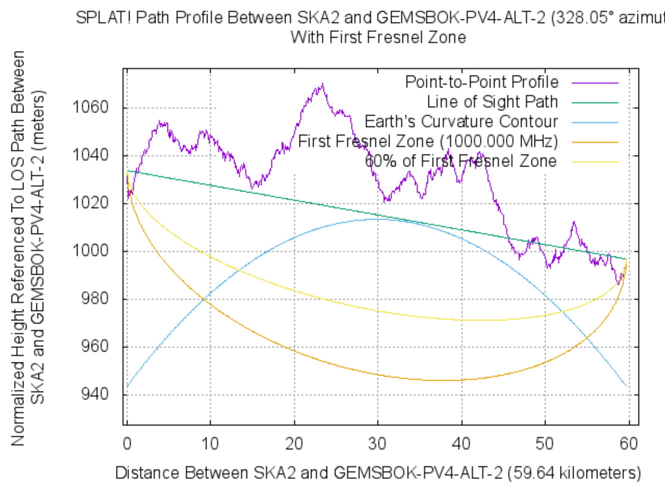


Figure 109: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

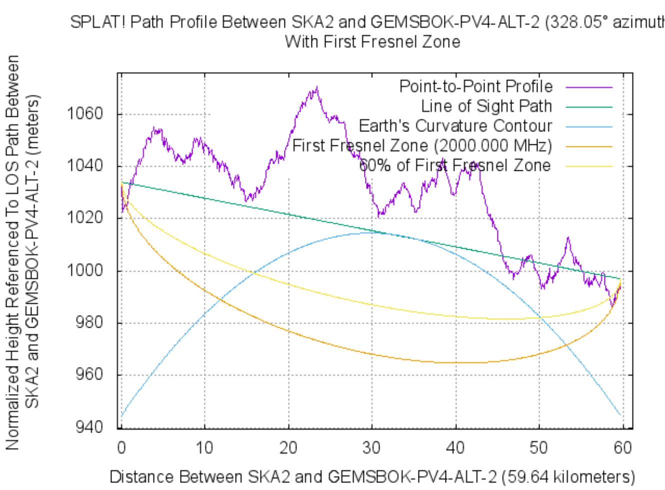
A.38 Gemsbok PV4 Alternative to 2nd Closest SKA



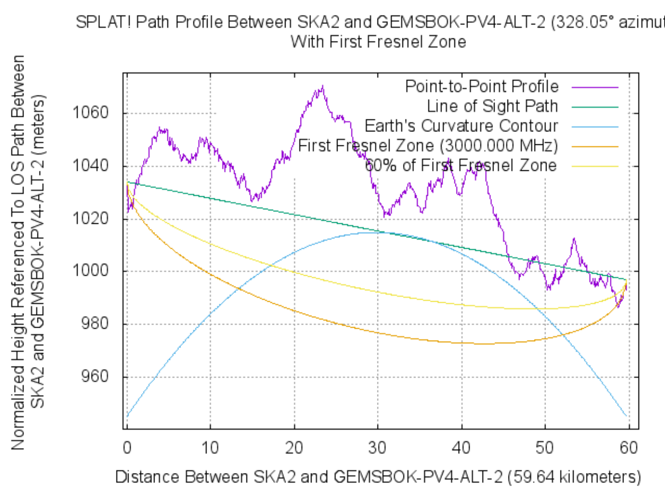
(a)



(b)



(c)



(d)

Figure 110: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.39 Gemsbok PV4 Alternative to Core SKA

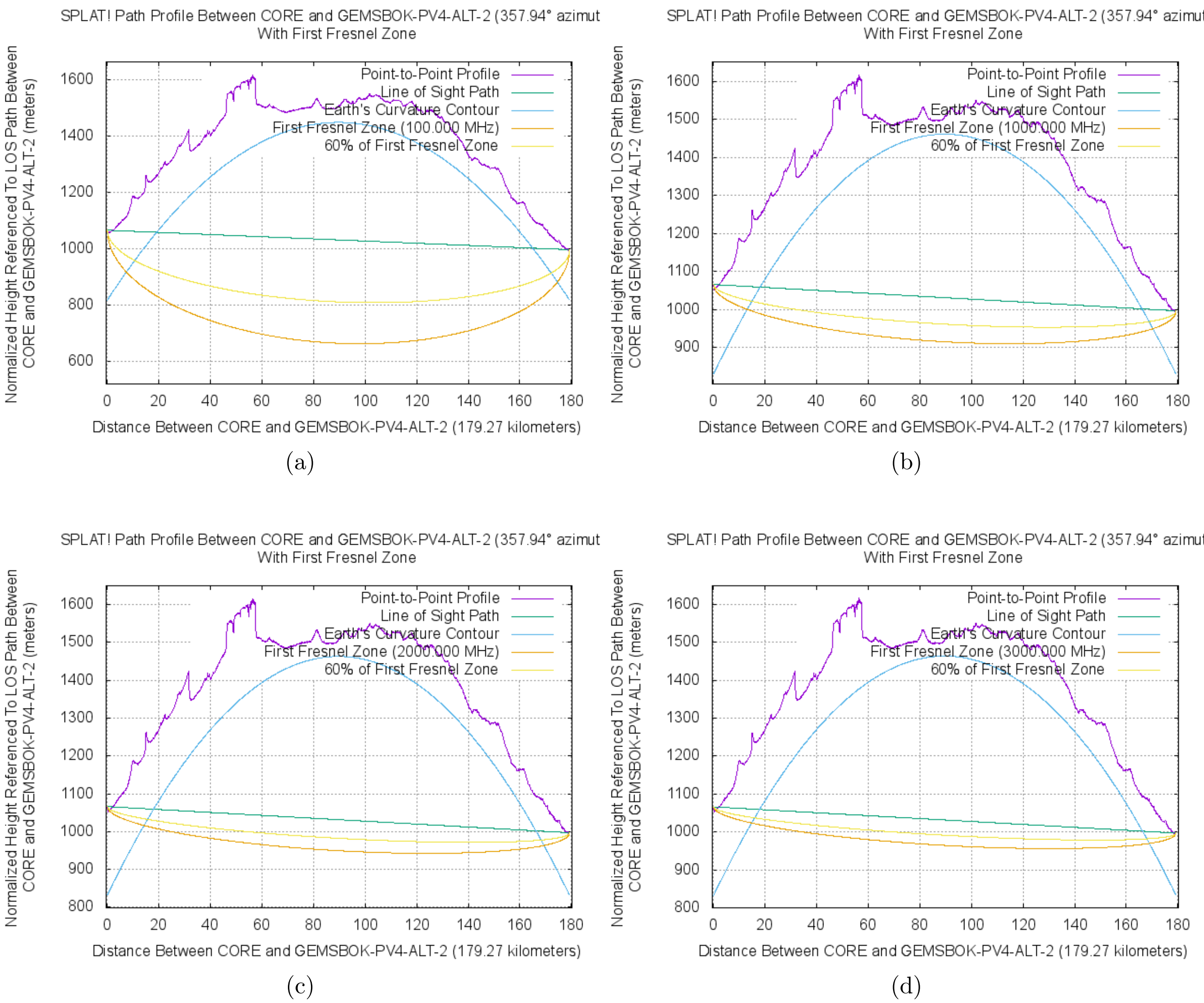
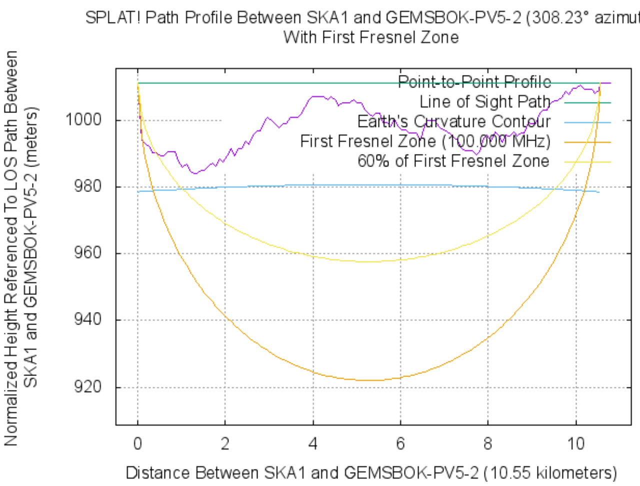
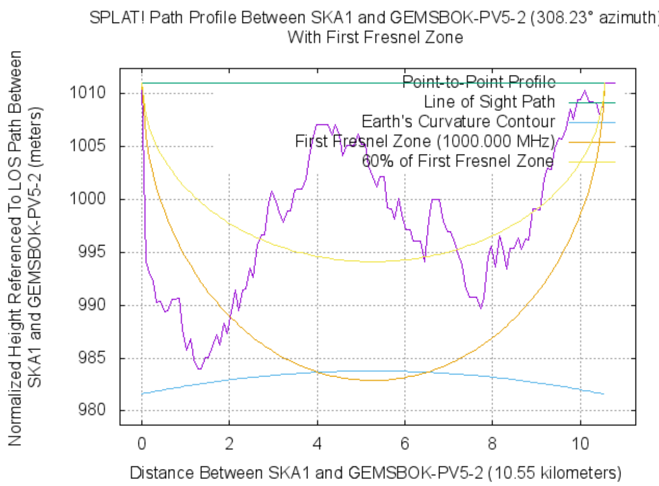


Figure 111: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV4 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

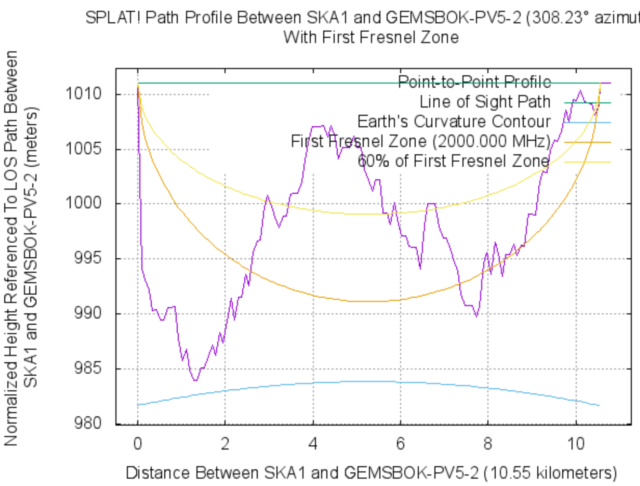
A.40 Gemsbok PV5 to Closest SKA



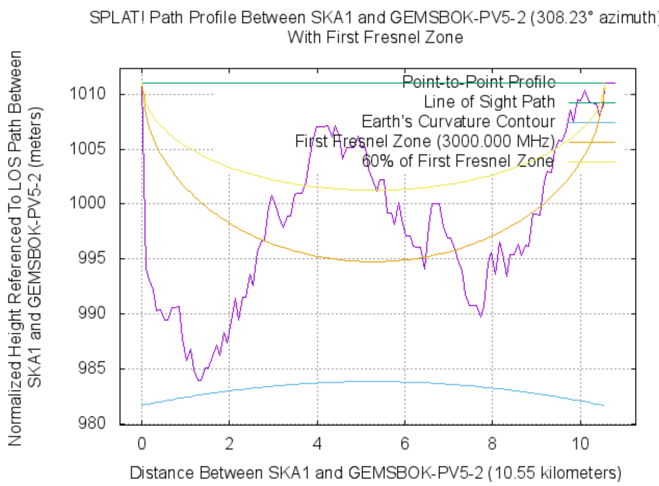
(a)



(b)



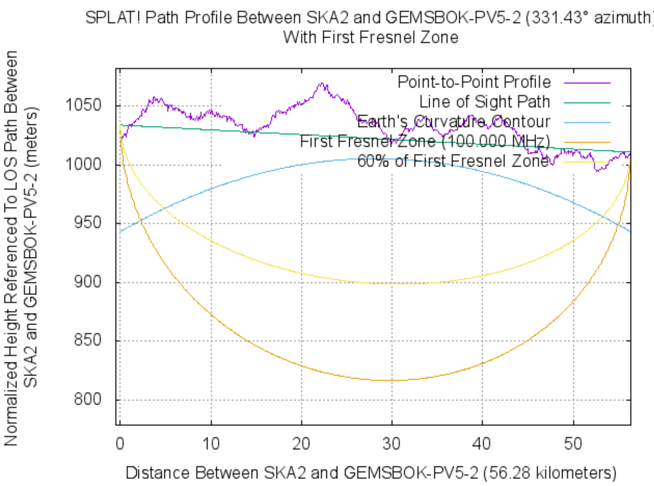
(c)



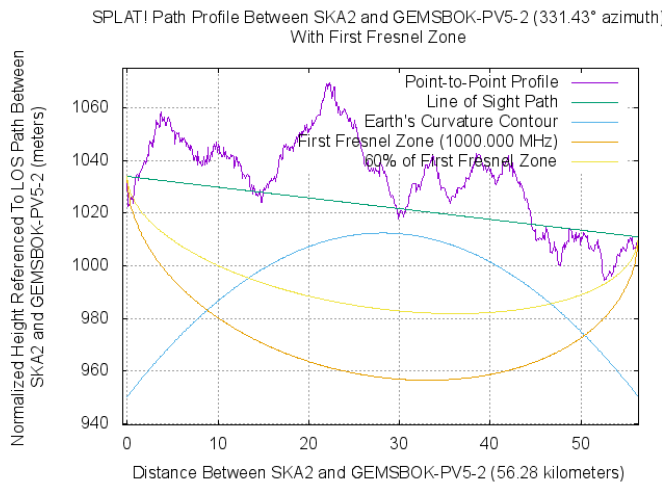
(d)

Figure 112: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

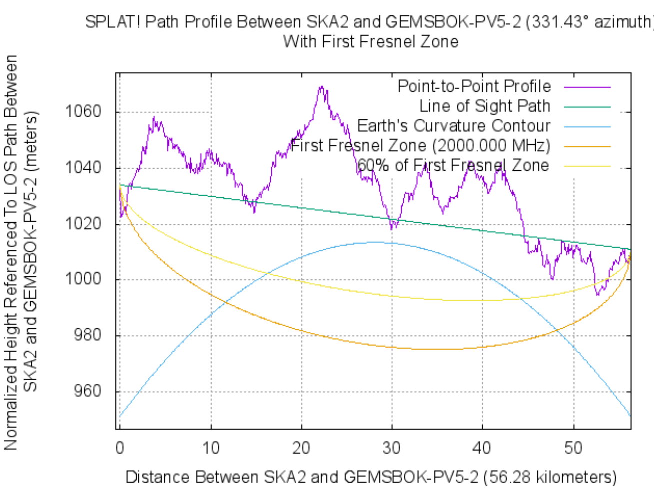
A.41 Gemsbok PV5 to 2nd Closest SKA



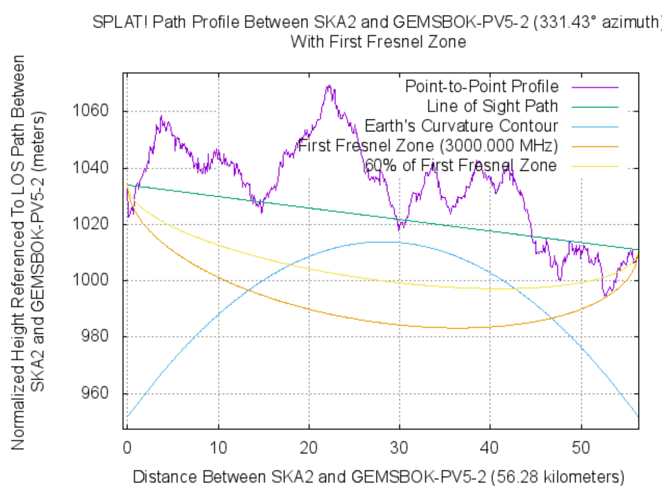
(a)



(b)



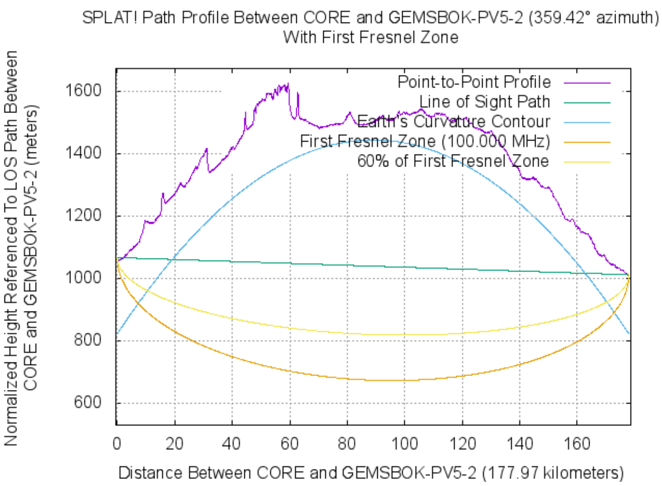
(c)



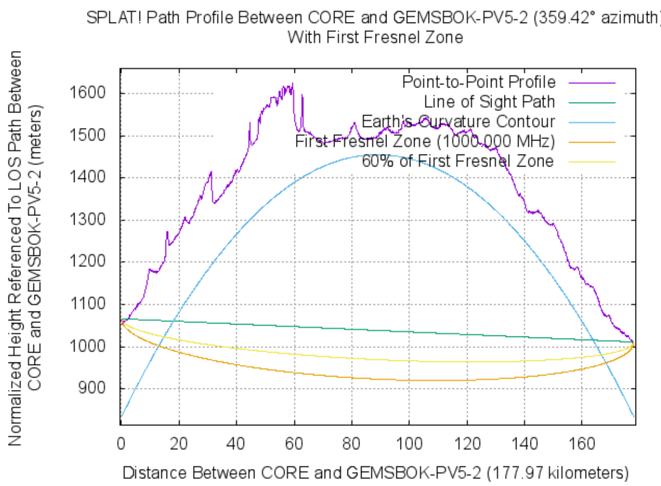
(d)

Figure 113: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

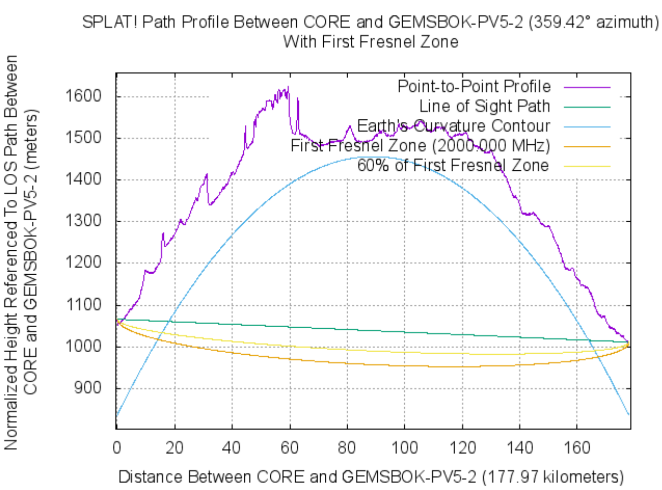
A.42 Gemsbok PV5 to Core SKA



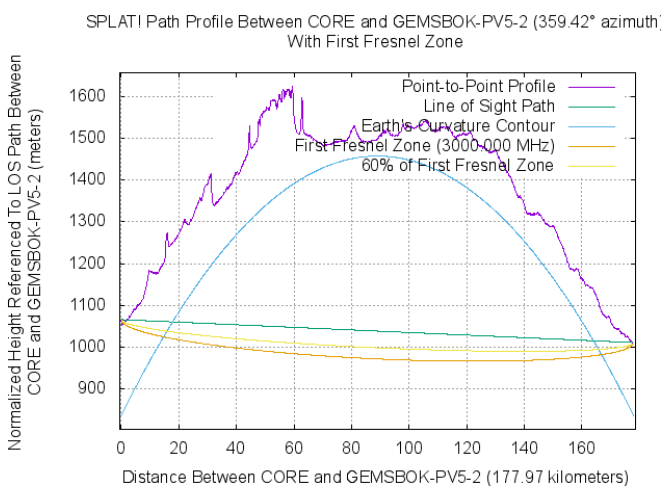
(a)



(b)



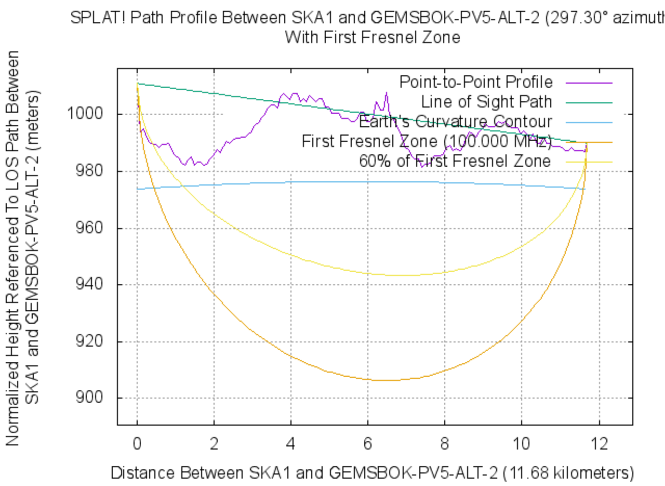
(c)



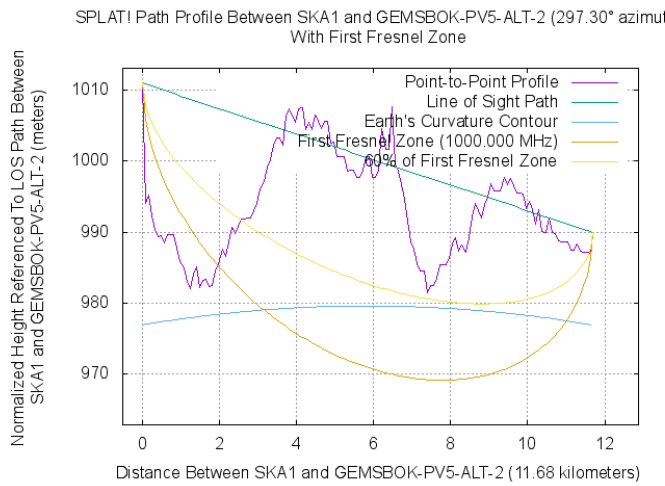
(d)

Figure 114: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

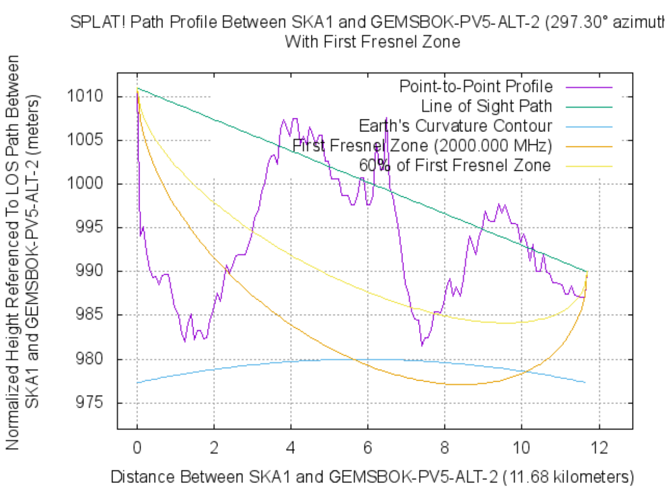
A.43 Gemsbok PV5 Alternative to Closest SKA



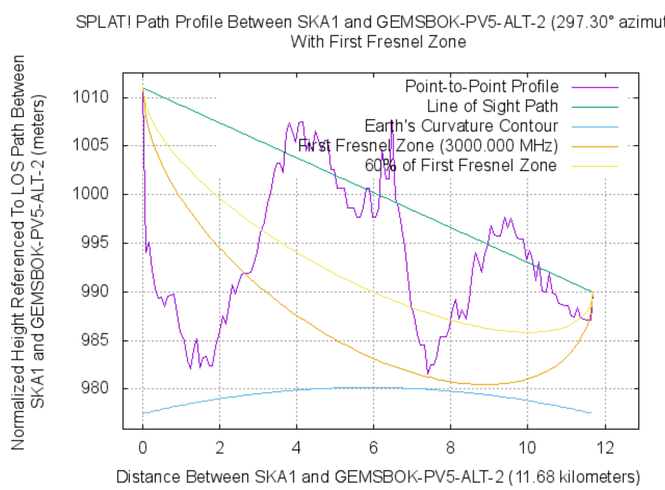
(a)



(b)



(c)



(d)

Figure 115: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.44 Gemsbok PV5 Alternative to 2nd Closest SKA

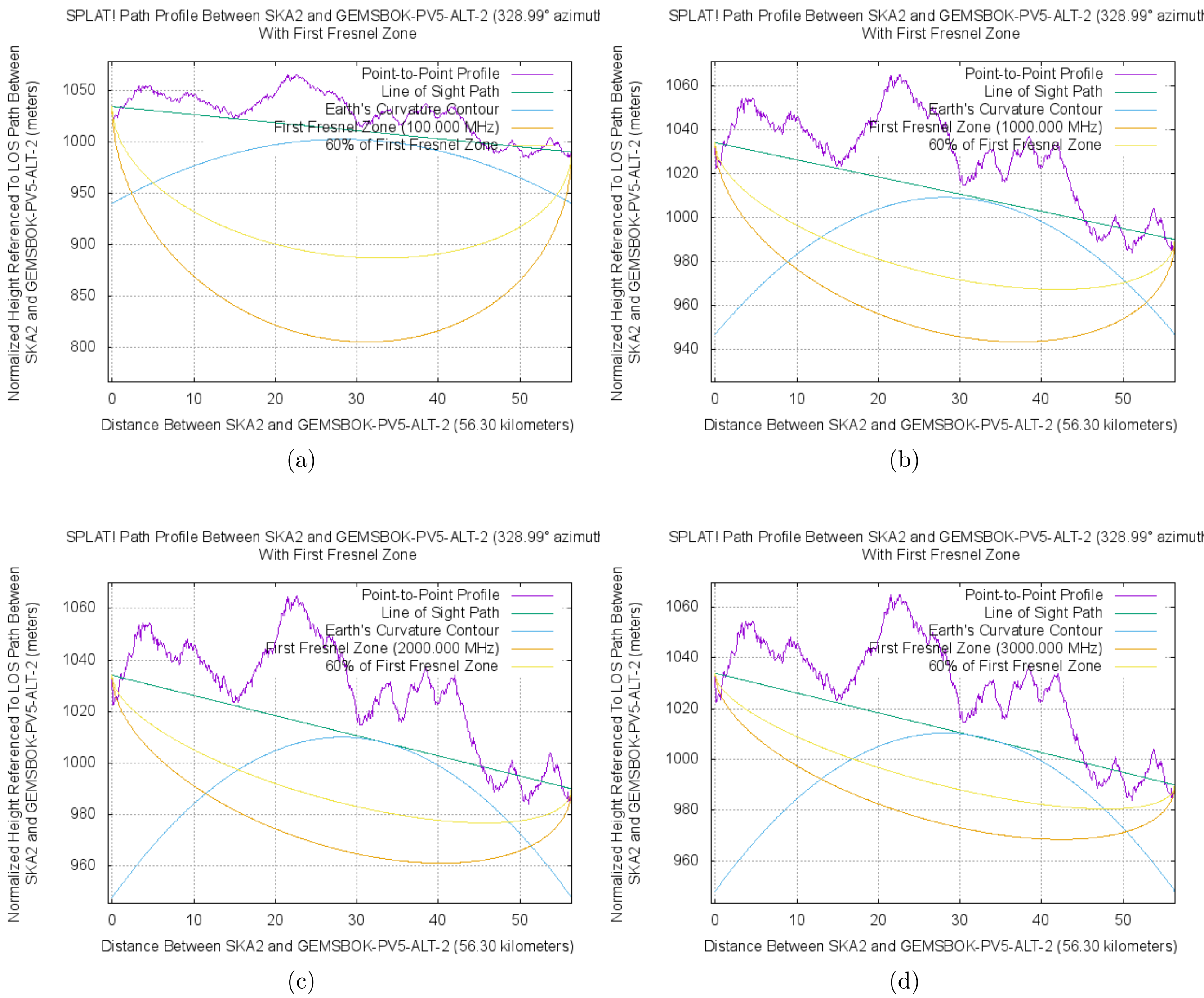


Figure 116: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.45 Gemsbok PV5 Alternative to Core SKA

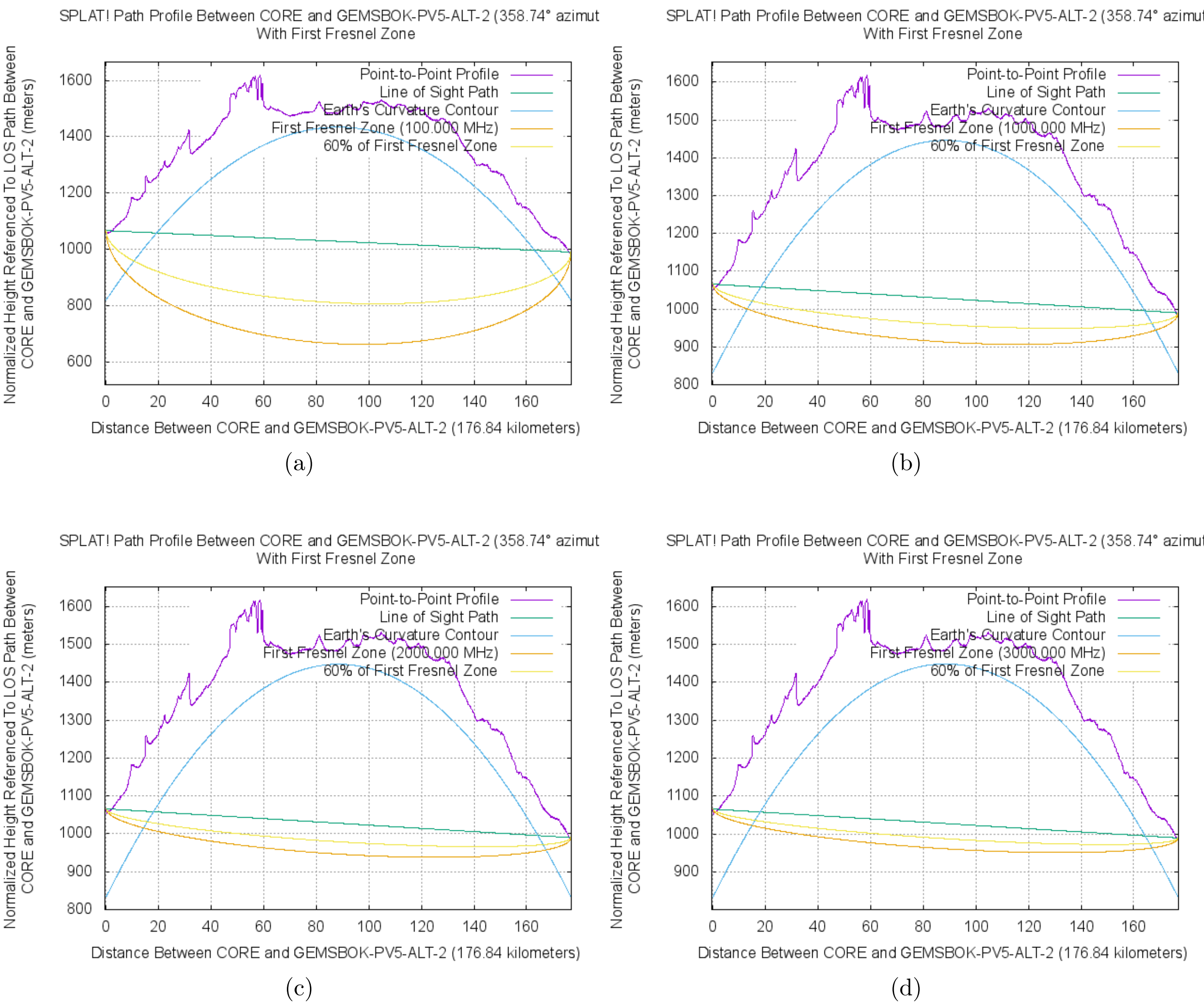
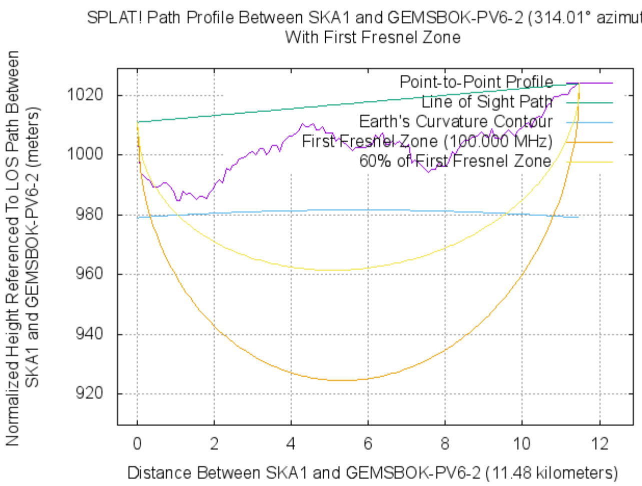
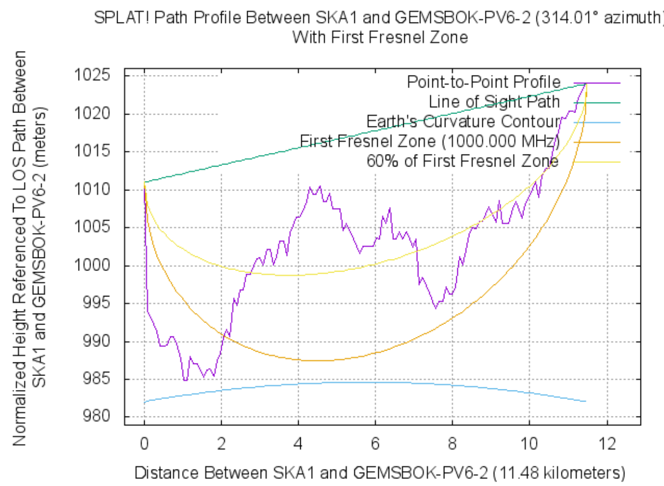


Figure 117: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV5 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

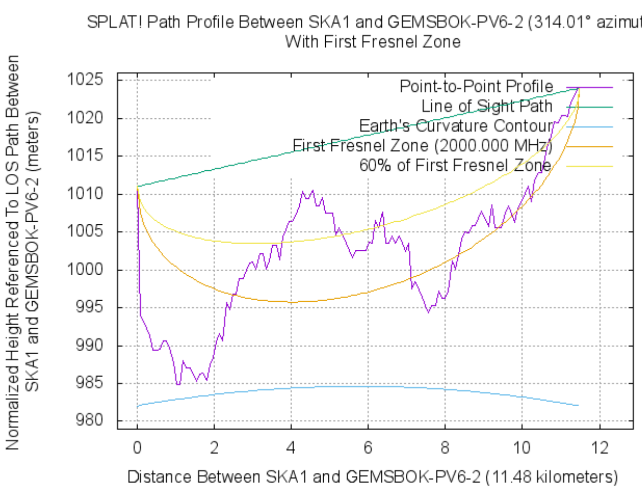
A.46 Gemsbok PV6 to Closest SKA



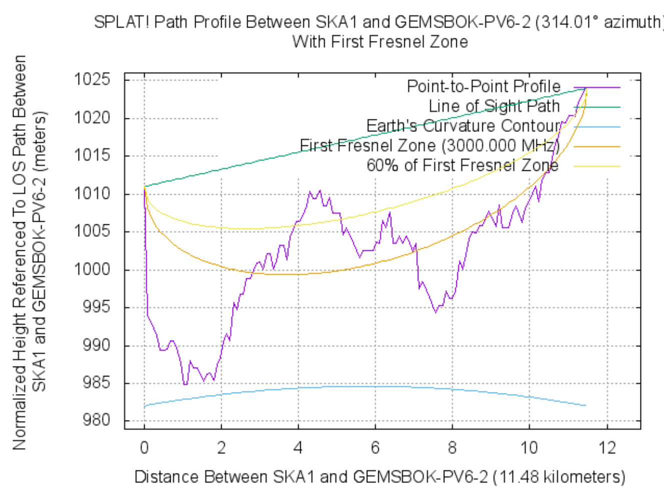
(a)



(b)



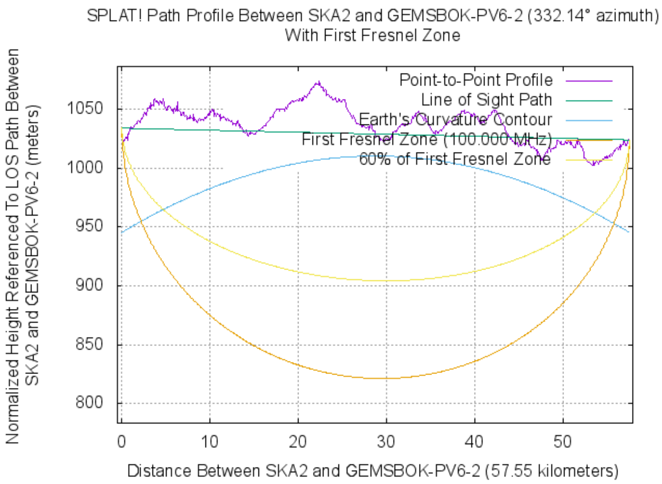
(c)



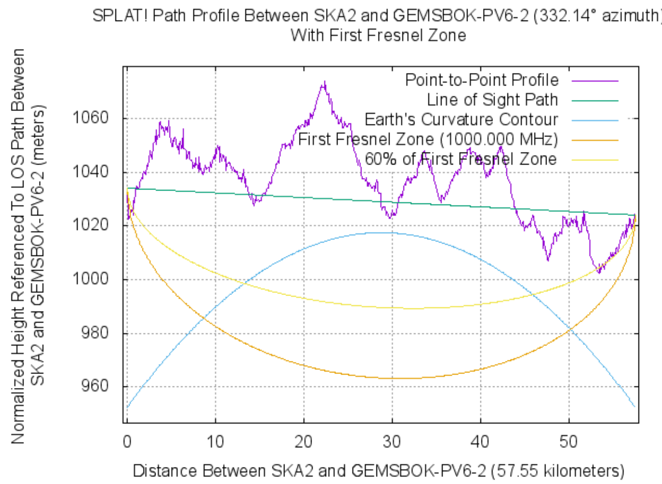
(d)

Figure 118: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

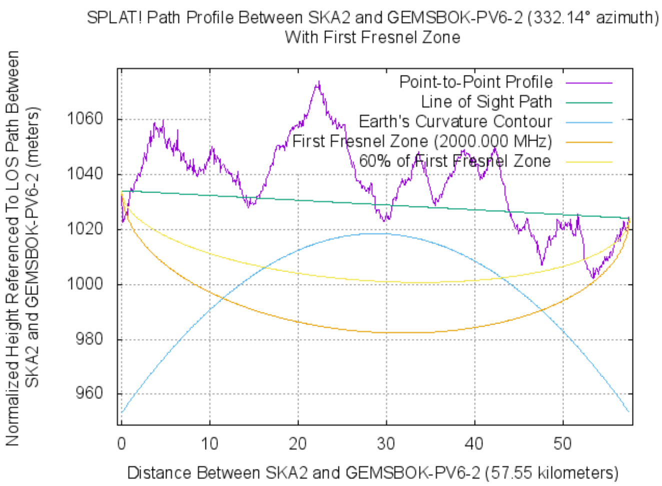
A.47 Gemsbok PV6 to 2nd Closest SKA



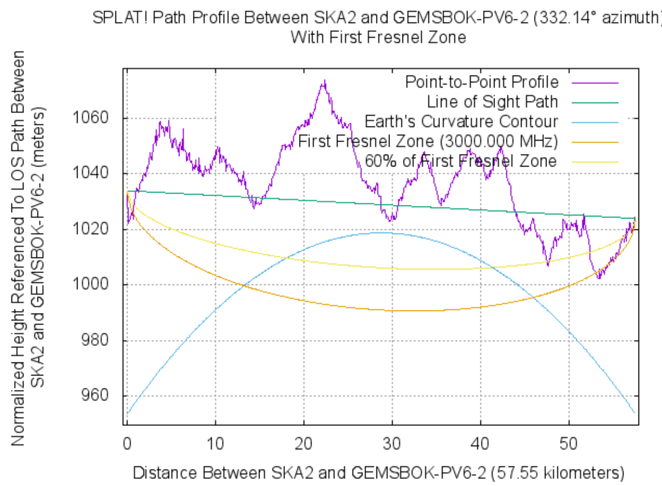
(a)



(b)



(c)



(d)

Figure 119: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.48 Gemsbok PV6 to Core SKA

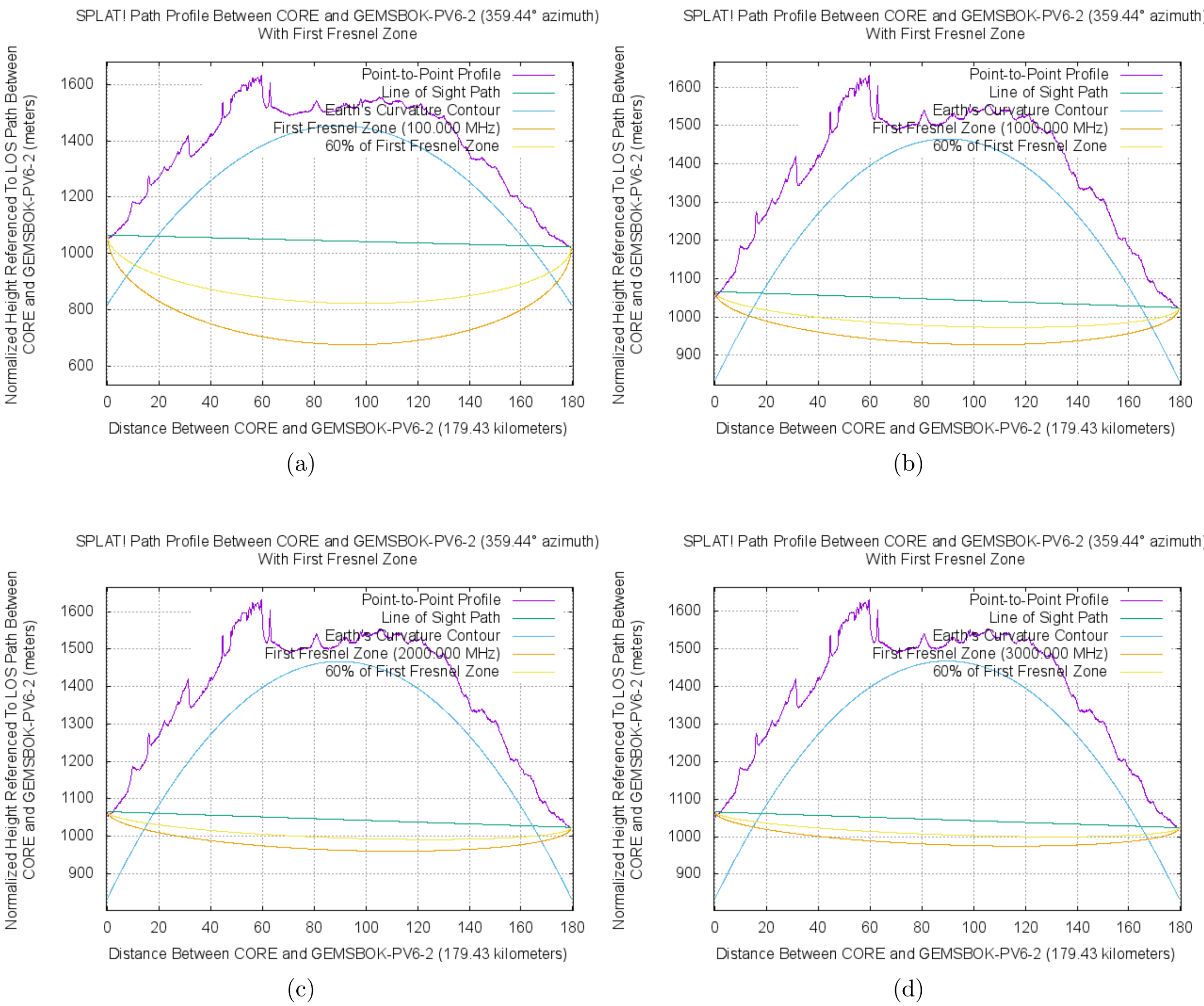


Figure 120: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.49 Gemsbok PV6 Alternative to Closest SKA

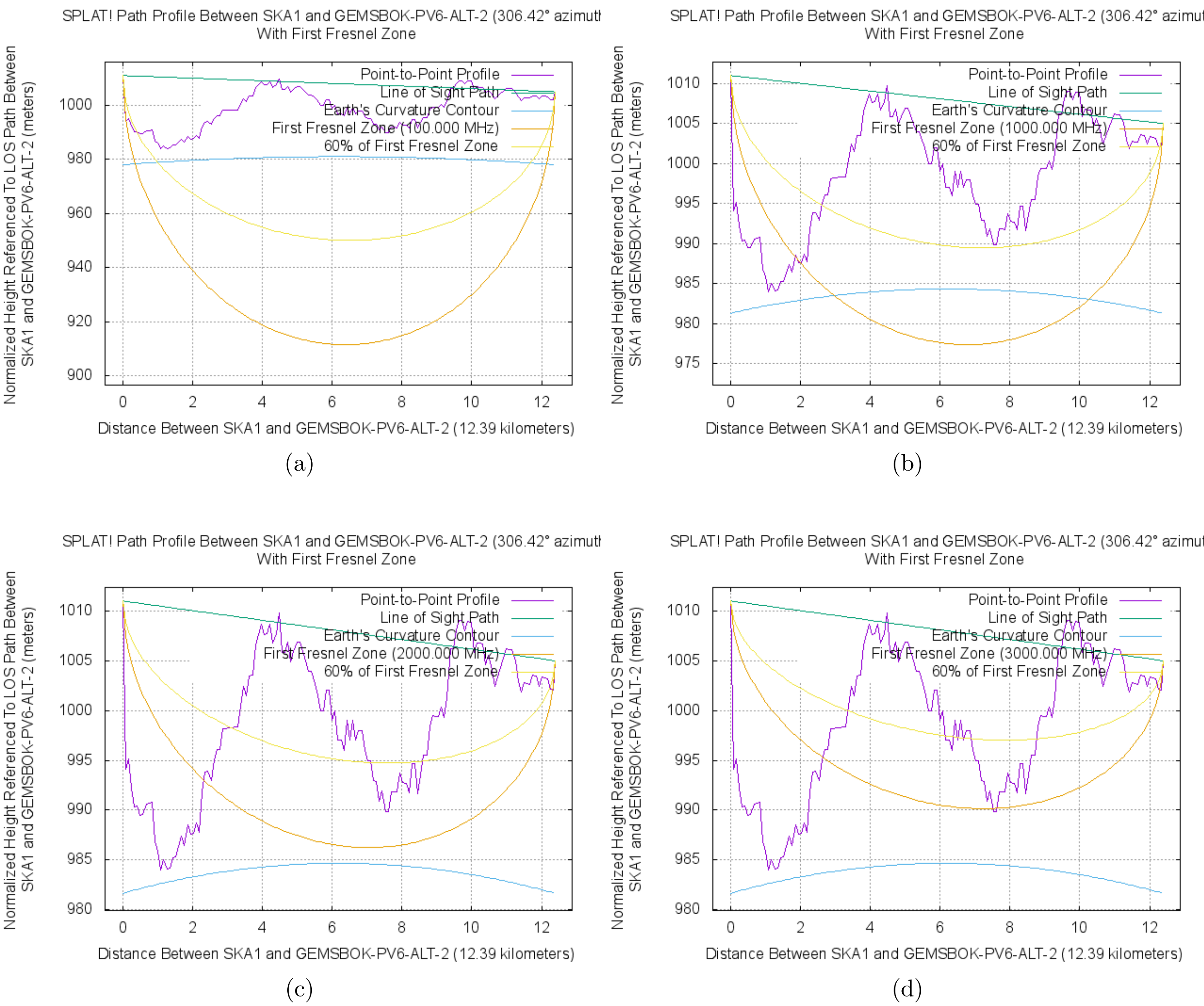
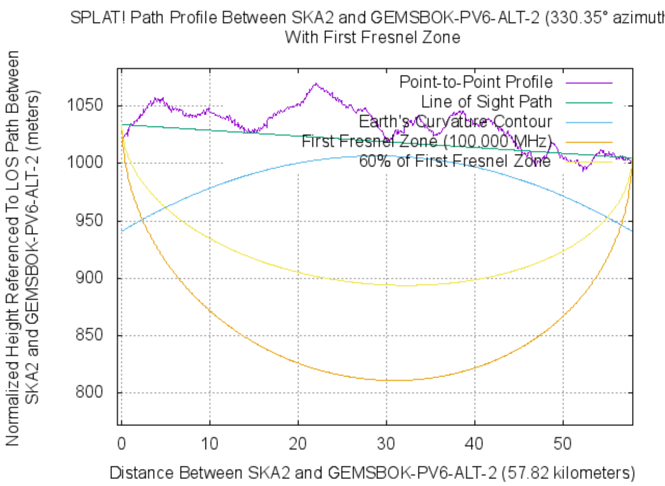
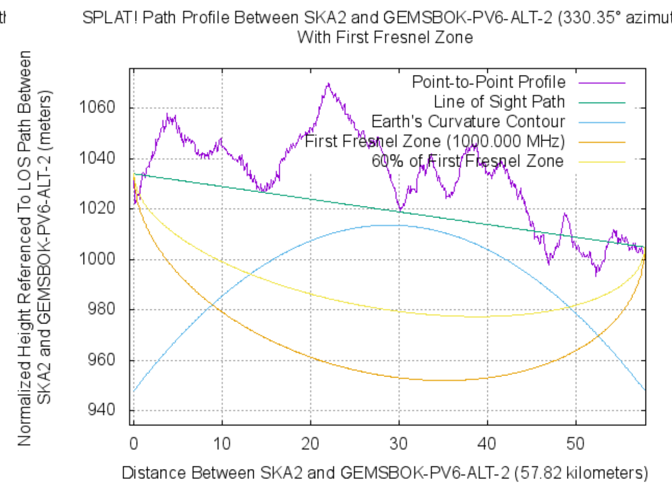


Figure 121: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 Alternative to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

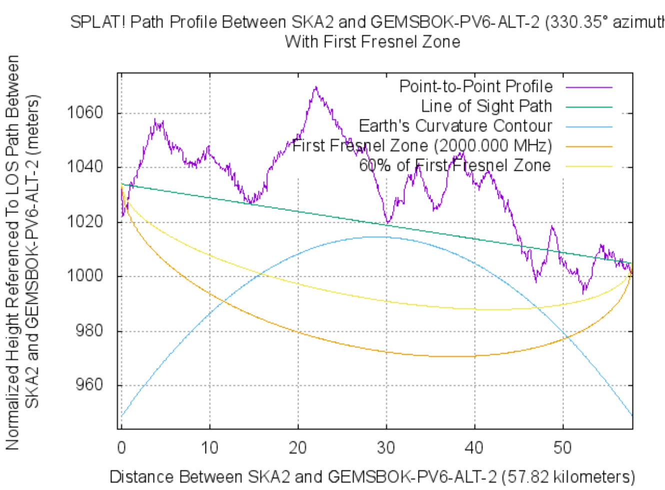
A.50 Gemsbok PV6 Alternative to 2nd Closest SKA



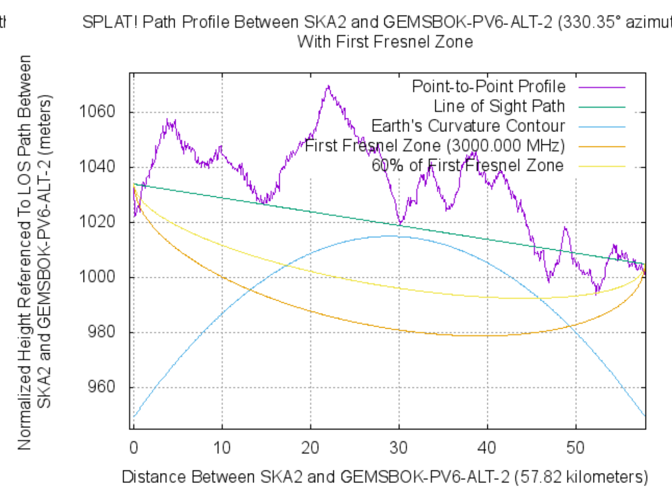
(a)



(b)



(c)



(d)

Figure 122: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 Alternative to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.51 Gemsbok PV6 Alternative to Core SKA

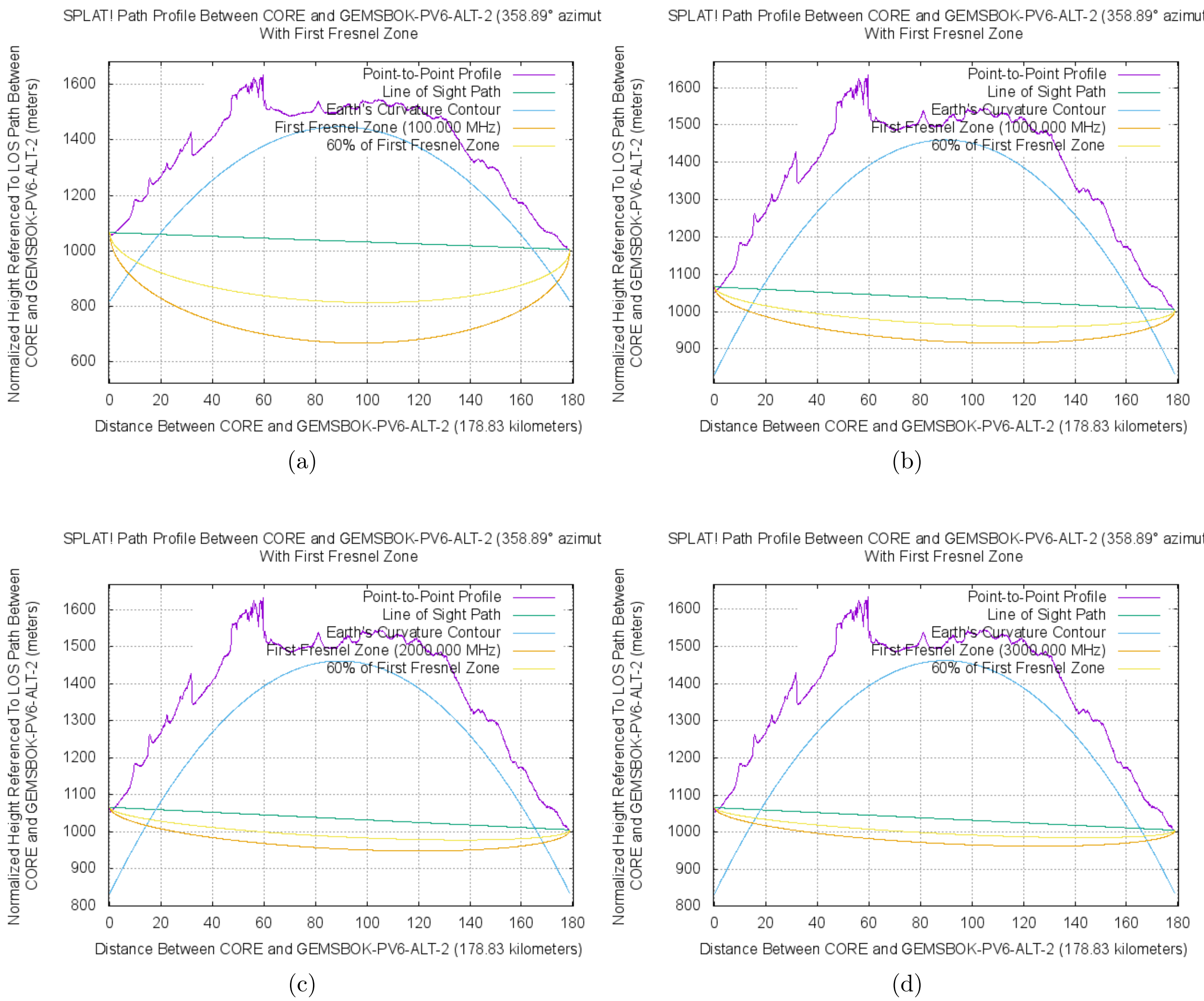
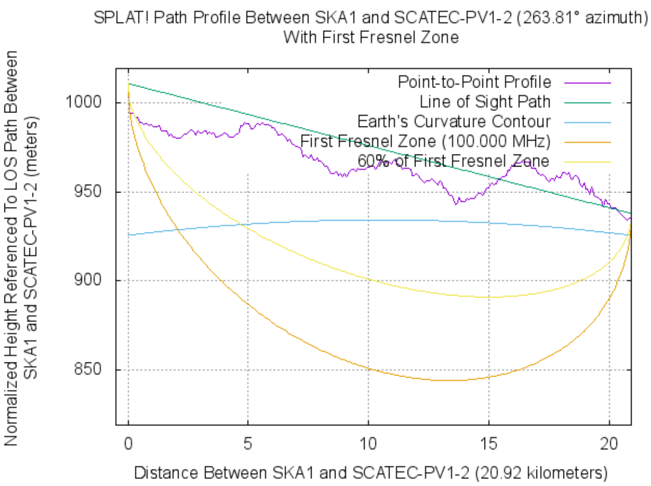
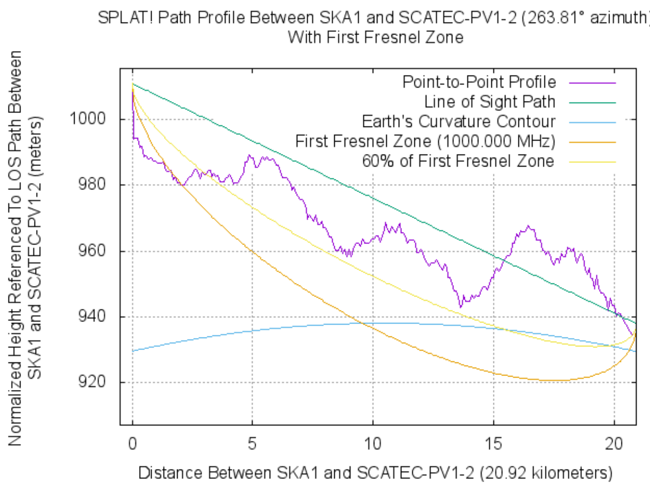


Figure 123: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Gemsbok PV6 Alternative to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

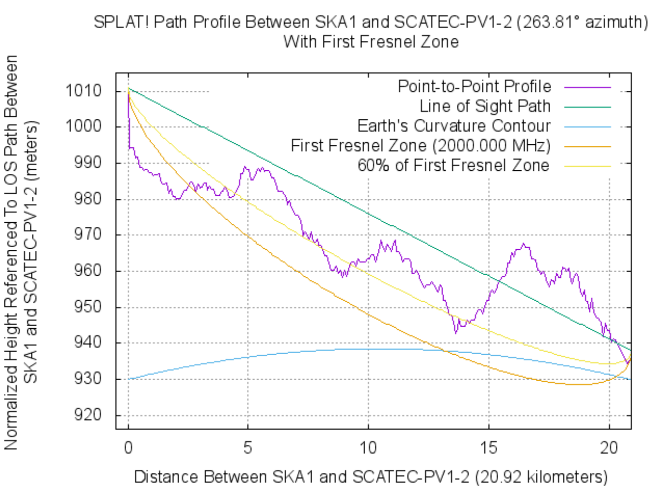
A.52 Scatec PV1 to Closest SKA



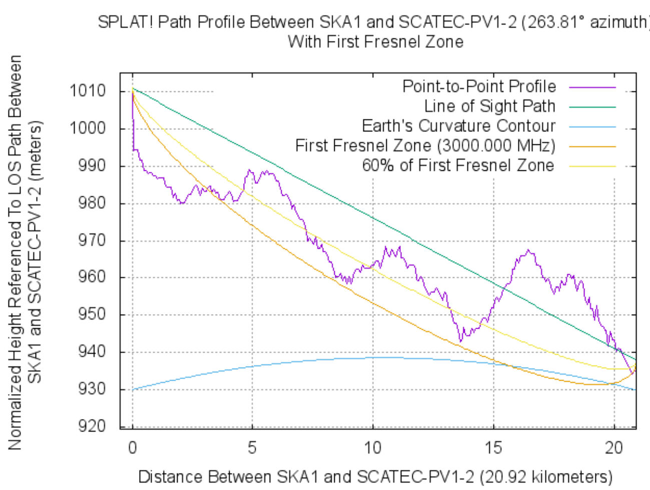
(a)



(b)



(c)



(d)

Figure 124: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV1 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.53 Scatec PV1 to 2nd Closest SKA

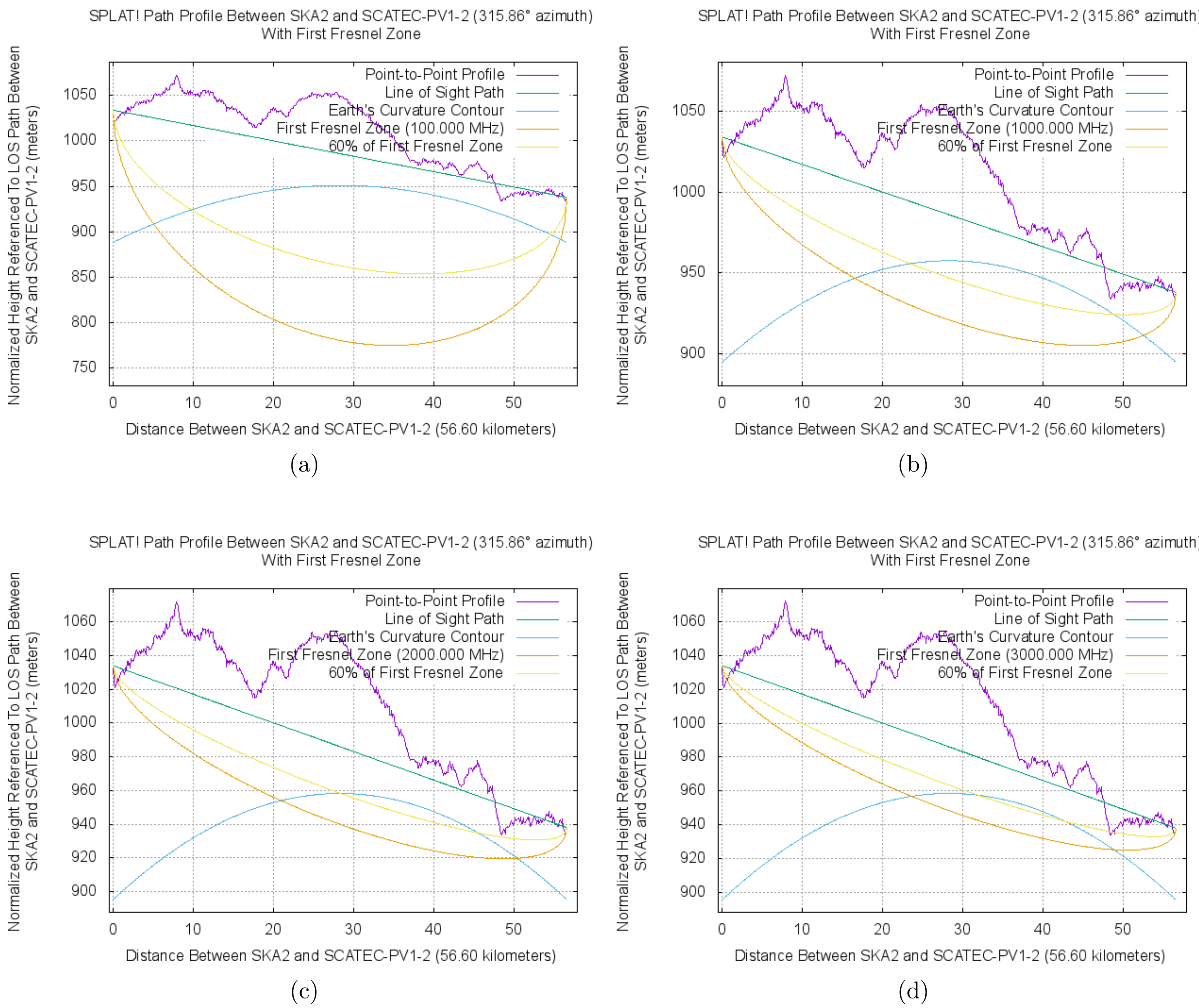


Figure 125: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV1 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.54 Scatec PV1 to Core SKA

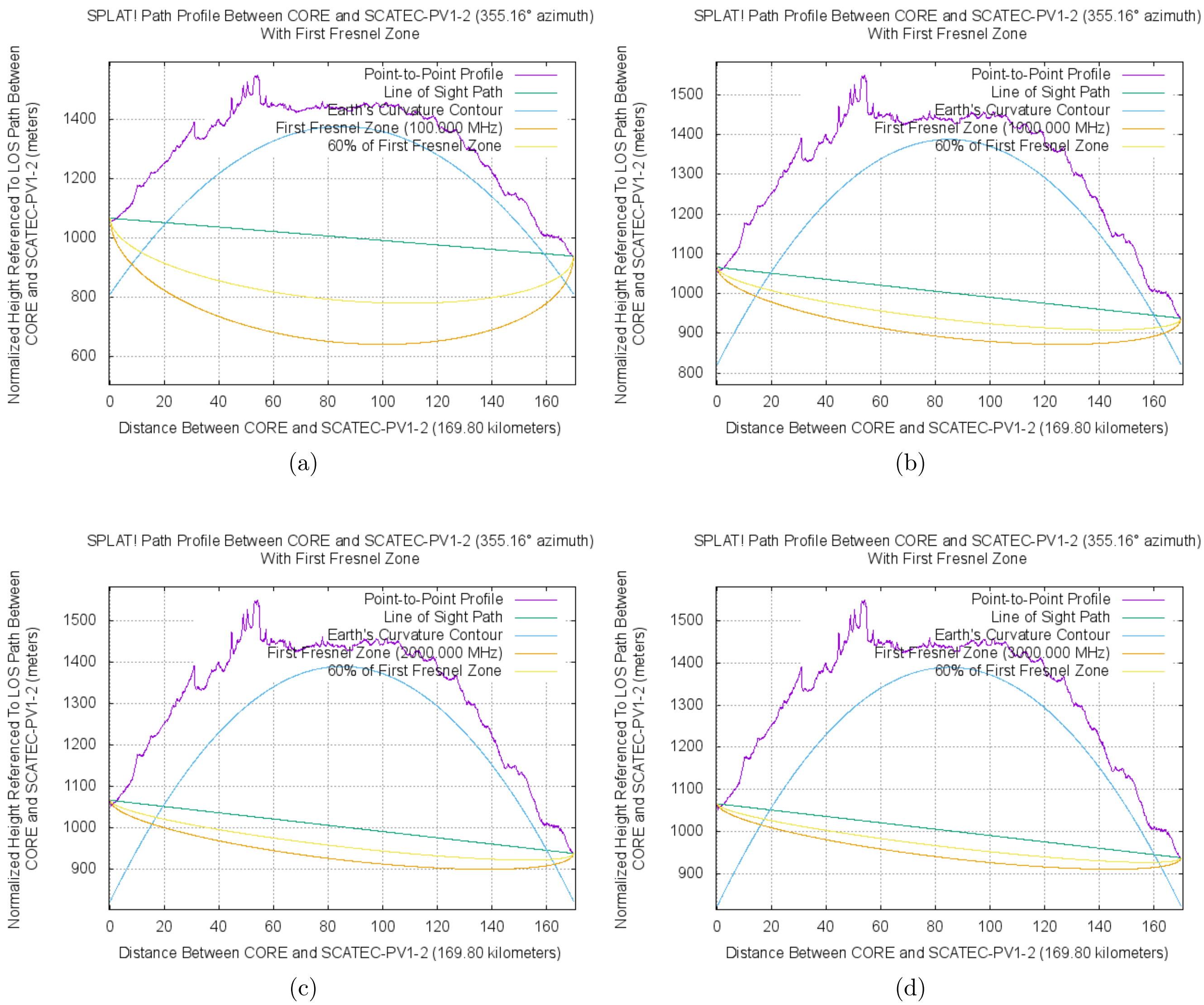


Figure 126: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV1 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.55 Scatec PV2 to Closest SKA

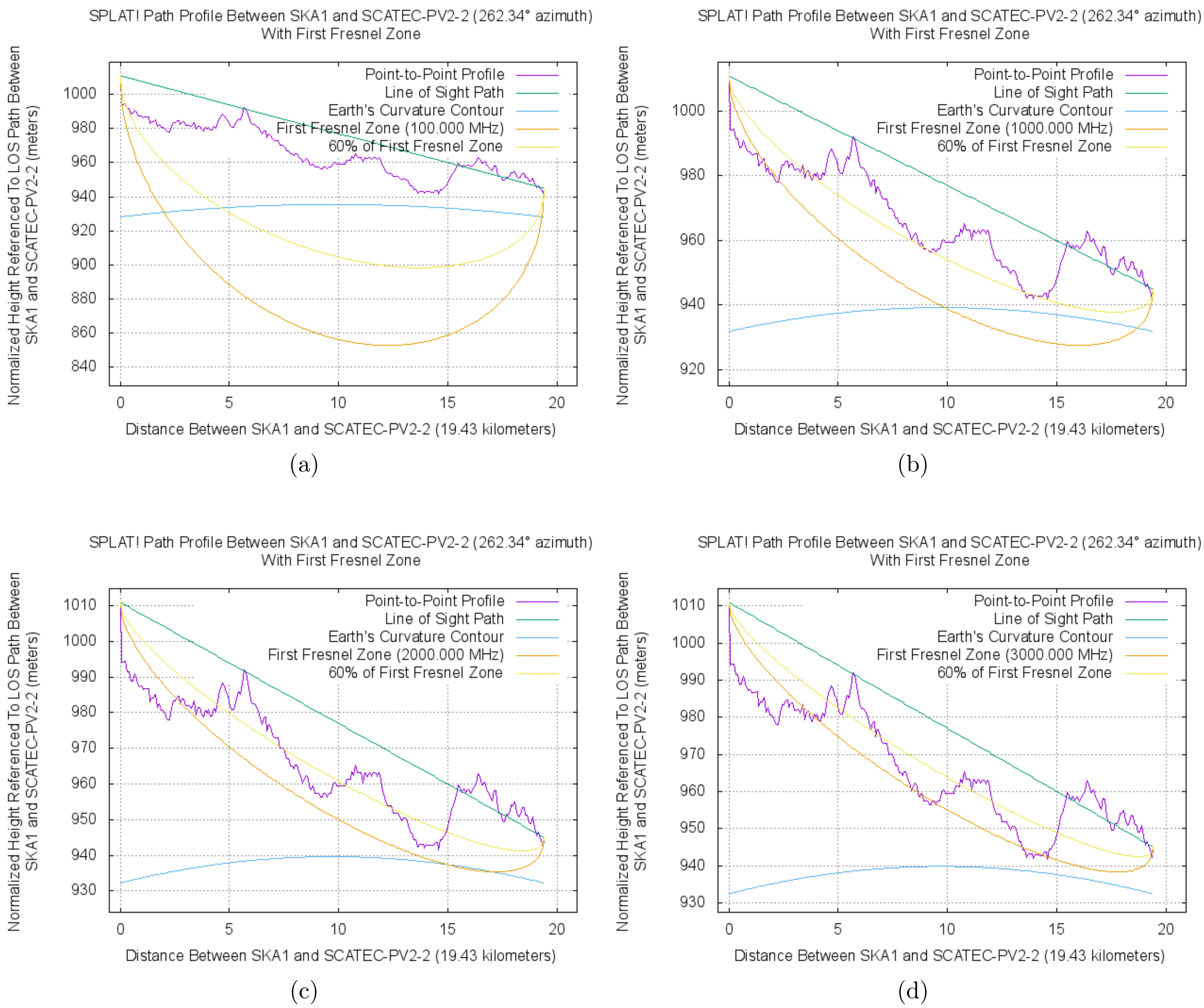
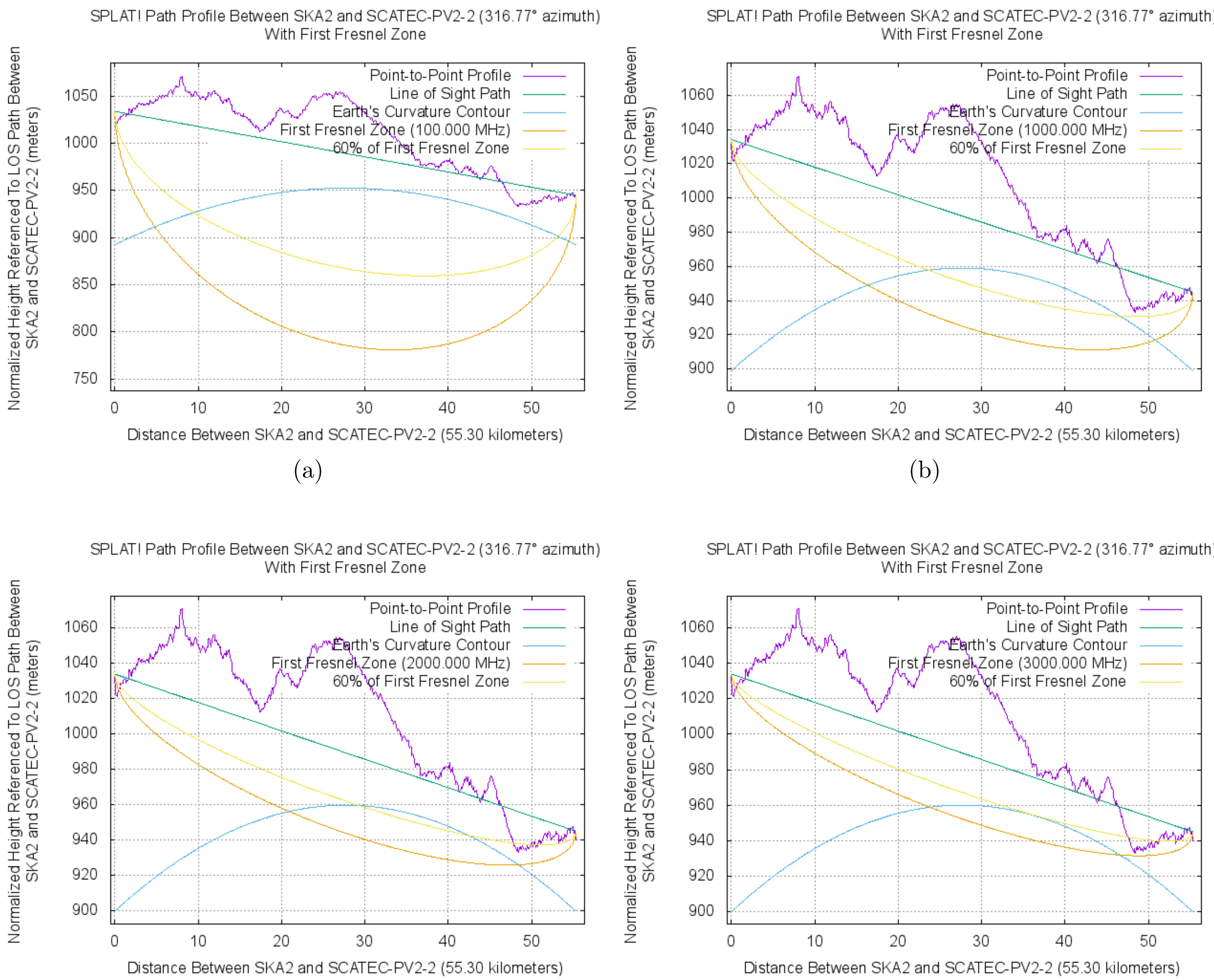


Figure 127: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV2 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.56 Scatec PV2 to 2nd Closest SKA



(a) (b) (c) (d)

Figure 128: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV2 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.57 Scatec PV2 to Core SKA

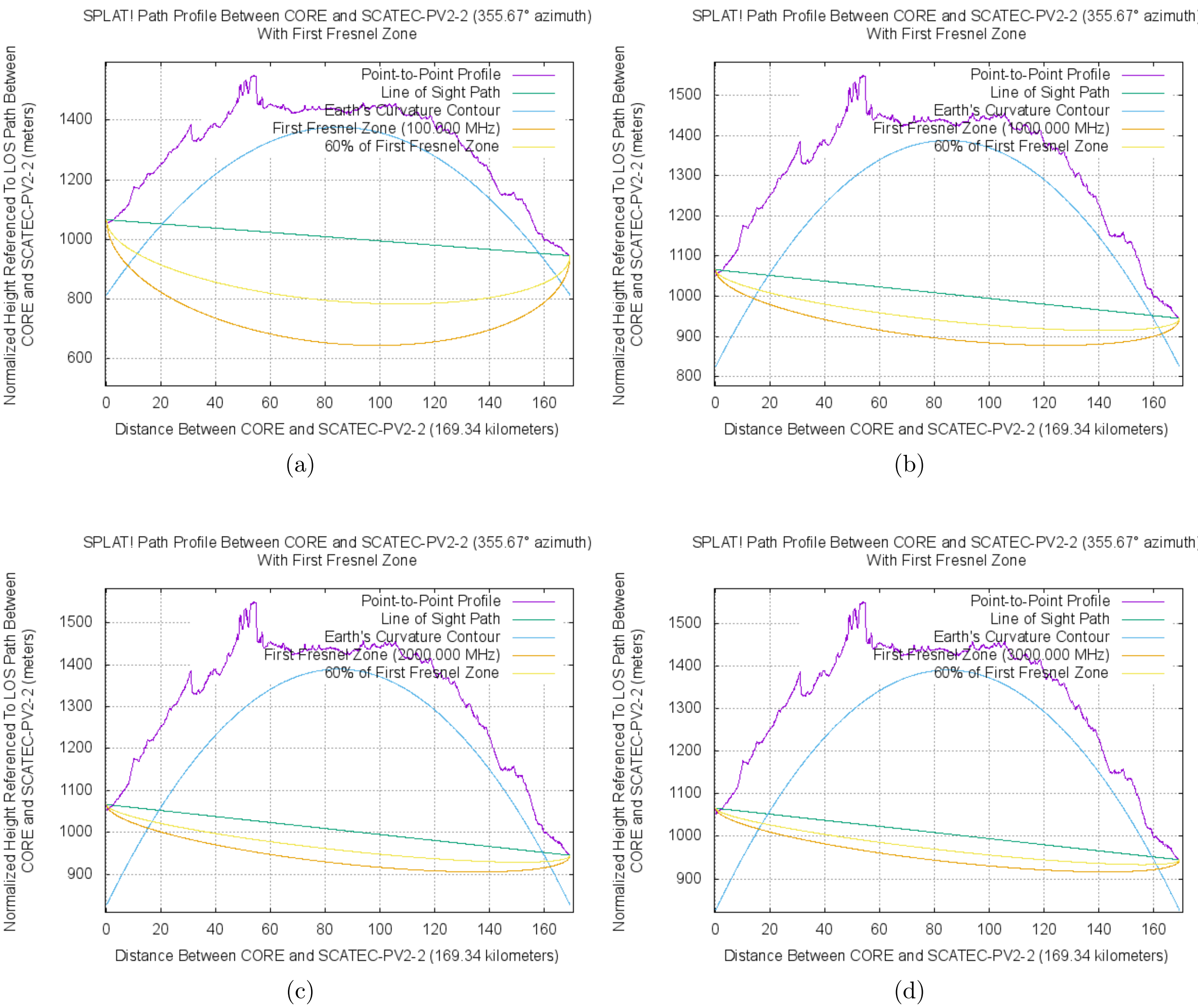


Figure 129: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV2 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.58 Scatec PV3 to Closest SKA

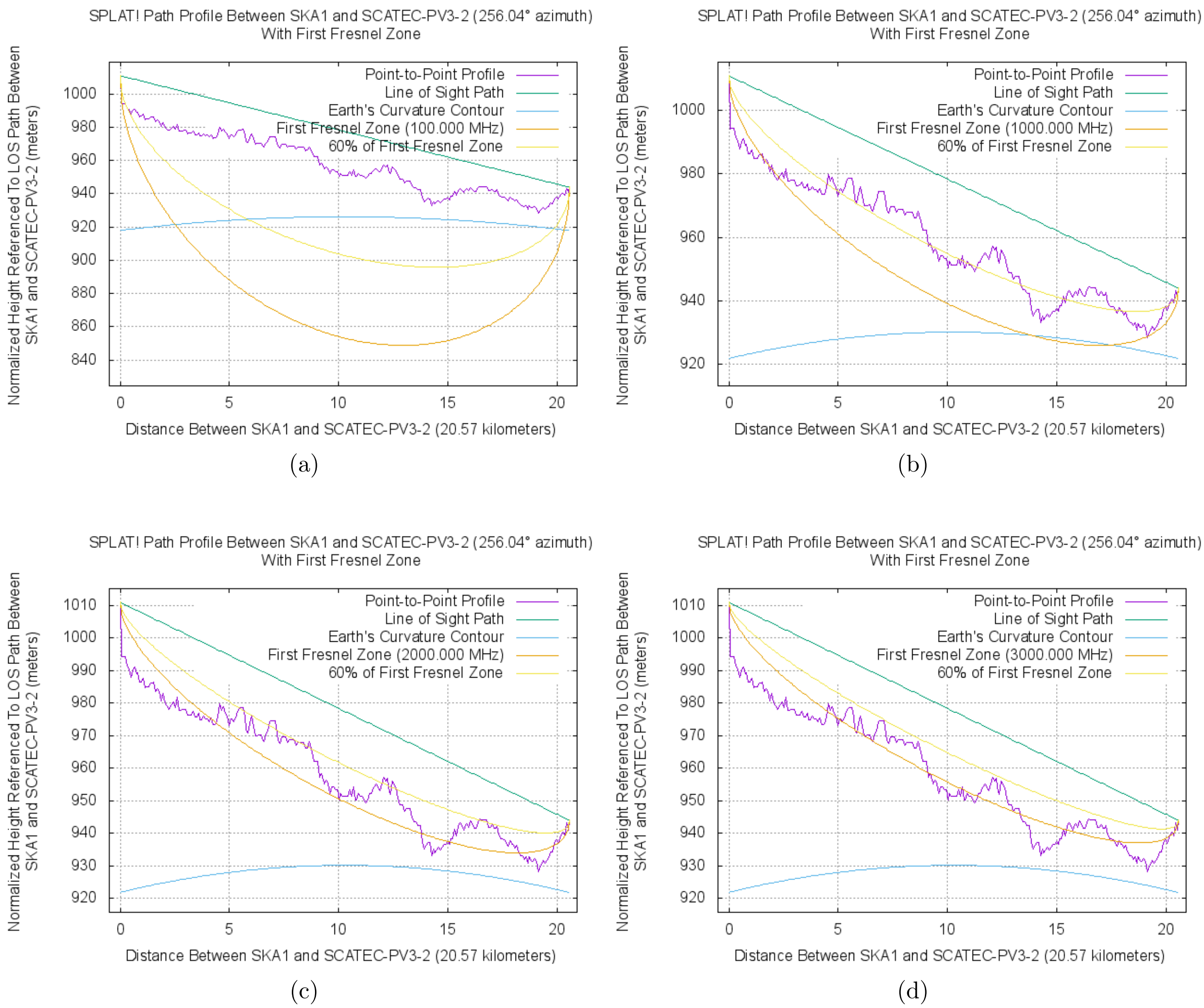
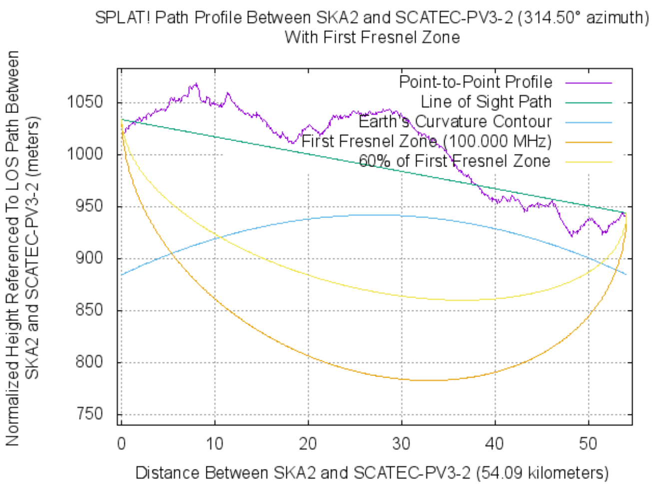
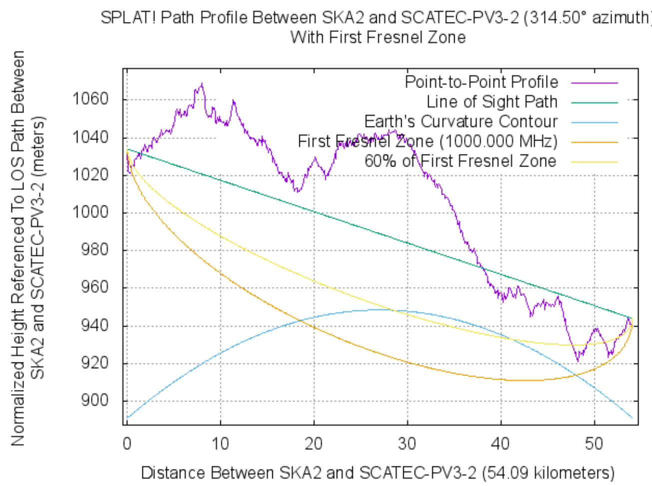


Figure 130: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV3 to the closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

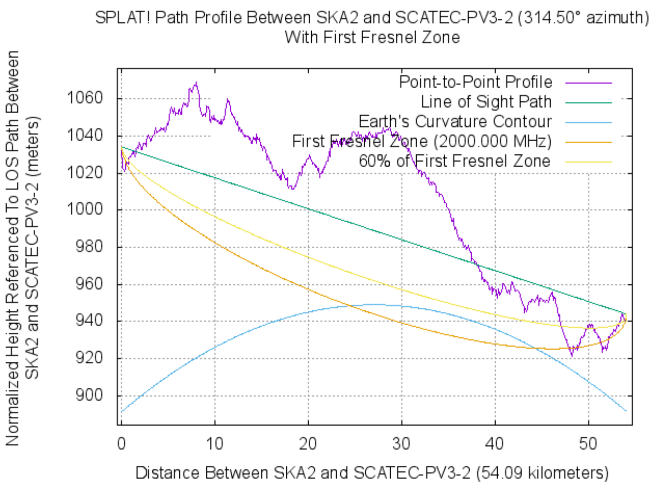
A.59 Scatec PV3 to 2nd Closest SKA



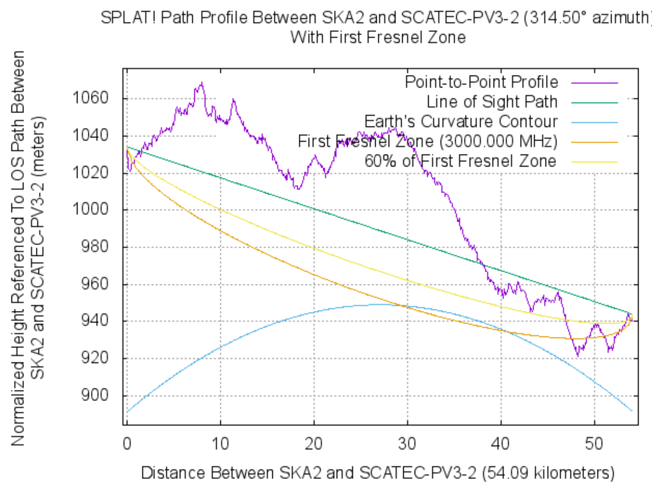
(a)



(b)



(c)



(d)

Figure 131: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV3 to the second closest SKA telescope for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

A.60 Scatec PV3 to Core SKA

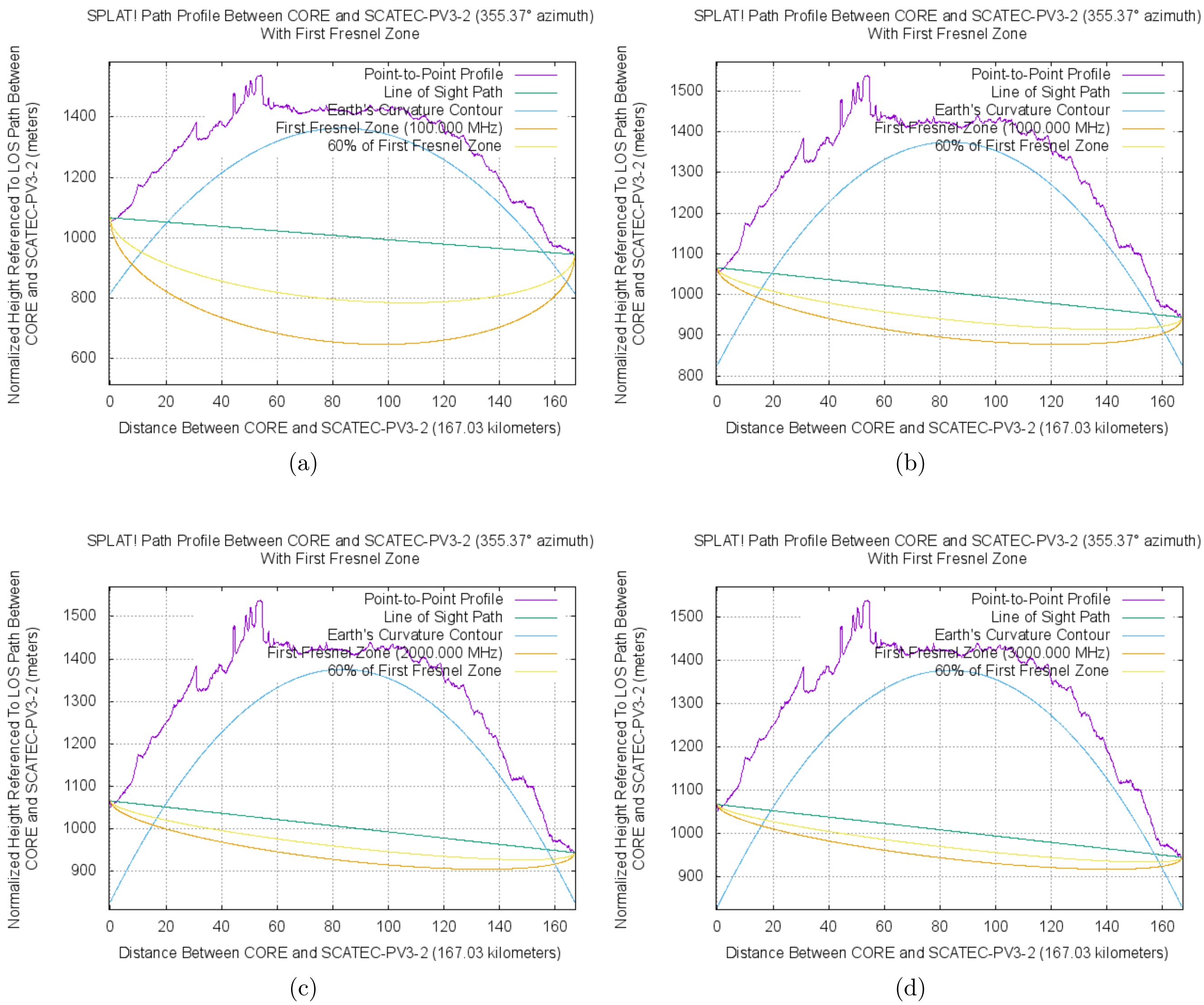


Figure 132: Fresnel zone, LOS and 60% of first Fresnel zone for site location of Scatec PV3 to the core SKA telescopes for (a) 100 MHz (b) 1000 MHz (c) 2000 MHz and (d) 3000 MHz.

BASIC ASSESSMENT REPORT

APPENDIX E: PUBLIC PARTICIPATION

contents

Appendix E.1 Proof of Placement of Newspaper Advertisements and Site Board

Newspaper Advertisement – The Gemsbok

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESSES

THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

CSIR REFERENCE: EMS0102/SCATEC/2015

Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar) (i.e. the Project Applicant), is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA EIA Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, the proposed projects require a full Scoping and EIA Process for the construction of the three Solar PV facilities. A separate Basic Assessment Process is also required and will be undertaken for the development of the proposed transmission lines. The CSIR has been appointed by Scatec Solar to undertake the requisite Basic Assessment and Scoping and EIA Processes for the proposed projects. The proposed project potentially triggers the following listed activities:

- Basic Assessment Process: GN R983: Activity 11 (i);
- Scoping and EIA Process: GN R983: Activity 9 (i) and (ii); Activity 12 (x) and (xii); Activity 19 (i); Activity 24 (ii) and Activity 28 (ii); and GN R984: Activity 1 and Activity 15.

Since the proposed 75 MW Solar PV facilities are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process will be undertaken for the proposed projects. However, separate Applications for Environmental Authorisation (EA) will be lodged with the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed 75 MW Solar PV facility and transmission line, which will be referred to as Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line. As such, separate reports (i.e. Basic Assessment and Scoping and EIA Reports) will be compiled for each project.

To ensure that you are included on the project register, as well as to raise any issues and concerns for inclusion in the Basic Assessment and Scoping Reports, you are kindly requested to register your interest in the projects and submit any comments you may have to the CSIR (at the details indicated below) within **30 days** of this notification (i.e. by no later than **31 August 2015**). Kindly note that available project information can be accessed at the following website: http://www.csir.co.za/eia/ScatecSolarPV/. For more information and/or to register as an Interested and Affected Party, please contact: Rohaida Abed; CSIR; P. O. Box 17001, Congella, Durban, 4013; Phone: 031 242 2300; Fax: 031 261 2509; Email: *RAbed@csir.co.za*

Newspaper Advertisement – English (For the Release of the Background Information Document) – The Gemsbok – 29 July 2015

BLADSY 4 | DIE GEMSBOK | 31 JULIE 2015

Skoolhoof wou klasse aan buitelanders verhuur

GEMSBOK-POFADDER: Die skoolhoof van die Laerskool Francois Visser op Pofadder wie daarvan beskuldig word dat hy skoolklasse in wooneenhede vir buitelanders wat as sonplaaswerkers werk omskep het, is ondanks die Khai Ma Gemeenskap Moniterings Forum se protes optog onlangs, weer terug in die tuig.

Volgens Erick Strauss, van die GMF, het die gemeenskap net betyds ingetree en het geen buitelanders nog in die eenhede ingetrek nie, maar al die TV's. beddegoed ens wat reeds aangekoop is, staan tans nog netso by die skool.

Nadat die GMF glo die klagtes by verskeie departementshoofde by die Departement van Onderwys in die Namakwastreek aanhangig gemaak het, het hulle besluit om gemeenskapslede en ouers van die skool in protes optog na die skool laat opruk om 'n versoekskrif te oorhandig.

Onder die klagtes word daar glo ook beweer dat die verkiesing van die skool se SBL nie heeltemal "grondwetlik" hanteer is nie.

Die GMF het in hul versoekskrif, wat aan Mnr Ruiter (adjunkhoof van onderwys in die Namakwastreek) en mnr Engelbrecht (kring bestuurder van onderwys in die Namakwastreek) oorhandig is, daarop aangedring dat die skoolhoof, mnr Fadil Faro, binne 48 uur uit sy pos verwyder moes word.

Volgens Strauss het die departement 'n dringende vergadering belê om agter die kap van die byl te kom en die gemeenskap het van die geleentheid gebruik gemaak om hulle ontevredenheid met die manier waarop die skoolhoof die skool bestuur, uit te spreek.

Na die 48 uur tydperk wat tydens die optog aan die dept onderwys gegee is om van Faro ontslae te raak, het die gemeenskap weer na die skool opgeruk, waarna Faro van die perseel verwyder moes word.

Blykbaar is die SBL ook ontbind.

In gesprek met mnr Ruiter het die Gemsbok vasgestel dat Faro weer terug is in sy pos.

Blykbaar is Faro die enigste een wat aan die Gr 7 leerders kan onderrig gee en daarom is hy weer, ondanks die klagtes teen hom, terug in die tuig.

Mnr Sam Ruiter het dievolgende op die aantygings van die GMF te sê gehad: "Eintlik reageer die Departement nie op sulke leë niksseggende aantygings nie. Tog wil die volgende noem:

Die Departement het reeds die infrastruktuurprobleem ondersoek voordat die klagskrif ontvang is. Die skoolhoof is, in gevolge departementele prosesse tydelik gesuspendeer, sodat die saak sonder inmenging ondersoek kon word.

Nadat die ondersoek afgehandel is het die distrikbestuur op 20 Julie vergadering met die ouergemeenskap gehou, waartydens die aankondiging van die terugplasing van die skoolhoof gedoen is. Die ouergemeenskap het dit met luide applous verwelkom. Die rede vir die die terugplasing soos aangevoer is dus heeltemal verkeerd,"

Die Pofadder gemeenskap in oproer. Volgens die GMF dring hulle daarop aan dat die skoolhoof van Laerskool Francois Visser uit sy pos geskors word, nadat hy glo die Graad R klasse van die skool in wooneenhede vir buitelanders wou omskep.

NG KERK UPINGTON-OOS
Basaar & Veiling
VRYDAG, 31 JULIE 2015
Braaivleisverkope 10:00
Rouvleis & Witolifant-tafel 14:00
Teetuin & Speletjies 15:00
Gesigverf, Ballonkunstenaar, Springkasteel, Skattejag
Inkleurkompetisie en 'n Mini kar om in te speel!
AMPTELIKE OPENING 17:00
Veiling 17:30
- 1 Arabier Hings (Jack Maritz)
- 2 Dorperramme
- 10 Meatmaster ooie
- Lusernbale

Navrae aan die Skriba - 054 338 0378

PADONGELUKFONDS

IS U ONLANGS ERNSTIG BESEER IN 'N MOTORONGELUK OF HET U 'N GELIEFDE VERLOOR?

OF HET U ONLANGS U PADONGELUKFONDS EIS DIREK MET DIE FONDS GESKIK?

KONTAK GERT NEL PROKUREURS BY 087 233 9188 VIR 'N GRATIS EVALUASIE VIR 'N MOONTLIKE EIS TEEN DIE PADONGELUKFONDS.

GERT NEL PROKUREURS
087 233 9188
www.gertnelincattorneys.co.za

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESSES

THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

CSIR REFERENCE: EMS0102/SCATEC/2015

Scatec Solar SA 163 (Pty) Ltd (hereinafter referred to as Scatec Solar) (i.e. the Project Applicant), is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA EIA Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, the proposed projects require a full Scoping and EIA Process for the construction of the three Solar PV facilities. A separate Basic Assessment Process is also required and will be undertaken for the development of the proposed transmission lines. The CSIR has been appointed by Scatec Solar to undertake the requisite Basic Assessment and Scoping and EIA Processes for the proposed projects. The proposed project potentially triggers the following listed activities:

- Basic Assessment Process: GN R983: Activity 11 (i);
- Scoping and EIA Process: GN R983: Activity 9 (i) and (ii); Activity 12 (x) and (xii); Activity 19 (i); Activity 24 (ii) and Activity 28 (ii); and GN R984: Activity 1 and Activity 15.

Since the proposed 75 MW Solar PV facilities are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process will be undertaken for the proposed projects. However, separate Applications for Environmental Authorisation (EA) will be lodged with the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed 75 MW Solar PV facility and transmission line, which will be referred to as Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 - Transmission Line. As such, separate reports (i.e. Basic Assessment and Scoping and EIA Reports) will be compiled for each project.

To ensure that you are included on the project register, as well as to raise any issues and concerns for inclusion in the Basic Assessment and Scoping Reports, you are kindly requested to register your interest in the projects and submit any comments you may have to the CSIR (at the details indicated below) within **30 days** of this notification (i.e. by no later than **31 August 2015**). Kindly note that available project information can be accessed at the following website: http://www.csir.co.za/eia/ScatecSolarPV/. For more information and/or to register as an Interested and Affected Party, please contact: Rohaida Abed; CSIR; P. O. Box 17001, Congella, Durban, 4013; Phone: 031 242 2300; Fax: 031 261 2509; Email: RAbed@csir.co.za

Abrahams Christopher (Boere)

Dit is nou al 10 jaar dat jy weg is Boere. Die hartseer en skok was so skielik en baie groot om jou te verloor. Ons mis jou baie, maar sal jou altyd in ons harte koester.

... kinders ... n kleinkinders.

Verdagtes vas na gewapende roof

GEMSBOK-KURUMAN: Drie verdagtes van Bankarra het, na wat soos 'n arretasie uit 'n aksie film gebeur het, onlangs op aanklag van gewapende roof en die onwettige besit van vuurwapens en ammunisie in die hof verskyn.

Daar word beweer dat op Sondag 26 Julie, 2015 omstreeks 16:30, die klaer saam met 'n vriend in Bankarra gestap het, toe hulle gestop word deur die drie verdagtes in 'n wit VW Golf.

Die mans het die 28-jarige klaer met 'n vuurwapen, messe en 'n panga gedreig en hom beroof van sy kontant en selfoon.

Polisie is onmiddellik in kennis gestel en die klaer het die polisie na 'n huis in die omgewing verwys, aangesine hy een van die verdagtes herken het.

Toe die verdagtes egter die polisie opmerk het een verdagte probeer om weg te hardloop.

So in die hardloop, gooi hy toe 'n sak op die dak van een van die huise.

Die polisie het hom ingehaal en gearresteer en die sak van die dak af gehaal.

Daar was twee rewolwers en ammunisie in die sak.

Pangas en meer ammunisie gekonfiskeer uit die huis.

Die VW Golf is ook op beslag gelê.

Drie verdagtes tussen 27 en 35 jaar oud is in hegtenis geneem.

R3000 uit motor gesteel

GEMSBOK-UPINGTON: Die Speurtak van Upington SAPD ondersoek 'n klagte van diefstal vanuit 'n motorvoertuig nadat daar R3000 in kontant, na bewering uit 'n voertuig in Le Rouxstraat, Upington, gesteel is.

Dit is onbekend hoe toegang tot die voertuig verkry is.

Niemand is in verband met die voorval in hegtenis geneem nie.

Die polisie ondersoek duur voort.

Enige persoon met inligting word versoek om die Speurtak te kontak by tel. (054) 337 3400.

GRATIS

*BYBEL STUDIE LESSE
*BOEKE
*AUDIO/VIDEO LERINGE

Besoek ons webtuiste
www.coyhwh.com

Om meer uit te vind oor:
*Die Naam van YAHWEH
*Yahshua die Messias
*Die 7de Dag Sabbat
*Die Heilige Dae
*Wet en Genade werk saam
En veel meer.

Kontak: Shemuel 076 196 8233
coyhwhharties@gmail.com

Met leedwese maak ons bekend die skielike afsterwe van ons ma

Johanna Pieters

Roudiens navrae: Suster Mokati 083 512 1667
Begrafnis navrae: Greg 071 913 8070

"Spread Love everywhere you go. Let no one ever come to you without leaving happier." - Mother Teresa

16/09/1951 - 23/07/2015

Van: Seuns & familie

Northern Cape Arabian Horse Club Training Seminar

Presented by Jack & Fanie Maritz and Jacobus Barnard

- Basic Horsemanship
- Biting & Longline
- Show classes
  - -Novice
  - -Hunter
  - -Western
  - -Country
  - -Costume
  - -English
- Halter Training and Showing
- Conditioning & Prepping for a Show
  - -Excerise
  - -Coat care
  - -Main and Tail
  - -Face and Body Clip
- Tack • Bits • Training tack • Showing tack

7 & 8 August
Fish Eagle Estate, Zamzikar Arabians

Contact: Jacobus Barnard 072 994 2392
Danelle Gouws 076 679 1392

Note from the CSIR: The Gemsbok is a weekly newspaper which is distributed every Wednesday and made available from Wednesday to Friday; however it is dated for a Friday (in this case, 31 July 2015). The newspaper advert was distributed on 29 July 2015.

Copy of the Site Notice Boards: English and Afrikaans

JOINT NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT PROCESSES

PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

CSIR REFERENCE: EMS0102/SCATEC/2015

Notice is hereby given in terms of Regulation 41 of the Environmental Impact Assessment (EIA) Regulations published in Government Notice (GN) R982 in Government Gazette 38282 of 8 December 2014, under Section 24(4)(a) of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA), that **Scatec Solar SA 163 (PTY) Ltd** are proposing to develop **three 75 Megawatt (MW) Solar Photovoltaic (PV) facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility), on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.** The proposed projects are located 30 km north-east of Kenhardt. Each 75 MW Solar PV facility proposed will cover an approximate area of 200 hectares (ha) and will be constructed adjacent to each other (with a collective footprint of approximately 600 ha and a combined power generation capacity of 225 MW). The proposed projects will entail the construction of the solar field, buildings, electrical infrastructure, internal access roads, and associated infrastructure and structures.

A full Scoping and EIA Process is required for the construction of the three Solar PV facilities. A separate Basic Assessment Process is also required and will be undertaken for the development of the proposed transmission lines. The CSIR has been appointed by Scatec Solar SA 163 (PTY) Ltd to undertake the required Basic Assessment and Scoping and EIA Processes for the proposed projects. The need for a Basic Assessment and Scoping and EIA is triggered by the following potential listed activities listed in GN R983 and GN R984:

Process	Government Notice	Listed Activity Number
Basic Assessment Processes	GN R983 - 8 December 2014	Activity 11 (i)
Scoping and EIA Processes	GN R983 - 8 December 2014	Activity 9 (i) and (ii); Activity 12 (x) and (xii); Activity 19 (i); Activity 24 (ii) and Activity 28 (ii)
	GN R984 - 8 December 2014	Activity 1 and Activity 15.

Since the proposed 75 MW Solar PV facilities are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process will be undertaken for the proposed projects. However, separate Applications for Environmental Authorisation (EA) will be lodged with the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed 75 MW Solar PV facility and transmission line, which will be referred to as Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line. Separate reports (i.e. Basic Assessment and Scoping and EIA Reports) will be compiled for each project.

To ensure that you are included on the project register as an Interested and Affected Party (I&AP), as well as to raise any issues and concerns for inclusion in the Basic Assessment and Scoping Reports, you are kindly requested to register your interest in the projects and submit any comments you may have to the CSIR (at the details indicated below). Available project information can be accessed at the following website: http://www.csir.co.za/eia/ScatecSolarPV/.

The Background Information Document is currently available for a 30-day commenting period (03 August 2015 - 04 September 2015).

To obtain further information or to register as Interested and Affected Party (I&AP), please contact:
CSIR
Rohaida Abed
P. O. Box 17001, Congella, Durban, 4013
Phone: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

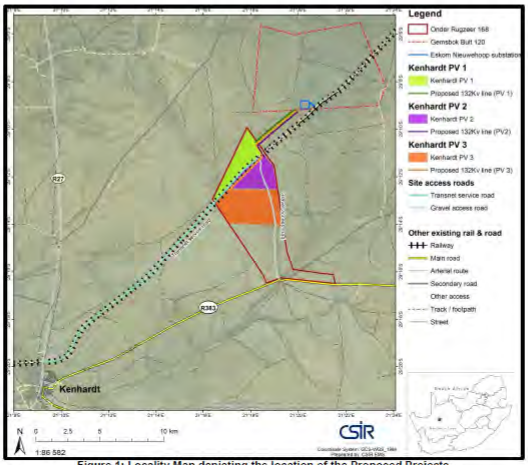


Figure 1: Locality Map depicting the location of the Proposed Projects

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE

VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD-KAAP PROVINSIE

CSIR VERWYSING: EMS0102/SCATEC/2015

Hiermee word kennis gegee, in terme van Regulasie 41 van die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2015, onder Seksie 24(4)(a) van die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA), dat **Scatec Solar SA 163 (Pty) Ltd** van voornemene is om drie **Fotovoltaïese (PV) sonkragfasiliteite, elk met 'n opwekkingskapasiteit van 75 MW en elektriese infrastruktuur** (132 kV kraglyn vir elke 75 MW sonkrag fasiliteit) te installeer op die Restant van Onder Rugzeer 168 en die konneksiepunte na die substasie op die Restant van Gedeelte 3 van Gemsbok Bult 120. Die voorgestelde projekte is 30 km noord-oos van Kenhardt geleë. Elke project gaan ongeveer 200 hektaar (ha) beslaan en sal langs mekaar gebou word. Elke projek gaan, onder andere, sonpanele, geboue, elektriese infrastruktuur, en toeganspaaie bestaan.

Elke sonkragprojek vereis dat 'n Bestekopname and Omgewingsimpakevalueringsproses onderneem word. Aparte Basiese evalueringsprosesse sal ook gedoen word vir die voorgestelde 132 kV kraglyne. Die WNNR (CSIR) is aangestel deur Scatec Solar 163 (Pty) Ltd om die evalueringsprosesse uit te voer. Die prosesse word benodig omdat die volgende gelyste aktiwiteite van toepassing is op die projekte:

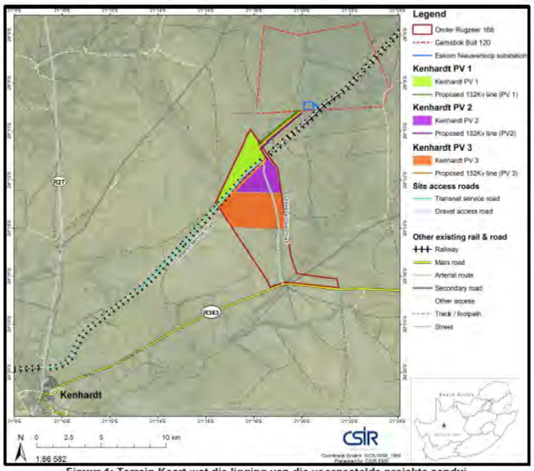
Proses	Staatskennisgewing	Gelyste aktiwiteit nommer
Basiese evaluering	GN R983 - 8 Desember 2014	Aktiwiteit 11 (i)
Bestekopname en Omgewingsimpakevaluering	GN R983 - 8 Desember 2014	Aktiwiteit 9 (i) and (ii); Aktiwiteit 12 (x) and (xii); Aktiwiteit 19 (i); Aktiwiteit 24 (ii) and Aktiwiteit 28 (ii)
	GN R984 - 8 Desember 2014	Aktiwiteit 1 and Aktiwiteit 15.

Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word and dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en sal na verwys word in die volgende formaat: Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line. Aparte verslae sal ook vir elke projek saamgestel en uitgestuur word.

Om te verseker dat u vir die projekte as 'n Belangstellende en Geaffekteerde Party (B&GP) geregistreer word of om enige kwessie uit te lig wat u met die projekte het, word u vriendelik versoek om te registreer vir die projekte en u kommentaar aan WNNR se verteenwoordiger (inligting hieronder) te stuur. Verdere inligting sal ook deur die loop van die projek op die projek se webtuiste beskikbaar wees: http://www.csir.co.za/eia/ScatecSolarPV/.

'n Dokument wat verdere inligting oor die projek verskaf is vir 30 dae beskikbaar vir besigtiging en kommentaar **(03 Augustus 2015 - 04 September 2015).**

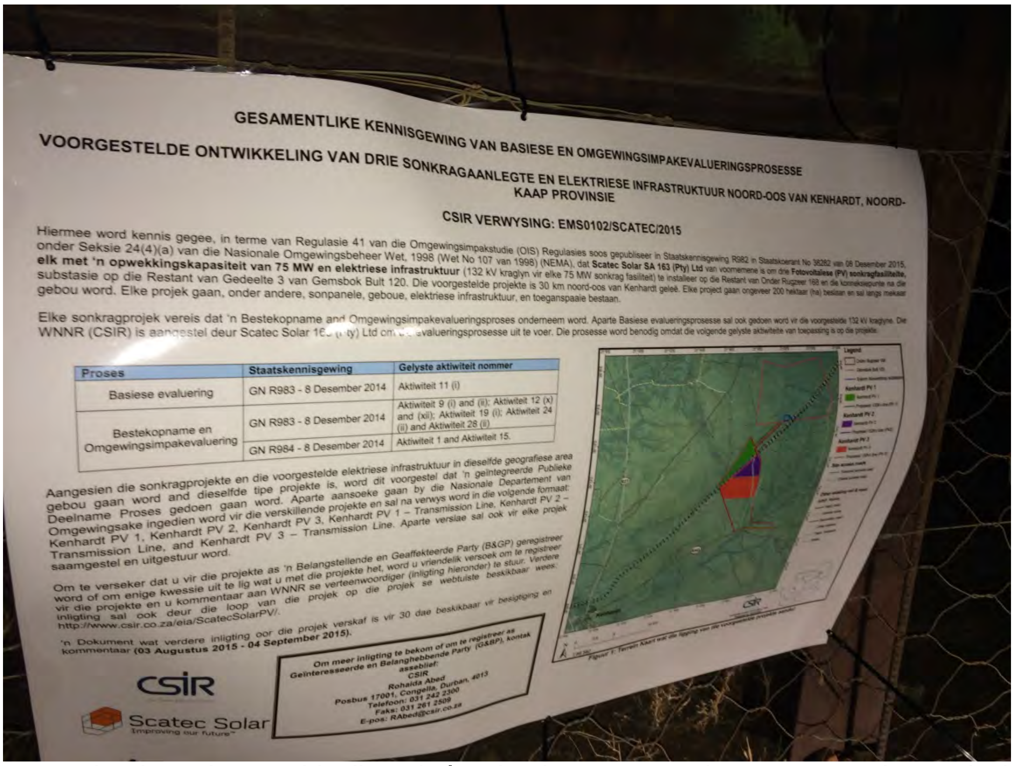
Om meer inligting te bekom of om te registreer as Geïnteresseerde en Belanghebbende Party (G&BP), kontak asseblief:
CSIR
Rohaida Abed
Posbus 17001, Congella, Durban, 4013
Telefoon: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za



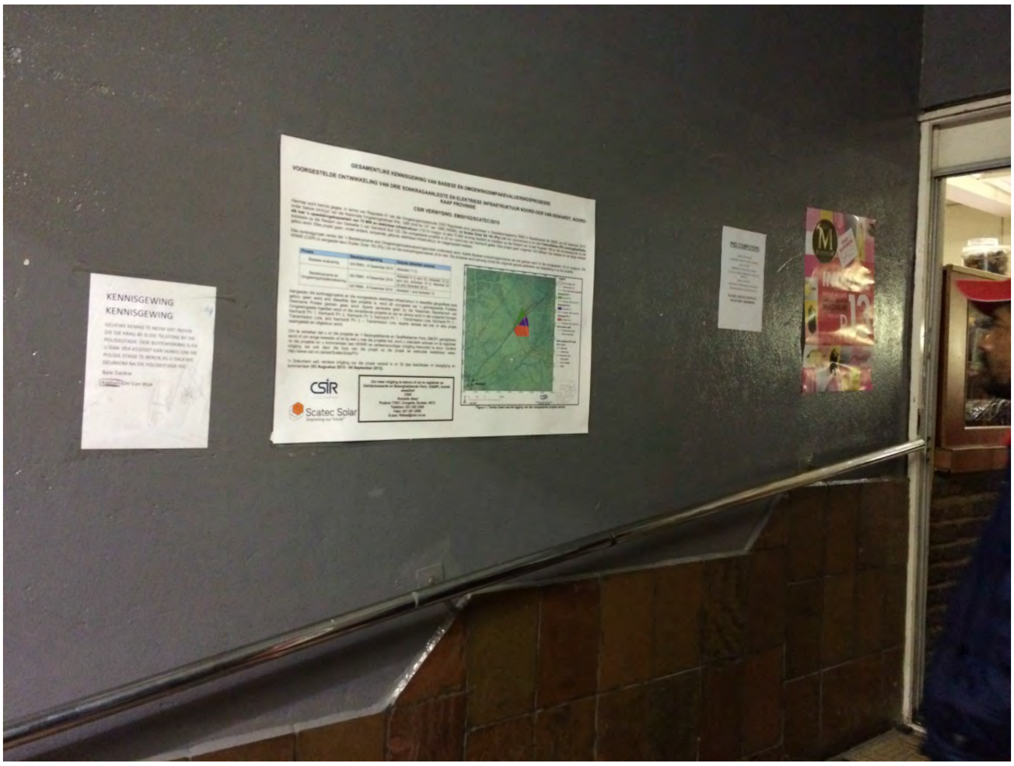
Figuur 1: Terrein Kaart wat die ligging van die voorgestelde projekte aandui

Proof of Placement of Site Notice Boards: 3 August 2015

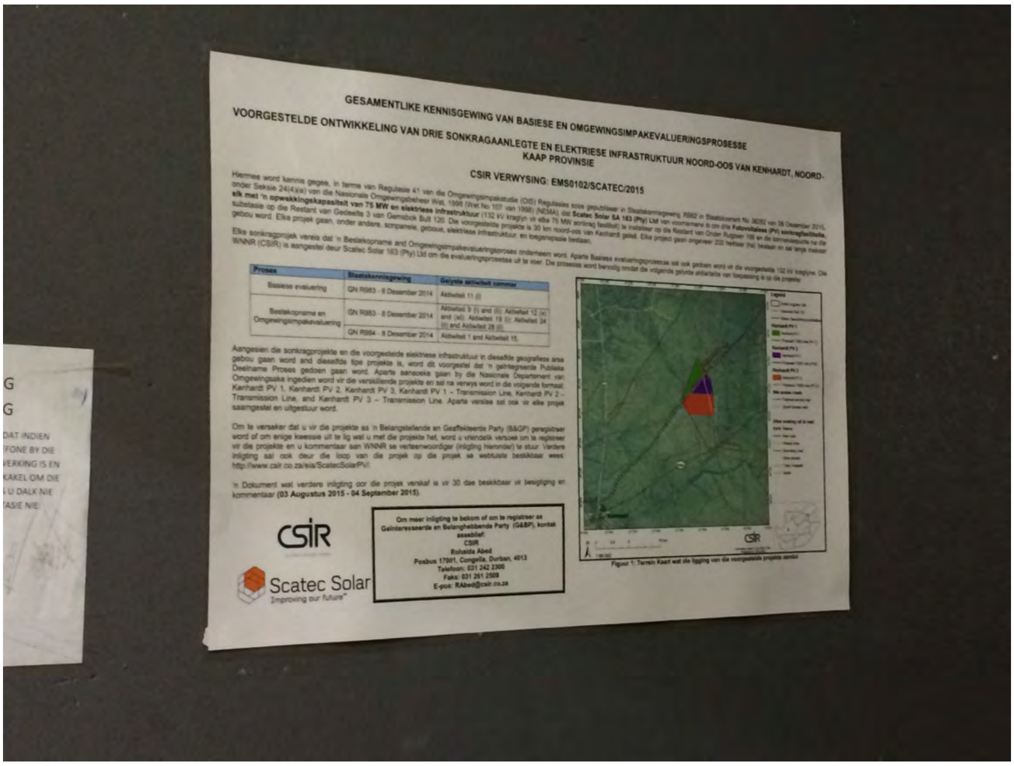
Site Notice Board (Afrikaans) placed at the entrance to the Transnet Service Road, which serves as one of the access routes to the (preferred and alternative) project sites.



Close up image of the Site Notice Board (Afrikaans) placed at the entrance to the Transnet Service Road, which serves as one of the access routes to the (preferred and alternative) project sites.

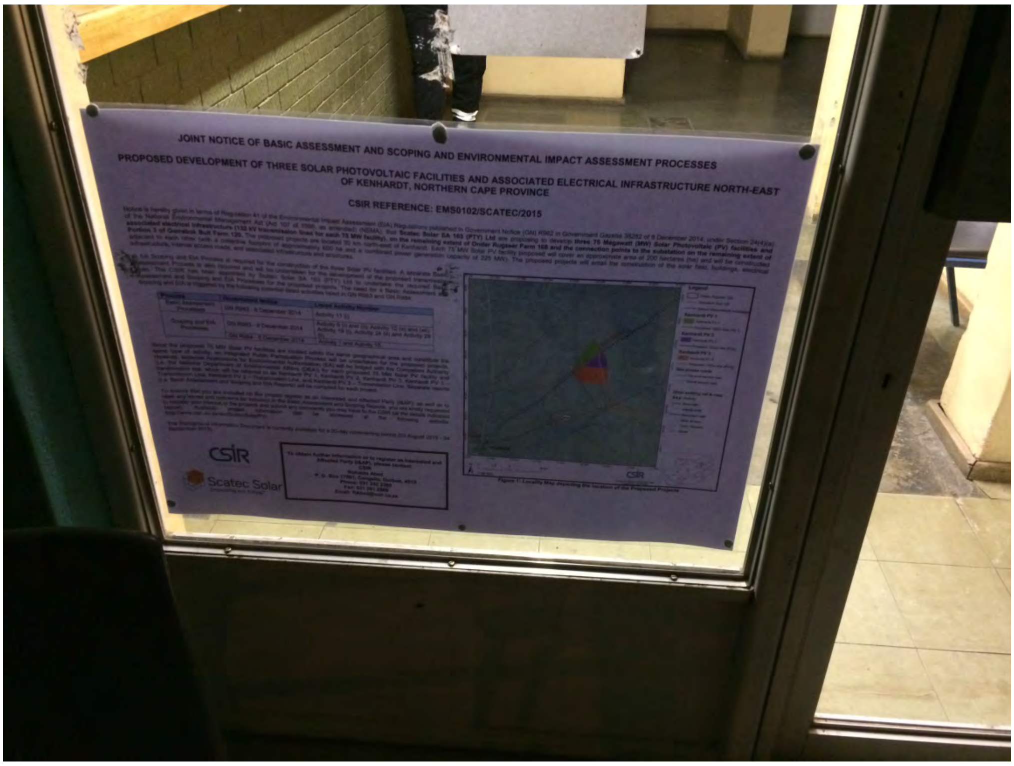


Site Notice Board (Afrikaans) placed at the Kenhardt Petrol Station.



Close up image of the Site Notice Board (Afrikaans) placed at the Kenhardt Petrol Station.

Site Notice Board (English) placed at the Kai !Garib Municipality Offices in Kenhardt.



Close up image of the Site Notice Board (English) placed at the Kai !Garib Municipality Offices in Kenhardt.

Proof of Placement of Site Notice Boards: 10 September 2015

Site Notice Board (English) placed at the entrance to the Unnamed Farm Road, which serves as one of the access routes to the (preferred and alternative) project sites.

Appendix E.2 Correspondence Sent to I&APs and Stakeholders (including Organs of State)

Copies of Correspondence Sent to I&APs and Organs of State Prior to the Release of the Basic Assessment Report for I&AP Review (i.e. during the Project Initiation Phase)

Note from the CSIR: As previously noted, an integrated PPP is being undertaken for the proposed BA Transmission Line Projects and the EIA Kenhardt PV 1, PV 2 and PV 3 Projects. For proof of correspondence sent to I&APs, Stakeholders and Organs of State during the Scoping Phase of the EIA Projects, kindly refer to Appendix E of the Kenhardt PV 1, PV 2 and PV 3 EIA Reports. This section (Appendix E.2) only includes proof of correspondence sent to I&APs during the Project Initiation Phase.

Letter 1: Notification of the BA (and Scoping and EIA) Processes

P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

30 July 2015

Dear Interested and Affected Party

RE: NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE (CSIR REFERENCE: EMS0102/SCATEC/2015)

Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar) (i.e. the Project Applicant), is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA EIA Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, the proposed projects require a full Scoping and EIA Process for the construction of the three Solar PV facilities. A separate Basic Assessment Process is also required and will be undertaken for the development of the proposed transmission lines. The CSIR has been appointed by Scatec Solar to undertake the requisite Basic Assessment and Scoping and EIA Processes for the proposed projects.

Scatec Solar is an integrated independent power producer that is focused on making solar energy a sustainable and affordable source on a global scale. Linked to enhancing its operations within South Africa, each 75 MW Solar PV facility proposed by Scatec Solar will cover an approximate area of 200 hectares (ha) and will be constructed adjacent to each other (with a collective footprint of approximately 600 ha and a combined power generation capacity of 225 MW). The proposed projects will entail the construction of the solar field, buildings, electrical infrastructure, internal access roads, and associated infrastructure and structures.

Since the proposed 75 MW Solar PV facilities are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process will be undertaken for the proposed projects. However, separate Applications for Environmental Authorisation will be lodged with the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed 75 MW Solar PV facility and transmission line, which will be referred to as Kenhardt PV 1, Kenhardt PV 2, Kenhardt PV 3, Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line. As such, separate reports (i.e. Basic Assessment and Scoping and EIA Reports) will be compiled for each project. The Project Applicant for each proposed 75 MW Solar PV facility and transmission line project will be various subsidiaries and divisions of Scatec Solar.

In line with this, notice is hereby given that Basic Assessment and Scoping and EIA Processes will be undertaken for each of the proposed 75 MW Solar PV facilities and transmission lines. In accordance with the 2014 NEMA EIA Regulations, you have been identified as an Interested and Affected Party (I&AP) and have been included on the project I&AP database.

Please find enclosed, a Background Information Document (including a Comment and Registration Form), which provides an overview of the proposed projects, as well as the potential listed activities that form part of the Basic Assessment and Scoping and EIA Processes and require Environmental Authorisation from the National DEA. The proposed project potentially triggers the following listed activities:

- Basic Assessment Process: GN R983: Activity 11 (i);
- Scoping and EIA Process: GN R983: Activity 9 (i) and (ii); Activity 12 (x) and (xii); Activity 19 (i); Activity 24 (ii) and Activity 28 (ii); and GN R984: Activity 1 and Activity 15.

A comment and registration period of **30 days** has been allocated for the review of the Background Information Document, for the submission of any issues or concerns, and for the registration of I&APs (which requires the completion of the enclosed Comment and Registration Form). Kindly complete the enclosed Comment and Registration Form and submit it to the CSIR at the contact details provided above by **31 August 2015**. All comments received during this 30 day period will be recorded and included in the Basic Assessment and Scoping Reports.

Kindly note that available project information can be accessed at the following website: http://www.csir.co.za/eia/ScatecSolarPV/

Should you have any queries or require additional information please do not hesitate to contact the undersigned using the contact details provided above.

Sincerely,

Surina Laurie Project Leader CSIR Environmental Management Services	Rohaida Abed Project Manager CSIR Environmental Management Services

Comment and Registration Form sent with Letter 1

BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE (KENHARDT PV 1, KENHARDT PV 2, KENHARDT PV 3, KENHARDT PV 1 – TRANSMISSION LINE, KENHARDT PV 2 – TRANSMISSION LINE, AND KENHARDT PV 3 – TRANSMISSION LINE)

CSIR REFERENCE: EMS0102/SCATEC/2015

Project Applicant: Scatec Solar SA 163 (PTY) Ltd

COMMENT AND REGISTRATION FORM

30 July 2015

Name:	**Telephone:**
Organisation:	**Fax:**
Designation:	**Email:**
Physical address:	**Postal address:**

Please indicate if you would like to register as an Interested and Affected Party (I&AP) for the proposed projects. Registration is required in order to receive further correspondence during the Basic Assessment and Scoping and EIA Processes. Please tick the appropriate box.	
YES	
NO	
Please indicate if you have any interest (business, financial, personal or other) in the proposed projects and/or the Applications for Environmental Authorisation:	

Please describe any issues or concerns you may have regarding the proposed projects, which you think should be considered during the Basic Assessment and Scoping and EIA Processes.

Please provide details of any other individuals or organisations that should be registered as I&APs:

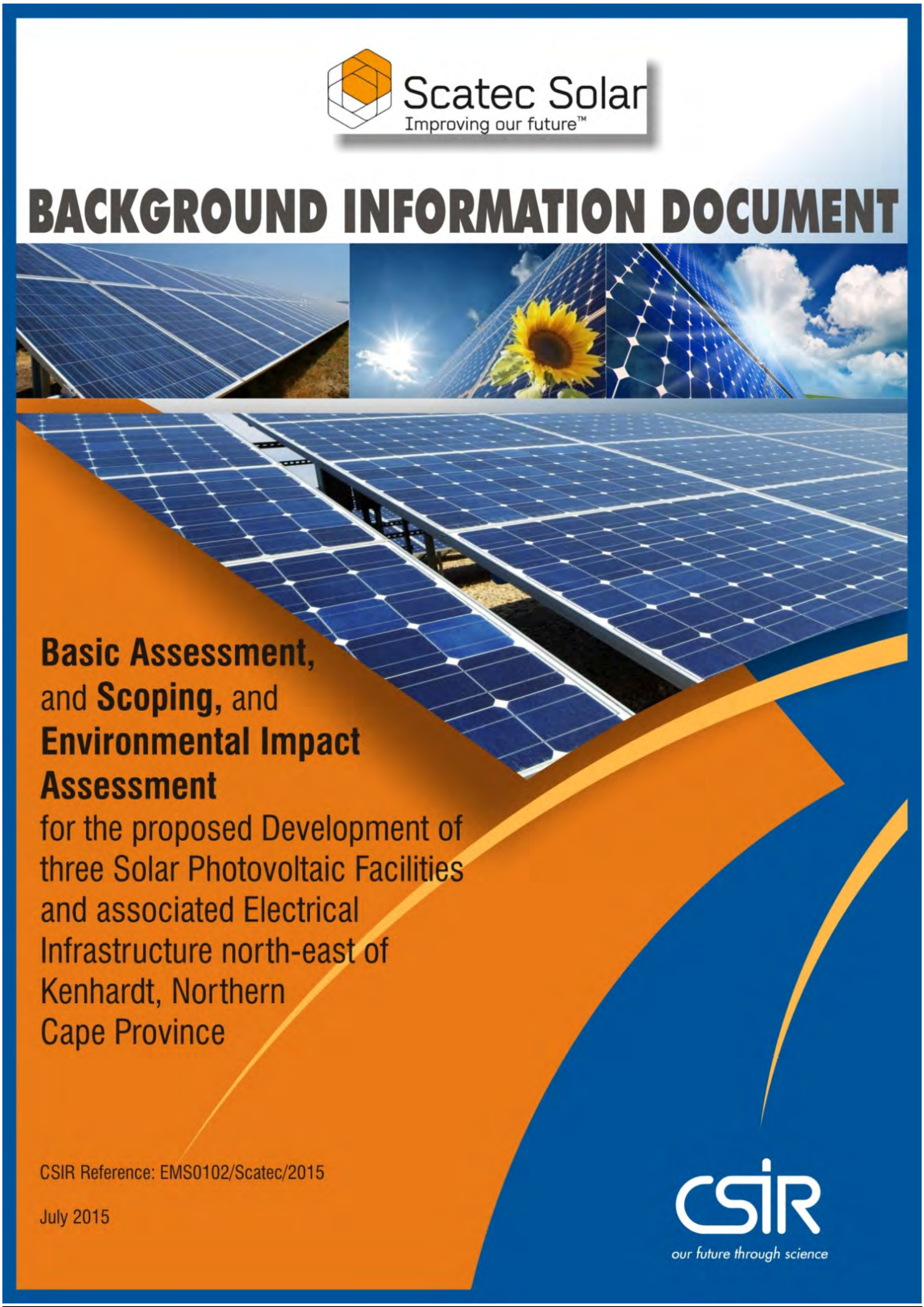
Please complete this Comment and Registration Form by **31 August 2015** and submit it to:

Rohaida Abed
CSIR
Postal Address: P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
E-mail: RAbed@csir.co.za
Project Website: http://www.csir.co.za/eia/ScatecSolarPV/

Scatec Solar
Improving our future™

CSIR

Background Information Document sent with Letter 1



Basic Assessment and Scoping and Environmental Impact Assessment for the proposed Development of three Solar Photovoltaic Facilities and associated Electrical Infrastructure north-east of Kenhardt, Northern Cape Province

1. INTRODUCTION TO THE PROPOSED PROJECT

Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar) is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province.

Scatec Solar is an integrated independent power producer that is focused on making solar energy a sustainable and affordable source on a global scale. Scatec Solar was founded in 2001 and holds its headquarters in Norway. The company develops, builds, owns and operates a number of solar power plants internationally and within Africa. The company is growing significantly and is currently planned to provide a combined 207 MW of power in the United States, Honduras and Jordan. In addition, Scatec Solar collectively delivers more than 219 MW of power in the Czech Republic, South Africa and Rwanda. Specifically linked to investment within South Africa, Scatec Solar has been involved in the following major solar energy projects:

- The Linde Solar Plant (40 MW) is located in the Northern Cape and is considered to be the first of the large-scale PV plants in production from the second round of the Renewable Energy Independent Power Producer Programme (REIPPP).
- The Dreunberg Solar Plant (75 MW) is the only REIPPP Solar PV Project to be located in the Eastern Cape.
- The Kalkbult Solar Plant (75 MW) is located in the Northern Cape and was the first REIPPP project to be connected to the grid and operational in South Africa.

Linked to enhancing its operations within South Africa, each 75 MW Solar PV facility proposed by Scatec Solar will cover an approximate area of 200 hectares (ha) and will be constructed adjacent to each other (with a collective footprint of approximately 600 ha and a combined power generation capacity of 225 MW). The proposed projects are located in proximity to the Eskom Nieuwehoop Substation (which is currently being constructed on the farm Gemsbok Bult (remaining extent of Portion 3 of Farm 120)). Each proposed 132 kV transmission line will link to the Eskom Nieuwehoop Substation.

Separate Applications for Environmental Authorisation (EA) will be lodged with the Competent Authority (i.e. the National Department of Environmental Affairs (DEA)) for each proposed 75 MW Solar PV facility and transmission line, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	Basic Assessment Processes: Proposed 132 kV Transmission Lines
• Kenhardt PV 1 • Kenhardt PV 2 • Kenhardt PV 3	• Kenhardt PV 1 – Transmission Line • Kenhardt PV 2 – Transmission Line • Kenhardt PV 3 – Transmission Line

BACKGROUND INFORMATION DOCUMENT

2

Basic Assessment and Scoping and Environmental Impact Assessment for the proposed Development of three Solar Photovoltaic Facilities and associated Electrical Infrastructure north-east of Kenhardt, Northern Cape Province

The Project Applicant for each of the above proposed projects will be various subsidiaries and divisions of Scatec Solar.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014, the proposed projects require a full Scoping and EIA Process for the construction of the three Solar PV facilities. A separate Basic Assessment Process is also required and will be undertaken for the development of the proposed transmission lines. The CSIR has been appointed to undertake the requisite Basic Assessment and EIA Process for the proposed projects.

Since the proposed 75 MW Solar PV facilities are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process (PPP) will be undertaken for the proposed projects. However, as mentioned above, separate Applications for EA will be lodged with the National DEA for each proposed project and as such, separate reports (i.e. Basic Assessment and Scoping and EIA Reports) will be compiled for each project.

2. NEED AND JUSTIFICATION FOR THE PROPOSED PROJECTS

At a national level, South Africa is facing serious electricity shortages as well as water scarcity. Linked to this, the proposed projects aim to supply additional electricity to the national grid. Furthermore, the urgent need to reduce greenhouse gas emissions and the importance of a secure and diversified energy supply has resulted in a global shift towards, and an increased focus on, the use of renewable energy technologies. In South Africa, national government has encouraged the utilisation of renewable energy through national policy and strategic planning. The objective is to expand electricity generation capacity in South Africa and promote the practice of sustainable development.

The Integrated Resource Plan for South Africa for the period 2010 to 2030 (hereinafter referred to as "IRP 2010") was released by government in 2010 and proposes to develop and secure 17 800 MW of renewable energy capacity by 2030 (including wind, solar and other energy sources). The IRP 2010 has set up a target of 3 725 MW of renewable energy to be produced by Independent Power Producers (IPPs) by 2016.

Linked to this, in 2011, the Department of Energy (DOE) launched the REIPPP and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of onshore wind, solar thermal, solar PV, biomass, biogas, landfill gas or small hydro projects. The two main evaluation criteria for compliant proposals are price and economic development, with other selection criteria including technical feasibility and grid connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders with the highest rankings (according to the aforementioned criteria) are appointed as "Preferred Bidders" by the DoE.

The proposed projects aim to contribute to the above strategic imperative.

3. WHAT DOES THIS DOCUMENT TELL YOU?

This Background Information Document (BID) provides you, as an Interested and Affected Party (I&AP), with:

- Background information on the proposed projects;
- A description of the Basic Assessment and EIA and Public Participation Processes that will be undertaken for the proposed projects; and
- Details on how to register your interest in the projects and receive further information.

As a registered I&AP, there will be opportunities for you to be involved in the Basic Assessment and Scoping and EIA Processes through receiving information, registering your interest on the project database, raising issues of concern and commenting on reports. The input from I&APs, together with the information and assessment provided by the Environmental Assessment Practitioner and relevant specialists, will assist the National DEA with their decision-making in terms of whether to grant or refuse EA for the proposed projects.

Basic Assessment and Scoping and Environmental Impact Assessment for the proposed Development of three Solar Photovoltaic Facilities and associated Electrical Infrastructure north-east of Kenhardt, Northern Cape Province

4. WHAT DO THE PROPOSED PROJECTS ENTAIL?

The locality map (Figure 1) included with this BID provides an overview of the proposed locality of the projects on the remaining extent of Onder Rugzeer Farm 168 and their connection points on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt in the Northern Cape. The proposed projects will take place on land that is owned by a third party, and as such consent will be obtained from the landowner accordingly. It is anticipated that the property on which the proposed projects will be constructed will be leased from the landowner.

Each Solar PV facility will consist of the components listed below. The components and their dimensions will be discussed within the relevant Basic Assessment and Scoping and EIA Reports produced for each facility:

Solar Field

- Solar Arrays
- Building infrastructure
  - Offices;
  - Operational control centre;
  - Warehouse/workshop;
  - Ablution facilities; and
  - Converter station.

Associated Infrastructure

- Electrical infrastructure (including transmission lines and substations);
- Access roads;
- Internal gravel roads;
- Fencing;
- Operation and Maintenance Area;
- Laydown Area;
- Stormwater channels; and
- Water pipelines.

5. ENVIRONMENTAL AUTHORISATION

In terms of the NEMA and the 2014 NEMA EIA Regulations published in GN R982, R983, R984 and R985 on 8 December 2014 in Government Gazette 38282, notice is hereby given that a Basic Assessment and full Scoping and EIA Process are required as the proposed projects include, amongst others, the following activities shown in Tables 1 and 2. Tables 1 and 2 indicate the applicable listed activities together with a summary of the listed activity in the context of the proposed project activities.

Table 1: Listed Activities for the Basic Assessment Processes – Proposed Transmission Lines

Relevant Notice and Activity Number	Description of the planned activity that relates to the applicable listed activity
GN R983: Activity 11 (i)	The proposed project will entail the construction and installation of a total of three overhead transmission lines with a capacity of 132 kV each. One transmission line will be constructed for each 75 MW Solar PV facility. The proposed project will take place on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation will take place on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt in the Northern Cape Province, outside an urban area.

BACKGROUND INFORMATION DOCUMENT

4

Table 2: Listed Activities for the Scoping and EIA Processes – Proposed 75 MW Solar PV Facilities

Relevant Notice and Activity Number	Description of the planned activity that relates to the applicable listed activity
GN R983: Activity 9 (i) and (ii)	The proposed project will entail the construction of stormwater channels and water pipelines. These structures may exceed 1000 m in length, may have an internal diameter of 0.36 m or more, and possibly a peak throughput of 120 l/s or more.
GN R983: Activity 12 (x) and (xii)	Each proposed 75 MW Solar PV facility will entail the construction of building infrastructure and structures (such as the solar field, offices, workshops, ablution facilities, on-site substations, laydown areas and security enclosures). The buildings and infrastructure are expected to exceed a footprint of 100 m^2 and some of which are likely to occur within 32 m of a watercourse.
GN R983: Activity 19 (i)	The proposed project **may** entail the excavation, removal and moving of more than 5 m^3 of soil, sand, pebbles or rock from the nearby watercourse. The proposed project **may** also entail the infilling of more than 5 m^3 of material into the nearby watercourse.
GN R983: Activity 24 (ii)	The proposed project will entail the construction of internal access roads. These roads could possibly be wider than 8 m (without a road reserve).
GN R983: Activity 28 (ii)	The proposed project will take place on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation will take place on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt in the Northern Cape. It is understood that the land is currently used for agricultural purposes. The proposed projects (i.e. commercial/industrial development) will cover a total combined footprint of approximately 600 ha.
GN R984: Activity 1	The proposed project will entail the construction of three 75 MW Solar PV facilities (i.e. facilities for the generation of electricity from a renewable resource). The proposed project will take place on the farm Onder Rugzeer 168 and the connection points to the substation will take place on the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt in the Northern Cape Province, outside an urban area.
GN R984: Activity 15	The total footprint of the proposed project is expected to be approximately 600 ha (i.e. 200 ha for each proposed 75 MW Solar PV facility). As a result, more than 20 ha or more of indigenous vegetation could possibly be removed for the construction of the proposed Solar PV facilities.

Note from the CSIR:
It is also important to note that a precautionary approach has been adopted by the CSIR when identifying listed activities, in that if there is any doubt at this stage of the project planning whether or not an activity is included in the project design, then the activity is listed. This list may be refined during the course of the Basic Assessment and Scoping and EIA Processes, and listed triggers may be removed or added as applicable.

The applicable listed activities require EA from the National DEA. The Basic Assessment and Scoping and EIA Process needs to show the Competent Authority, the National DEA, and the project proponent, Scatec Solar, the consequences their choices will have on the biophysical, social and economic environment. The steps in the Basic Assessment and Scoping and EIA Process are outlined below.

6. SCOPING AND EIA PROCESS

The Scoping and EIA Process being implemented can be summarised as follows:

Stage 1: Environmental Scoping:

This Scoping Process is being planned and conducted in a manner that is intended to provide sufficient information to enable the authorities to reach a decision regarding the scope of issues to be addressed in the EIA, and in particular to convey the range of specialist studies that will be included as part of the Environmental Impact Reporting Phase of the EIA, as well as the approach to these specialist studies. Within this context, the main objectives of this Scoping Process are to:

- Identify and inform a broad range of stakeholders about the proposed projects;
- Through a process of broad-based consultation with stakeholders, conduct an open, participatory and transparent Public Participation Process and facilitate the inclusion of any concerns and issues raised by stakeholders;
- Identify the relevant policies and legislation relevant to the proposed project;
- Provide the need and desirability of the proposed project, as well as the need and desirability of the project in the context of the preferred location;
- Identify and confirm the preferred activity, technology

alternative, and preferred site (i.e. clarify the scope and nature of the proposed activities and the alternatives being considered);
- Identify and document the key issues to be addressed in the subsequent EIA Phase;
- Confirm the level of assessment required, impact assessment methodology, and the specialist input; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Stage 2: EIA:

The purpose of this stage of the EIA Process is to:
- Undertake specialist investigations to address the issues of concern that have been raised and identified through the Scoping Process.
- Assess reasonable and feasible alternatives that form part of the proposed project (including the No Go Option);
- Determine the policy and legislative context of the proposed project;
- Describe the need and desirability of the proposed project, as well as the need and desirability of the project in the context of the preferred location;
- Identify the location of the proposed development footprint within the preferred site;
- Identify the most ideal location for the proposed activity within the preferred site;
- Identify, determine and assess the significance of the predicted impacts in line with the accepted Plan of Study for EIA;
- Recommend management actions to enhance positive benefits or avoid/minimise potential negative impacts (based on specialist input); and
- Identify residual risks that need to be managed and monitored.

The following specialist studies have been identified, at this stage, to form part of the EIA Phase of the proposed projects:
- Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna);
- Visual Impact Assessment;
- Heritage Impact Assessment (Archaeology and Cultural Landscape);
- Desktop Palaeontological Impact Assessment;
- Geohydrological Assessment;
- Soils and Agricultural Potential Assessment; and
- Social Impact Assessment

7. BASIC ASSESSMENT PROCESS

The objectives of the Basic Assessment Processes being implemented will be similar to that of the Scoping and EIA Processes as explained above. The proposed transmission lines will be assessed separately as part of a Basic Assessment Process in order to facilitate the administrative aspects surrounding the REIPPP evaluation process and potential transfer of the lines to Eskom. The abovementioned specialist studies undertaken for the Scoping and EIA Processes will feed into the Basic Assessment.

8. PUBLIC PARTICIPATION PROCESS

Public involvement forms an important component of the Basic Assessment and EIA Process by assisting in the identification of issues and alternatives to be evaluated. The following outlines the steps in the Public Participation Process which will be undertaken to run in parallel to the Basic Assessment and Scoping and EIA Processes.

Step 1: Notify Authorities and I&APs of the Basic Assessment and Scoping and EIA Processes (30 days)
The initial step entails providing notification to Authorities and potential I&APs of the proposed projects and the commencement of the Basic Assessment and Scoping and EIA Processes. An initial database of potential I&APs and Authorities will be compiled. Authorities and potential I&APs will be provided with a BID (i.e. this document), including a Comment and Registration Form and written notification. Advertisements will also be placed in a local newspaper during this phase. I&APs will be provided with a 30-day review period within which to raise any issues or concerns for inclusion in the Basic Assessment and Scoping Reports. During this review period, I&APs are required to register their interest on the project database in order to be included from the outset of the Basic Assessment and Scoping and EIA Processes.

Step 2: Preparation of Applications for EA, and Basic Assessment and Scoping Reports
Separate Applications for EA for each proposed 75 MW Solar PV facility and transmission line will be prepared (i.e. a total of six applications will be prepared). In addition, the Basic Assessment Reports will be compiled in line with Appendix 1 of the 2014 EIA Regulations (GN R982), and the Scoping Reports and Plan of Study for EIA will be compiled in line with Appendix 2 of the 2014 EIA Regulations (GN R982). All issues and concerns raised by the Authorities and I&APs during the review of the BID will be recorded and compiled into an Issues and Responses Trail for inclusion in the Basic Assessment and Scoping Reports.

Step 3: Submission of Applications for EA
Submit the Applications for EA for each proposed 75 MW Solar PV facility and transmission line (i.e. a total of six applications) to the National DEA for processing.

Step 4: Authority and I&AP Review of the Scoping Reports (30 days)
The Scoping Reports will be released to the public for a 30-day review period. All Authorities and registered I&APs on the project database will be notified in writing of the opportunity to review the Scoping Reports. A Comment and Registration Form will also be sent with the written notification to all registered stakeholders. Copies of the Scoping Reports will be placed on the project website (http://www.csir.co.za/eia/ScatecSolarPV/), and at the local public library.

Step 5: Submission of Scoping Reports to the National DEA for Decision-Making
The comments received from I&APs during the 30-day review of the Scoping Reports will be recorded into a comprehensive Issues and Responses Trail, and will be included in the Scoping Reports before submission to the National DEA. The Scoping Reports will thereafter be finalised and submitted to the National DEA for decision making. All registered I&APs on the project database will be notified of the submission of the Scoping Reports.

The National DEA will have 43 days (from receipt of the Scoping Reports) to either accept the Scoping Reports with or without conditions, or refuse EA.

Step 6: Undertake Specialist Studies and Preparation of Basic Assessment and EIA Reports (including the Environmental Management Programme (EMPr))
Once the National DEA accepts the Scoping Reports, the Impact Assessment Phase may commence.

During this phase, the specialist studies (as listed above) will be undertaken and the EIA Reports (including the EMPr) will be compiled in line with the 2014 EIA Regulations and the accepted Plan of Study for EIA.

During this phase, the Basic Assessment Reports (including the EMPr) will also be compiled in line with the 2014 EIA Regulations.

Step 7: Authority and I&AP Review of the Basic Assessment and EIA Reports and EMPr (30 days)
During this phase, the Basic Assessment and EIA Reports will be released to the public for a 30-day review period. All Authorities and registered I&APs on the project database will be notified in writing of the opportunity to review the EIA Reports. A Comment and Registration Form will also be sent with the written notification to all registered stakeholders. Copies of the Basic Assessment and EIA Reports will be placed on the project website (http://www.csir.co.za/eia/ScatecSolarPV/), and at the local public library.

Step 8: Submission of the Basic Assessment and EIA Reports to the National DEA for Decision-Making
A key component of the Basic Assessment and EIA Process is documenting and responding to the comments received from I&APs and Authorities. The comments received from I&APs during the 30-day review of the Basic Assessment and EIA Reports will be recorded into a comprehensive Comments and Responses Trail, and will be included in the EIA Reports before submission to the National DEA. The Comments and Responses Trail will indicate the nature of the comment, when and who raised the comment, as well as indicate how the comment received has been considered in the Basic Assessment and EIA Reports, in the project design or the EMPr. The Basic Assessment and EIA Reports will thereafter be finalised and submitted to the National DEA for decision making. All registered I&APs on the project database will be notified of the submission of the Basic Assessment and EIA Reports.

The National DEA will have 10 days (from receipt of the EIA Reports) to acknowledge the reports and will thereafter have 107 days to grant or refuse EA.

Step 9: Notification of Environmental Decision and Appeal Period
All registered stakeholders on the project database will be notified in writing of the environmental decision for the proposed projects, and will be informed of the opportunity to appeal.

HOW CAN YOU GET INVOLVED?

1. By responding to our invitation for your involvement advertised in local newspapers.
2. By mailing or faxing a Comment and Registration Form to the CSIR (contact details provided below).
3. By telephonically contacting the CSIR if you have a query, comment, or require further project information.
4. By reviewing the various reports within the stipulated comment periods provided.
5. By attending any feedback meetings, which may be held during the review period.

CSIR Contact Details:

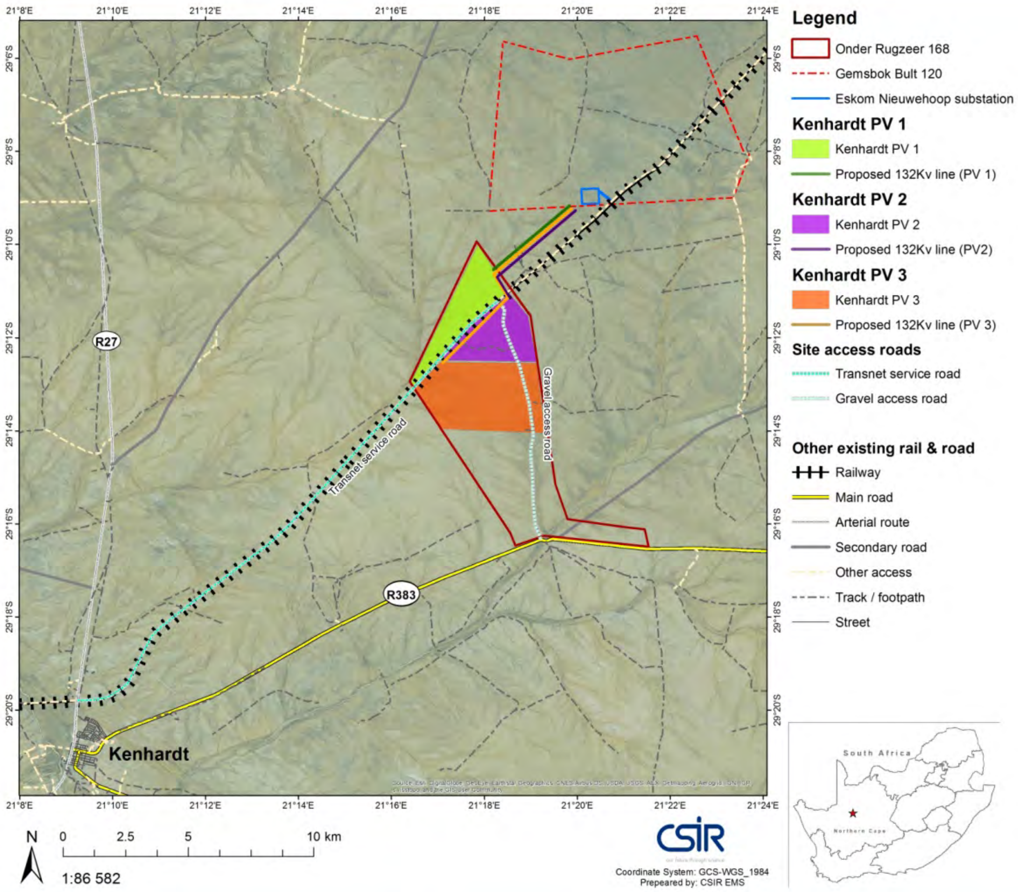
To register as an I&AP, please complete the Comment and Registration Form included with this BID and kindly return to:

Rohaida Abed
Email: RAbed@csir.co.za
Tel: 031 242 2300
Fax: 031 261 2509
Postal Address: P. O. Box 17001, Congella, Durban, 4013

CSIR
our future through science

Basic Assessment and Scoping and Environmental Impact Assessment for the proposed Development of three Solar Photovoltaic Facilities and associated Electrical Infrastructure north-east of Kenhardt, Northern Cape Province

Figure 1 – Locality Map for the Proposed Project



BACKGROUND INFORMATION DOCUMENT

8

Proof of Correspondence with I&APs (Registered Mail Receipts for Letter 1)

DALBRIDGE POST OFFICE
LIST OF REGISTERED MAIL FOR CSIR DURBAN – July 2015

SCATEC SOLAR - DISTRIBUTION LIST FOR Rohaida Abed – Unit: CAS

No.	Name	Surname	Company	Designation	Postal	Registered Number Customer Copy (for CSIR)
1	~~[illegible]~~ Mmatlala	~~[illegible]~~ Rabothata	National Department of Environmental Affairs: Department of Environmental Affairs: Integrated Environmental Authorisations	Competent Authority	Private Bag X447 Pretoria 0001	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 466 ZA CUSTOMER COPY 301028R
2	Muhammad	Essop	National Department of Environmental Affairs: Department of Environmental Affairs: Integrated Environmental Authorisations	Competent Authority	Private Bag X447 Pretoria 0002	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 506 ZA CUSTOMER COPY 301028R
3	A	Yaphi	Provincial Department of Environment and Nature Conservation: Northern Cape	Provincial Environmental Authority	Private Bag X6102 Kimberley 8300	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 510 ZA CUSTOMER COPY 301028R
4	M	Mathews	Provincial Department of Environment and Nature Conservation: Northern Cape	Provincial Environmental Authority	Private Bag X6102 Kimberley 8300	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 523 ZA CUSTOMER COPY 301028R
5	Mr Eric	Ngxanga	ZF Mgcawu District Municipality - Municipal Manager	Municipal Manager	Private Bag X6039 Upington 8800	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 537 ZA CUSTOMER COPY 301028R
6	H.T	Scheepers	!Kheis Municipality - Municipal Manager	Municipal Manager	Private Bag X2, Oranje Street 97, Groblershoop 8850	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 545 ZA CUSTOMER COPY 301028R

No.	Name	Surname	Company	Designation	Postal	Registered Number Customer Copy (for CSIR)
7	JG	Lategan	Kai ! Garib Municipality - Municipal Manager	Municipal Manager	Private Bag X6, Kakamas, 8870	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 554 ZA CUSTOMER COPY 301028R
8	Mashudu	Randwedzi	Department of Water and Sanitation	DWS	Private Bag X5912 Upington 8800	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 568 ZA CUSTOMER COPY 301028R
9	Melinda	Mei	Department of Water and Sanitation	DWS	Private Bag X5912 Upington 8800	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 712 571 ZA CUSTOMER COPY 301028R
10	Mandla	Ndzilili	Ministry of Environment and Nature Conservation		Private Bag X6120 Kimberley 8301	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 713 461 ZA CUSTOMER COPY 301028R
11	Mr Sibonelo	Mbanjwa	Provincial Department of Environment and Nature Conservation: Northern Cape		Private Bag X6120 Kimberley 8301	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 713 475 ZA CUSTOMER COPY 301028R
12	Ms Mashudu	Marubini	Department of Agriculture, Forestry and Fisheries - Delegate of the Minister (Act 70 of 1970)	Delegate of the Minister (Act 70 of 1970)	Private Bag X120, Pretoria 0001	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 713 458 ZA CUSTOMER COPY 301028R

DALBRIDGE 2015-07-30 9

No.	Name	Surname	Company	Designation	Postal	Registered Number Customer Copy (for CSIR)
13	Thoko	Buthelezi	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office		Private Bag X120, Pretoria 0001	REGISTERED LETTER RC 073 713 444 ZA CUSTOMER COPY
14	D	Nhlakad	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office		Private Bag X120, Pretoria 0001	REGISTERED LETTER RC 073 713 427 ZA CUSTOMER COPY
15	Anneliza	Collett	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office		Private Bag X120, Pretoria 0001	REGISTERED LETTER RC 073 713 435 ZA CUSTOMER COPY
16	Jacoline	Mans	Department of Agriculture, Forestry and Fisheries - Chief Forester: NFA Regulation		PO BOX 2782 Upingotn 8800	REGISTERED LETTER RC 073 713 360 ZA CUSTOMER COPY
17	Ali	Diteme	Agriculture, Land Reform & Rural Development		Private Bag X 5018, Kimberley, 8300	REGISTERED LETTER RC 073 713 373 ZA CUSTOMER COPY
18	Pieter	Buys	National Energy Regulator of South Africa (NERSA)		PO Box 40343, Arcadia, 0007	REGISTERED LETTER RC 073 713 387 ZA CUSTOMER COPY
19	IA	Bulane	Department of Public Works, Roads and Transport		PO Box 3132, Squarehill Park, Kimberley 8300	REGISTERED LETTER RC 073 713 400 ZA CUSTOMER COPY
20	Denver	Van Heerden	Department of Public Works, Roads and Transport		PO Box 3132, Squarehill Park, Kimberley 8300	REGISTERED LETTER RC 073 713 413 ZA CUSTOMER COPY
21	Rene	de kock	South African Roads Agency Limited (SANRAL) Northern Cape (Western Region)		Private Bag X19 Bellville, 7535	REGISTERED LETTER RC 073 713 395 ZA CUSTOMER COPY
22	Ms. M	Lepheane	Department of Labour		Private Bag X5012, Kimberley, 8300	REGISTERED LETTER RC 073 713 308 ZA CUSTOMER COPY
23	Mr. A.	Botes	Department of Social Development		Private Bag X 5042, Kimberley 8300	REGISTERED LETTER RC 073 713 311 ZA CUSTOMER COPY
24	Mr. Riaan	Warie	Northern Cape Economic Development Agency		227 Du Toitspan Road, Belgravia, Kimberley 8301	REGISTERED LETTER RC 073 713 325 ZA CUSTOMER COPY
25	Mr Andrew	Timothy	Directorate Heritage, Department - Sports, Arts and Culture	2015-07-30	P. O. Box 1930, Kimberley 8300	REGISTERED LETTER RC 073 713 339 ZA CUSTOMER COPY

9

No.	Name	Surname	Company	Designation	Postal	Registered Number Customer Copy (for CSIR)
29	Lizell	Stroh	**South African Civilian Aviation Authority**		Private Bag X73 Halfway House 1685	REGISTERED LETTER (with a domestic insurance option) RC 073 713 268 ZA CUSTOMER COPY 301028R
30	John	Geeringh	**ESKOM**	Commenting authority	P.O.Box 1091 Johannesburg 2157	REGISTERED LETTER (with a domestic insurance option) RC 073 713 299 ZA CUSTOMER COPY 301028R
31	Justine	Wyngaardt	**Eskom Holdings Limited: Eskom Distribution Western Operating Unit**			REGISTERED LETTER (with a domestic insurance option) RC 073 713 271 ZA CUSTOMER COPY 301028R
32	Sharon	Steyn	**Northern Cape Chamber of Commerce and Industry**		PO Box 350, Kimberley 8300	REGISTERED LETTER (with a domestic insurance option) RC 073 713 245 ZA CUSTOMER COPY 301028R
33	P.J.J	van Rensburg	**Agri Northern Cape**		PO Box 1094, Kimberly 8300	REGISTERED LETTER (with a domestic insurance option) RC 073 713 254 ZA CUSTOMER COPY 301028R
35	Adrian	Tiplady	**SKA SA**		17 Baker Street Rosebank Johannesburg South Africa 2196	REGISTERED LETTER (with a domestic insurance option) RC 073 713 237 ZA CUSTOMER COPY 301028R
37	The Director		**Department of Energy Nothern Cape**		Private Bag X6093 Kimberley, 8300	REGISTERED LETTER (with a domestic insurance option) RC 073 713 210 ZA CUSTOMER COPY 301028R
38	Simon	Gear	**Birdlife South Africa**		PO Box 515 Randburg, 2194	REGISTERED LETTER (with a domestic insurance option) RC 073 713 197 ZA CUSTOMER COPY 301028R

DALBRIDGE 2015-07-30 9

No.	Name	Surname	Company	Designation	Postal	Registered Number Customer Copy (for CSIR)
39	Lubabalo	Ntsolo	**C.A.P.E. co-ordination unit: Northern Cape**		Private Bag X7, Claremont, 7735	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 073 713 183 ZA CUSTOMER COPY 301028R
41	Dr. Howard	Hendricks	**South African National Parks (SANParks) - Snr GM: Policy & Governance Conservation Services Division**		PO Box 787, Pretoria, 0001	REGISTERED LETTER (with a domestic insurance option) RC 073 713 166 ZA CUSTOMER COPY 301028R
42	Rudolph	Grobler			PO Box 41, Keimos 8860	REGISTERED LETTER (with a domestic insurance option) RC 073 713 152 ZA CUSTOMER COPY 301028R
43	Ernest	Connan	**Ernest Connan Trust**		PO Box 290, Upington, 8800	REGISTERED LETTER (with a domestic insurance option) RC 073 713 149 ZA CUSTOMER COPY 301028R
44	Johan	Steenkamp	**JHJ Steenkamp Trust**		JHJ Steenkamp Trust PO Box 3267 Upington 8800	REGISTERED LETTER (with a domestic insurance option) RC 073 713 135 ZA CUSTOMER COPY 301028R
	Samantha	De la Fontaine	Northern Cape Department of Environment and Nature Conservation		Provincial Building 1st Floor Corner River & Nelson Mandela Rd Upington 8800	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC 089 995 411 ZA CUSTOMER COPY 301028R

DALBRIDGE 2015-07-30 9

Email 1 sent to all I&APs on 29 July 2015 (English and Afrikaans)

From:	Rohaida Abed
To:	Abed, Rohaida
BC	Clive.Stephenson@transnet.net; GeerinJH@eskom.co.za; *Gilbert.Nortier@transnet.net*; JacolineMa@daff.gov.za; Laurie, Surina; LeaskK@eskom.co.za; MashuduMa@daff.gov.za; Mayvyn.Bhana@transnet.net; MeiM@dwa.gov.za; Rabothata, MMatlala; ThokoB@daff.gov.za; WyngaaJO@eskom.co.za; aditeme@agri.ncape.gov.za; admin@grasslands.org.za; advocacy@birdlife.org.za; ameliastrauss2@gmail.com; andre.vanniekerk10@gmail.com; annelizac@nda.agric.za; atiplady@ska.ac.za; boozahunter@yahoo.com; claude@veroniva.co.za; ernest.connan@donco.co.za; fpr@bodr.gov.za; hendri@aheadtrading.co.za; howard.hendricks@sanparks.org; jhjs@webmail.co.za; karen@mulilo.com; klawrence@trpw.ncape.gov.za; kraaines@mweb.co.za; l.ntsolo@sanbi.org.za ; marcyroxnpc@gmail.com; messop@environment.gov.za; mitchell.hodgson@scatecsolar.com; mm@kaigarib.gov.za; mmathews@ncpg.gov.za; mndzilili@ncpg.gov.za; monica.lepheane@labour.gov.za; ncagric@worldonline.co.za; nhlakad@daff.gov.za; nyaphi@ncpg.gov.za; peter.buys@nersa.org.za; ratha.timothy@gmail.com; rwarie@ncpg.gov.za; sb@siyanda.gov.za; sdelafontaine@gmail.com; sharon@nocci.co.za; smbanjwa@ncpg.gov.za; straussdj@orientis.co.za; strohl@caa.co.za; teresascheepers@vodamail.co.za; waltjc@nra.co.za; wep@ewt.org.za
Date:	29/07/2015 16:01
Subject:	Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Attachments:	Scatec Solar BID_A4_8 PAGES_July2015_LOW RES.pdf; CSIR Letter 1 to I&APs_Scatec Solar NC.pdf; Comment and Response Form_Scatec Solar NC.pdf

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.

The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
- Kenhardt PV 1	- Kenhardt PV 1 – Transmission Line
- Kenhardt PV 2	- Kenhardt PV 2 – Transmission Line
- Kenhardt PV 3	- Kenhardt PV 3 – Transmission Line

The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.

Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available. In addition, the above-mentioned project information can be accessed at the following website:

http://www.csir.co.za/eia/ScatecSolarPV/

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

Bevoegde Owerheid: *Die Nasionale Departement van Omgewingsake*

WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

Hierdie e-pos korrespondensie se doel is om u in kennis te stel van die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte, wat 80 km suid van Upington en 30 km noord-oos van Kenhardt in die !Kheis munisipaliteit voorgestel word. Die Aansoeker vir die projek is Scatec Solar SA 163 (PTY) Ltd ("Scatec Solar"). Die WNNR is aangestel deur Scatec Solar om die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte uit te voer.

'n Bestek en Omgewingsimpakevalueringsproses word vereis vir elk van die drie 75 MW Fotovoltaïese (PV) sonkragfasiliteite wat op die plaas Restant van Onder Rugzeer 168 voorgestel word. Aparte Basiese evalueringsprosesse word ook vereis vir die voorgestelde 132 kV kraglyne en die konneksiepunte aan die Eskom Nieuwehoop Substasie (wat tans gebou word) op die plaas Restant van Gedeelte 3 van Gemsbok Bult 120.

Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

Bestek en Omgewingsimpakevalueringsproses: Voorgestelde drie 75 MW PV sonkragprojekte	Basiese evalueringsprosesse: Voorgestelde drie 132 kV kraglyne
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

Vind asseblief aangeheg die volgende:
- Beskrywing van die projek (word na verwys as die "BID")
- Brief aan die Belanghebbende en Geïnteresseerde Partye (B&GP'e)
- Kommentaar en Registrasievorm

*Die BID, wat dien as agtergrond van die projek, bevat 'n beskrwying van die projek, die gelyste aktiwiteite en is vir 30-dae beskikaar vir oorsig en kommentaar (**30 Julie 2015 - 31 Augustus 2015**). 'n Harde kopie van die bogenoemde dokumente is ook gestuur aan diegene vir wie ons posadresse het. Inligting van die projek is ook beskikbaar op die projekwebtuiste: **http://www.csir.co.za/eia/ScatecSolarPV/**.*

*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed
CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

Proof of Delivery of Email 1 sent to all I&APs on 29 July 2015

Message id: 55B8DCA1.FB3 . 179 : 65115
Subject: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Created By: RAbed@csir.co.za
Scheduled Date:
Creation Date: 29/07/2015 16:01
From: Rohaida Abed

Recipients:

Recipient	Action	Date & Time	Comment
agri.ncape.gov.za	Transferred	29/07/2015 16:01	
BC: aditeme@agri.ncape.gov.za (aditeme@agri.ncape.gov.za)	Delivered	29/07/2015 16:02	
aheadtrading.co.za	Transferred	29/07/2015 16:01	
BC: hendri@aheadtrading.co.za (hendri@aheadtrading.co.za)	Delivered	29/07/2015 16:02	
birdlife.org.za	Transferred	29/07/2015 16:01	
BC: advocacy@birdlife.org.za (advocacy@birdlife.org.za)	Delivered	29/07/2015 16:02	
bodr.gov.za	Transferred	29/07/2015 16:01	
BC: fpr@bodr.gov.za (fpr@bodr.gov.za)	Undeliverable	29/07/2015 16:02	
caa.co.za	Transferred	29/07/2015 16:01	
BC: strohl@caa.co.za (strohl@caa.co.za)	Delivered	29/07/2015 16:08	
daff.gov.za	Transferred	29/07/2015 16:01	
BC: JacolineMa@daff.gov.za (JacolineMa@daff.gov.za)			
BC: MashuduMa@daff.gov.za (MashuduMa@daff.gov.za)			
BC: nhlakad@daff.gov.za (nhlakad@daff.gov.za)			
BC: ThokoB@daff.gov.za (ThokoB@daff.gov.za)			
donco.co.za	Transferred	29/07/2015 16:01	
BC: ernest.connan@donco.co.za (ernest.connan@donco.co.za)	Delivered	29/07/2015 16:02	
dwa.gov.za	Transferred	29/07/2015 16:01	
BC: MeiM@dwa.gov.za (MeiM@dwa.gov.za)	Delivered	29/07/2015 16:02	
environment.gov.za	Transferred	29/07/2015 16:01	
BC: messop@environment.gov.za (messop@environment.gov.za)	Delivered	29/07/2015 16:03	
BC: Rabothata MMatlala (MRabothata@environment.gov.za)	Delivered	29/07/2015 16:03	
eskom.co.za	Transferred	29/07/2015 16:01	
BC: GeerinJH@eskom.co.za (GeerinJH@eskom.co.za)	Delivered	29/07/2015 16:02	
BC: LeaskK@eskom.co.za (LeaskK@eskom.co.za)	Delivered	29/07/2015 16:02	
BC: WyngaaJO@eskom.co.za (WyngaaJO@eskom.co.za)	Delivered	29/07/2015 16:02	
ewt.org.za	Transferred	29/07/2015 16:01	
BC: wep@ewt.org.za (wep@ewt.org.za)	Delivered	29/07/2015 16:11	2.0.0 recipients expanded
gmail.com	Transferred	29/07/2015 16:01	
BC: ameliastrauss2@gmail.com (ameliastrauss2@gmail.com)	Delivered	29/07/2015 16:03	
BC: andre.vanniekerk10@gmail.com (andre.vanniekerk10@gmail.com)	Delivered	29/07/2015 16:03	
BC: marcyroxnpc@gmail.com (marcyroxnpc@gmail.com)	Delivered	29/07/2015 16:03	
BC: ratha.timothy@gmail.com (ratha.timothy@gmail.com)	Delivered	29/07/2015 16:03	
BC: sdelafontaine@gmail.com (sdelafontaine@gmail.com)	Delivered	29/07/2015 16:03	
grasslands.org.za	Transferred	29/07/2015 16:01	
BC: admin@grasslands.org.za (admin@grasslands.org.za)	Delivered	29/07/2015 16:02	
kalgarib.gov.za	Transferred	29/07/2015 16:01	
BC: mm@kalgarib.gov.za (mm@kalgarib.gov.za)	Delivered	29/07/2015 16:03	
labour.gov.za	Transferred	29/07/2015 16:01	
BC: monica.lepheane@labour.gov.za (monica.lepheane@labour.gov.za)	Delivered	29/07/2015 16:03	
mullo.com	Transferred	29/07/2015 16:01	
BC: karen@mullo.com (karen@mullo.com)	Delivered	29/07/2015 16:03	
mweb.co.za	Transferred	29/07/2015 16:01	
BC: kraaines@mweb.co.za (kraaines@mweb.co.za)	Delivered	29/07/2015 16:03	
ncpg.gov.za	Transferred	29/07/2015 16:01	
BC: mmathews@ncpg.gov.za (mmathews@ncpg.gov.za)	Delivered	29/07/2015 16:03	
BC: mndzilli@ncpg.gov.za (mndzilli@ncpg.gov.za)	Delivered	29/07/2015 16:03	
BC: nyaphi@ncpg.gov.za (nyaphi@ncpg.gov.za)	Delivered	29/07/2015 16:03	

BC: rwarie@ncpg.gov.za (rwarie@ncpg.gov.za)	Delivered	29/07/2015 16:03	
BC: smbanjwa@ncpg.gov.za (smbanjwa@ncpg.gov.za)	Delivered	29/07/2015 16:03	
nda.agric.za	Transferred	29/07/2015 16:01	
BC: annelizac@nda.agric.za (annelizac@nda.agric.za)	Delivered	31/07/2015 21:50	
nersa.org.za	Transferred	29/07/2015 16:01	
BC: peter.buys@nersa.org.za (peter.buys@nersa.org.za)	Delivered	29/07/2015 16:09	
nocci.co.za	Transferred	29/07/2015 16:01	
BC: sharon@nocci.co.za (sharon@nocci.co.za)			
nra.co.za	Transferred	29/07/2015 16:01	
BC: waltjc@nra.co.za (waltjc@nra.co.za)	Delivered	29/07/2015 16:02	
orientis.co.za	Transferred	29/07/2015 16:01	
BC: straussdj@orientis.co.za (straussdj@orientis.co.za)	Delivered	29/07/2015 16:02	
POBOX1.DURBAN	Delivered	29/07/2015 16:01	
To: Rohaida Abed (RAbed@csir.co.za)	Read	29/07/2015 16:01	
POBOX1.STELLBOS	Delivered	29/07/2015 16:01	
BC: Surina Laurie (SLaurie@csir.co.za)	Third-Party Downloaded Read	29/07/2015 16:01 29/07/2015 16:02	
sanbi.org.za	Transferred	29/07/2015 16:01	
BC: l.ntsolo@sanbi.org.za (l.ntsolo@sanbi.org.za)	Undeliverable	29/07/2015 16:02	
sanparks.org	Transferred	29/07/2015 16:01	
BC: howard.hendricks@sanparks.org (howard.hendricks@sanparks.org)	Delivered	29/07/2015 16:12	
scatecsolar.com	Transferred	29/07/2015 16:01	
BC: mitchell.hodgson@scatecsolar.com (mitchell.hodgson@scatecsolar.com)	Delivered	29/07/2015 16:03	
siyanda.gov.za	Transferred	29/07/2015 16:01	
BC: sb@siyanda.gov.za (sb@siyanda.gov.za)	Undeliverable	03/08/2015 16:27	
ska.ac.za	Transferred	29/07/2015 16:01	
BC: atiplady@ska.ac.za (atiplady@ska.ac.za)	Delivered	29/07/2015 16:02	
transnet.net	Transferred	29/07/2015 16:01	
BC: Clive.Stephenson@transnet.net (Clive.Stephenson@transnet.net)	Delivered	29/07/2015 16:03	
BC: Gilbert.Norten@transnet.net (Gilbert.Norten@transnet.net)	Delivered	29/07/2015 16:03	
BC: Mayvyn.Bhana@transnet.net (Mayvyn.Bhana@transnet.net)	Delivered	29/07/2015 16:03	
trpw.ncape.gov.za	Transferred	29/07/2015 16:01	
BC: klawrence@trpw.ncape.gov.za (klawrence@trpw.ncape.gov.za)	Undeliverable	29/07/2015 16:02	
veroniva.co.za	Transferred	29/07/2015 16:01	
BC: claude@veroniva.co.za (claude@veroniva.co.za)	Delivered	29/07/2015 16:03	
vodamail.co.za	Transferred	29/07/2015 16:01	
BC: teresascheepers@vodamail.co.za (teresascheepers@vodamail.co.za)	Delivered	29/07/2015 16:19	2.0.0 recipients expanded
webmail.co.za	Transferred	29/07/2015 16:01	
BC: jhjs@webmail.co.za (jhjs@webmail.co.za)	Transferred	29/07/2015 16:30	2.0.0 message relayed
worldonline.co.za	Transferred	29/07/2015 16:01	
BC: ncagric@worldonline.co.za (ncagric@worldonline.co.za)	Delivered	29/07/2015 16:02	
yahoo.com	Transferred	29/07/2015 16:01	
BC: boozahunter@yahoo.com (boozahunter@yahoo.com)	Delivered	29/07/2015 16:03	

Post Offices

Post Office	Delivered	Route
agri.ncape.gov.za		agri.ncape.gov.za
aheadtrading.co.za		aheadtrading.co.za
birdlife.org.za		birdlife.org.za
bodr.gov.za		bodr.gov.za
caa.co.za		caa.co.za
daff.gov.za		daff.gov.za
donco.co.za		donco.co.za
dwa.gov.za		dwa.gov.za
environment.gov.za		environment.gov.za

eskom.co.za		eskom.co.za
ewt.org.za		ewt.org.za
gmail.com		gmail.com
grasslands.org.za		grasslands.org.za
kaigarib.gov.za		kaigarib.gov.za
labour.gov.za		labour.gov.za
mullo.com		mullo.com
mweb.co.za		mweb.co.za
ncpg.gov.za		ncpg.gov.za
nda.agric.za		nda.agric.za
nersa.org.za		nersa.org.za
nocci.co.za		nocci.co.za
nra.co.za		nra.co.za
orientis.co.za		orientis.co.za
POBOX1.DURBAN	29/07/2015 16:01	csir.co.za
POBOX1.STELLBOS	29/07/2015 16:01	csir.co.za
sanbi.org.za		sanbi.org.za
sanparks.org		sanparks.org
scatecsolar.com		scatecsolar.com
siyanda.gov.za		siyanda.gov.za
ska.ac.za		ska.ac.za
transnet.net		transnet.net
trpw.ncape.gov.za		trpw.ncape.gov.za
veroniva.co.za		veroniva.co.za
vodamail.co.za		vodamail.co.za
webmail.co.za		webmail.co.za
worldonline.co.za		worldonline.co.za
yahoo.com		yahoo.com

Files

File	Size	Date & Time
Comment and Response Form_Scatec Solar NC.pdf	86206	28/07/2015 15:14
CSIR Letter 1 to I&APs_Scatec Solar NC.pdf	123630	28/07/2015 15:15
MESSAGE	13601	29/07/2015 16:01
Scatec Solar BID_A4_8 PAGES_July2015_LOW RES.pdf	751766	29/07/2015 08:56
TEXT.htm	35806	29/07/2015 16:01

Options

Auto Delete:	No
Concealed Subject:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply requested by	None
Security:	Standard
To Be Delivered:	Immediate

Record Id

Record Id:	55B8F8C1.DURBAN.POBOX1.100.1356D37.1.C449.1
Common Record Id:	55B8F8C1.DURBAN.POBOX1.200.20000B3.1.30CBD.1

Response and Follow-up Emails sent to I&APs and Stakeholders during the 30-day review of the BID

From: Rohaida Abed
To: (UPN), Mei Melinda
CC: Shaun, Cloete
Date: 05/08/2015 08:48
Subject: Re: Hard Copies: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Melinda

Thank you for your email. Hard copies of the BID, Comment Form and Letter 1 has been sent to the following address via registered mail on 30 July 2015:

Department Of Water and Sanitation
Private Bag X 5912
Upington
8800

The documents were sent to the following representatives of DWS (please note the tracking numbers as well).

- Mashudu Randwedzi - Tracking Number: RC 073 712 568 ZA
- Melinda Mei - Tracking Number: RC 073 712 571 ZA

Please let me know once you receive the documents.

Thanks and kind regards,
Rohaida

>>> "Mei Melinda (UPN)" <MeiM@dws.gov.za> 04/08/2015 13:38 >>>

Good morning Mr. Abed
Your notice received with regards to Basic Assessment; Scoping and Environmental Impact Assessment for the Proposed Development of the three Solar Photovoltaic Facilities and Associated Electrical Infrastructure; North-East of Kenhardt; Northern Cape is of reference.

DWS requires you to forward hard copies of the above mentioned project to either of the following address:

Physical Address:
Department Of Water and Sanitation
Louisvale Road Upington
8801
OR

Postal Address:
Department Of Water and Sanitation
Private Bag X 5912
Upington
8800

Your co-operation and assistance is highly appreciated.

With kind regards,

Melinda Mei
Senior Administration Clerk
Water Quality Management: Lower Orange Water Management Area
Tel: 054 338 5836
Fax: 054 334 0205
Mail: MeiM@dwa.gov.za
From: Rohaida Abed [mailto:RAbed@csir.co.za]
Sent: 29 July 2015 04:01 PM
To: Rohaida Abed
Subject: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.

The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.

Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available.

In addition, the above-mentioned project information can be accessed at the following website: **http://www.csir.co.za/eia/ScatecSolarPV/**

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE
Bevoegde Owerheid: *Die Nasionale Departement van Omgewingsake*

WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

Hierdie e-pos korrespondensie se doel is om u in kennis te stel van die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte, wat 80 km suid van Upington en 30 km noord-oos van Kenhardt in die !Kheis munisipaliteit voorgestel word. Die Aansoeker vir die projek is Scatec Solar SA 163 (PTY) Ltd ("Scatec Solar"). Die WNNR is aangestel deur Scatec Solar om die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte uit te voer.

'n Bestek en Omgewingsimpakevalueringsproses word vereis vir elk van die drie 75 MW Fotovoltaïese (PV) sonkragfasiliteite wat op die plaas Restant van Onder Rugzeer 168 voorgestel word. Aparte Basiese evalueringsprosesse word ook vereis vir die voorgestelde 132 kV kraglyne en die konneksiepunte aan die Eskom Nieuwehoop Substasie (wat tans gebou word) op die plaas Restant van Gedeelte 3 van Gemsbok Bult 120.

Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

Bestek en Omgewingsimpakevalueringsproses: Voorgestelde drie 75 MW PV sonkragprojekte	**Basiese evalueringsprosesse: Voorgestelde drie 132 kV kraglyne**
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

Vind asseblief aangeheg die volgende:
- Beskrywing van die projek (word na verwys as die "BID")
- Brief aan die Belanghebbende en Geïnteresseerde Partye (B&GP'e)
- Kommentaar en Registrasievorm

*Die BID, wat dien as agtergrond van die projek, bevat 'n beskrwying van die projek, die gelyste aktiwiteite en is vir 30-dae beskikaar vir oorsig en kommentaar (**30 Julie 2015 - 31 Augustus 2015**). 'n Harde kopie van die bogenoemde dokumente is ook gestuur aan diegene vir wie ons posadresse het. Inligting van die projek is ook beskikbaar op die projekwebtuiste: **http://www.csir.co.za/eia/ScatecSolarPV/**.*

*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed

CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

From: Rohaida Abed
To: townsendmorgan029@gmail.com
Date: 26/08/2015 17:03
Subject: Fwd: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Attachments: Scatec Solar BID_A4_8 PAGES_July2015_LOW RES.pdf; CSIR Letter 1 to I&APs_Scatec Solar NC.pdf; Comment and Response Form_Scatec Solar NC.pdf

Good day

I understand that you contacted our offices for additional information on the proposed Solar PV projects in the Northern Cape. If you would like to register on the database as an I&AP, please complete the attached comment and response form and return it to me via email. Please also see attached a Background Information Document and letter.

Thanks and kind regards,
Rohaida

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

>>> Rohaida Abed 29/07/2015 16:01 >>>

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.

The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
- Kenhardt PV 1	- Kenhardt PV 1 – Transmission Line
- Kenhardt PV 2	- Kenhardt PV 2 – Transmission Line
- Kenhardt PV 3	- Kenhardt PV 3 – Transmission Line

The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.

Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available.

In addition, the above-mentioned project information can be accessed at the following website: **http://www.csir.co.za/eia/ScatecSolarPV/**

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,
Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

Bevoegde Owerheid: *Die Nasionale Departement van Omgewingsake*

WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

Hierdie e-pos korrespondensie se doel is om u in kennis te stel van die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte, wat 80 km suid van Upington en 30 km noord-oos van Kenhardt in die !Kheis munisipaliteit voorgestel word. Die Aansoeker vir die projek is Scatec Solar SA 163 (PTY) Ltd ("Scatec Solar"). Die WNNR is aangestel deur Scatec Solar om die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte uit te voer.

'n Bestek en Omgewingsimpakevalueringsproses word vereis vir elk van die drie 75 MW Fotovoltaïese (PV) sonkragfasiliteite wat op die plaas Restant van Onder Rugzeer 168 voorgestel word. Aparte Basiese evalueringsprosesse word ook vereis vir die voorgestelde 132 kV kraglyne en die konneksiepunte aan die Eskom Nieuwehoop Substasie (wat tans gebou word) op die plaas Restant van Gedeelte 3 van Gemsbok Bult 120.

Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

Bestek en Omgewingsimpakevalueringsproses: Voorgestelde drie 75 MW PV sonkragprojekte	**Basiese evalueringsprosesse: Voorgestelde drie 132 kV kraglyne**
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

Vind asseblief aangeheg die volgende:
- Beskrywing van die projek (word na verwys as die "BID")
- Brief aan die Belanghebbende en Geïnteresseerde Partye (B&GP'e)
- Kommentaar en Registrasievorm

*Die BID, wat dien as agtergrond van die projek, bevat 'n beskrwying van die projek, die gelyste aktiwiteite en is vir 30-dae beskikaar vir oorsig en kommentaar (**30 Julie 2015 - 31 Augustus 2015**). 'n Harde kopie van die bogenoemde dokumente is ook gestuur aan diegene vir wie ons posadresse het. Inligting van die projek is ook beskikbaar op die projekwebtuiste: **http://www.csir.co.za/eia/ScatecSolarPV/**.*

*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed

CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

From:	Rohaida Abed
To:	Miles, Melanie
Date:	27/08/2015 09:33
Subject:	Re: Proposed Development of Three Solar Photovoltaic Facilities and Associated Electrical Infrastructure
Attachments:	Scatec Solar BID_A4_8 PAGES_July2015_LOW RES.pdf; Comment and Response Form_Scatec Solar NC.pdf; CSIR Letter 1 to I&APs_Scatec Solar NC.pdf

Dear Melanie

As requested, please find attached a copy of the BID for the proposed project, as well as Letter 1 and Comment and Registration Form. Kindly note that the comment period closes on 31 August 2015. We will add you to the project database. Please note that all project information is available on the project website: http://www.csir.co.za/eia/ScatecSolarPV/

Thanks and kind regards,
Rohaida

>>> "Melanie Miles" <MelanieM@L2B.co.za> 03/08/2015 10:17 >>>

Good Morning,

Your company is currently conducting an Environmental Impact Assessment for the Proposed Development of Three Solar Photovoltaic Facilities and Associated Electrical Infrastructure North East of Kenhardt. Please could you forward me the BID for this application and register me as a Interested & Affected party?

Thanking you in anticipation of a favourable response.

Kindest Regards,

Melanie Miles
Content Researcher
MelanieM@L2B.co.za

Leads 2 Business (www.L2B.co.za)

0860836337 or 0860 TENDER
Fax: 033 343 5882

Appendix E.3 Comments and Response Report

Note from the CSIR: As previously noted, an integrated PPP is being undertaken for the proposed BA Transmission Line Projects and the EIA Kenhardt PV 1, PV 2 and PV 3 Projects. However, for the purpose of completeness, the comments noted in this section (Appendix E.3 of the BA Report), includes those that were raised by I&APs during the review of the Scoping Reports for the Kenhardt PV EIA Projects. Furthermore, some of the comments raised relate to the proposed transmission line, which is the subject of this BA Process. However, for the complete set of correspondence received from I&APs during the Scoping Phase (i.e. up until the submission of the Scoping Report to the DEA for decision-making), kindly refer to Appendix G of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.

APPENDIX E.3.1 - COMMENTS RECEIVED FROM I&APS DURING THE PROJECT INITIATION PHASE

1. EIA Process and Public Participation

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
1.1	Kindly register me as an I&AP for the proposed development with CSIR Reference: EMS0102/SCATEC/2015.	Samantha De la Fontaine, District Ecologist, Northern Cape Department of Environment and Nature Conservation	29 July 2015, Email	**CSIR:** Comment noted. Samantha De la Fontaine has been added to the project I&AP database. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs.
1.2	Attached please find the completed comment and registration form.	Karen Low, Environmental Manager, Mulilo Renewable Project Developments	29 July 2015, Email and Comment and Registration Form	**CSIR:** Comment noted. Mulilo Renewable Project Developments was identified as an I&AP and thus pre-included on the project database of I&APs and Organs of State at the outset of the BA Process. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs.
1.3	Your company is currently conducting an Environmental Impact Assessment for the Proposed Development of Three Solar Photovoltaic Facilities and Associated Electrical Infrastructure North East of Kenhardt. Please could you forward me the BID for this application and register me as a Interested & Affected party?	Melanie Miles, Content Researcher, Leads 2 Business	3 August 2015, Email	**CSIR:** Comment noted. Melanie Miles has been added to the project I&AP database. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs. A copy of the BID was also provided to Melanie Miles via email.
1.4	Your notice received with regards to Basic Assessment; Scoping and Environmental Impact Assessment for the Proposed Development of the three Solar Photovoltaic Facilities and Associated Electrical Infrastructure; North-East of Kenhardt; Northern Cape is of reference. DWS	Melinda Mei, Senior Administration Clerk, Water Quality Management: Lower	4 August 2015, Email	**CSIR:** Comment noted. The Department of Water and Sanitation was identified as a key stakeholder and thus pre-included on the project database of I&APs and Organs of State at the outset of the BA Process. Refer to Appendix E.5 of this BA Report for a copy of the current database of

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	requires you to forward hard copies of the above mentioned project to either of the following address: Physical Address: Department Of Water and Sanitation Louisvale Road Upington 8801 OR Postal Address: Department Of Water and Sanitation Private Bag X 5912 Upington 8800	Orange Water Management Area, Department of Water and Sanitation		I&APs. Hard copies of the BID, including Letter 1 and a Comment and Registration Form, were sent to Mashudu Randwedzi and Melinda Mei of the Department of Water and Sanitation via registered post on 30 July 2015, at the following postal address: Private Bag X5912; Upington; 8800. The BID, Letter 1 and the Comment and Registration Form were also sent to these representatives of the Department of Water and Sanitation via email on 29 July 2015. Refer to Appendix E.2 of this BA Report for the registered mailing receipts and email delivery.
1.5	I want to register for the facility because I support the project.	John de Bruin, Henrohn Security	25 August 2015, Email	**CSIR:** Comment noted. John de Bruin has been added to the project I&AP database. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs. A telephonic discussion was also held with John de Bruin on 21 August 2015.

2. Project Description and Impact on Existing Infrastructure

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
2.1	The following immediate concerns are: ▪ Possible glare from the solar panels which may influence the Train Drivers and staff travel on the TFR service road. Future concerns: ▪ During construction, planned access routes to the facilities that might influence TFR (Dust on High Voltage Electrical Equipment).	Gilbert Nortier, Depot Engineering Manager, Transnet Freight Rail	19 August 2015, Email	**CSIR and Scatec Solar:** ▪ Comment noted. The aspect of glare from the solar panels has been addressed in Chapter 2 of the EIA Report for Kenhardt PV 1, PV 2 and PV 3. ▪ Existing roads (such as a private Transnet Service Road or an unnamed farm road) will be used to gain access to the preferred site. The Transnet Service Road can be accessed from the R27 and the farm road can be

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	▪ The location of the High Voltage transmission lines. ▪ Level crossing requirements (High risk of accidents). ▪ During maintenance same issues as above.			accessed from the R383 Regional Road also via the R27 National Road. Discussions have been initiated and held between Transnet Freight Rail and the Project Applicant to discuss the requirements for use of the Transnet Service Road. Dust may be generated during the construction phase, however it is expected to be of a short-term duration and insignificant. However, mitigation measures relating to potential dust impacts have been included in the EMPr (Appendix G of the BA Report), as applicable. ▪ As noted in Section A of the BA Report, the proposed transmission line will extend between the proposed Solar Facility and the Eskom Nieuwehoop Substation. A transmission line will be constructed for each solar PV facility (i.e. Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line) within a single electrical infrastructure corridor. Appendix A of this BA Report includes the proposed routing and location of the transmission line and corridor. ▪ Recommendations and mitigation measures to reduce the risk of accidents as a result of the nearby ore railway line have been generally included in the EMPr (Appendix G of the BA Report). Transnet will be provided with an opportunity to comment on the BA (and EIA) Reports and EMPr during the 30-day review period. Any comments received will be considered (as applicable) prior to the submission to the Competent Authority, the DEA, for decision-making.
2.2	This letter is in response to your email request, to provide an assessment on the potential development of three solar PV electricity generation facilities in the Northern Cape Province and the risk they may pose on the Square Kilometre Array Project. A high level risk assessment has been conducted at the South African SKA Project Office to determine the	Dr. Adrian Tiplady Head: Strategy, SKA South Africa	2 September 2015, Letter via email	**CSIR and Scatec Solar:** ▪ Comment noted. ▪ Comment noted. Scatec Solar has complied with the requirements from the SKA Project Office. A technical EMI and RFI study has been commissioned by Scatec Solar. Scatec Solar appointed MESA Solutions (PTY) Ltd to undertake the Cumulative Topographical Analysis of

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	potential impact of such facilities on the Square Kilometre Array. This letter serves to confirm the outcomes of the risk assessment, and proposals for any future investigations associated with this facility. ▪ The location of the proposed facility has been provided in the background information document compiled by CSIR; ▪ The nearest SKA station has been identified as SKA Station ID 2362, at approximately 20 km from the proposed installation; ▪ Based on distance to the nearest SKA station, and the information currently available on the detailed design of the PV installations, these facilities poses a medium to high risk of detrimental impact on the SKA; ▪ Any transmitters that are to be established, or have been established, at the site for the purposes of voice and data communication will be required to comply with the relevant AGA regulations concerning the restriction of use of the radio frequency spectrum that applies in the area concerned; ▪ As a result of the medium to high risk associated with the PV facilities, The SKA project office recommends that further EMI and RFI detailed studies be conducted as significant mitigation measures would be required to lower the risk of detrimental impact to an acceptable level. The South African SKA Project Office would like to be kept informed of progress with this project, and reserves the right to further risk assessments at a later stage. This technical advice is provided by the South African SKA Project Office on the basis of the protection requirements of the SKA in South Africa, and does not constitute legal approval of the renewable energy projects in terms of the Astronomy Geographic			Proposed PV Projects in AGA Area, which is included in Appendix D.9 of this BA Report. The SKA Project Office will review the findings of this study and provide feedback during the 30-day review phase. ▪ The SKA Project Office has been included on the project database as a key stakeholder, since the commencement of the BA and EIA Processes. The SKA Project Office will be kept informed of project progress.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	Advantage Act, the Management Authority, and its regulations or declarations.			
2.3	Thank you for your letter dated 29 July 2015, send to Mr van der Walt. Please note that this solar development will not impact on a national road, therefore SANRAL has no jurisdiction and have no further comment with regard to the Solar Facility. Should any service, e.g. power line and/or water pipe will be situated within 60m from the national road or will cross the national road application should be made to SANRAL for approval in terms of the National Roads Act.	René de Kock, Statutory Control, SANRAL	4 September 2015, Email	**CSIR:** Comment noted. Based on the conceptual design, it is not anticipated that any service infrastructure will be located within 60 m of the national road, or crossing the national road. It is duly noted that if the aforementioned is required, application will be lodged with the SANRAL by the Applicant.

APPENDIX E.3.2 - COMMENTS RECEIVED FROM I&APS DURING THE SCOPING PHASE

1. Heritage Impacts

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
1.1	Letter In terms of Section of the National Heritage Resources Act (Act 25 of 1999) Attention: Scatec Solar SA 163 (PTY) Ltd Scatec Solar SA 163 (PTY) Ltd is proposing to develop three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities and associated electrical infrastructure (132 kV transmission lines for each 75 MW facility) on the remaining extent of Onder Rugzeer Farm 168 and the connection points to the substation on the remaining extent of Portion 3 of Gemsbok Bult Farm 120. A separate full Scoping and EIA Process will be undertaken for each proposed 75 MW Solar PV facility. A separate BA Process will be undertaken for each transmission line. An integrated Public Participation Process will be undertaken for the proposed projects. Separate Applications for Environmental Authorisation will be submitted for each proposed 75 MW Solar PV facility and transmission line. Separate BA, Scoping and EIA Reports will be compiled for each project. This specific application will entail the construction of the proposed 75 MW facility and will be referred to as Kenhardt PV1. The proposed project will take place approximately 80 km south of Upington and 30 km north-east of Kenhardt within the Northern Cape Province. The proposed project entails the construction of a solar photovoltaic (PV) facility and associated	Ragna Redelstorff, Heritage Officer SAHRA	22 September 2015, Letter via SAHRIS	**CSIR:** The BID and Scoping Report were uploaded to the SAHRIS on 25 September 2015 for comment. A Heritage Impact Assessment (Archaeology and Cultural Landscape) has been undertaken as part of the BA Process (i.e. prior to the commencement of construction of the proposed project (subject to the issuing of an EA)). This specialist assessment was conducted by Dr. Jayson Orton of ASHA Consulting (PTY) Ltd, who is a registered member of the Association of Southern African Professional Archaeologists. The Heritage Impact Assessment is included in Appendix D.3 of this BA Report, which is currently being made available to registered I&APs and the public for a 30-day comment period. The Heritage Impact Assessment (Archaeology and Cultural Landscape) has identified and assessed the significance of archaeological sites that are located within the proposed project area. The specialist assessment also indicates the relevant permit requirements, including if a permit is required from the Ngwao-Boswa Jwa Kapa Bokone (i.e. the Northern Cape Provincial Heritage Resources Authority) for the potential disturbance of any heritage features on site. The specialist study provides recommendations and suggests appropriate mitigation measures (if required), for the recording, sampling and dating of any archaeological sites that could potentially be destroyed as a result of the proposed project. As further noted in the BA Report, based on the low palaeontological sensitivity of the area, a Palaeontological Heritage Desktop Assessment has been undertaken as part of the BA Phase (i.e. prior to the commencement of construction of the proposed project (subject to the issuing of an EA)). This

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	infrastructure on the remaining extent of the Farm Onder Rugzeer No 168 and connection points to the substation on the remaining extent of Portion 3 of the Farm Gemsbok Bult No 120, located approximately 30 km northeast of Kenhardt, Northern Cape Province. This project is part of a larger project comprising a total of three solar facilities (called Kenhardt PV1, 2 and 3). In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required. The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists www.asapa.org.za) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place. The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate			specialist assessment was conducted by Dr. John Almond of Natura Viva cc. The Desktop Palaeontological Impact Assessment assesses the significance of potential impacts of the proposed project on palaeontological resources. The Palaeontological Heritage Desktop Assessment includes recommendations for inclusion in the EMPr (Appendix G of the BA Report). The desktop assessment is included in Appendix D.4 of this BA Report, which is currently being made available to registered I&APs and the public for a 30-day comment period, as well as uploaded to the SAHRIS. As noted in the Heritage Impact Assessment (Appendix D.3 of this BA Report), there are no buildings or structures within the proposed project footprint that need to be demolished for the establishment of the proposed project.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites. The PalaeoSensitivity Map on SAHRIS (*http://www.sahra.org.za/sahris/map/palaeo*) indicates moderate palaeontological sensitivity for the proposed area. Therefore, the SAHRA Archaeology, Palaeontology and Meteorites Unit requires a desktop Palaeontological Impact Assessment to be undertaken to assess whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed. Should you have any further queries, please contact the designated official using the case number quoted above in the case header.			

2. General, EIA Process, Scoping Report and Public Participation

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
2.1	Your notice received with regards to Basic Assessment; Scoping and Environmental Impact Assessment for the Proposed Development of the three Solar Photovoltaic Facilities and Associated Electrical Infrastructure; North-East of Kenhardt; Northern Cape is of reference. DWS requires you to forward hard copies of the above mentioned project to either of the following address: Physical Address: Department Of Water and Sanitation Louisvale Road Upington 8801 OR Postal Address: Department Of Water and Sanitation Private Bag X 5912 Upington 8800 Your co-operation and assistance is highly appreciated.	Melinda Mei, Senior Administration Clerk, Water Quality Management: Lower Orange Proto-CMA, Department of Water and Sanitation	29 September 2015, Email	**CSIR:** The Department of Water and Sanitation was identified as a key stakeholder and thus pre-included on the project database of I&APs and Organs of State at the outset of the BA and EIA Processes. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs. Hard copies and CD copies of the Scoping Report for the Kenhardt PV 1, Kenhardt PV 2, and Kenhardt PV 3 projects, including Letter 2, a Comment and Registration Form and Executive Summaries, were sent to Ms. Melinda Mei of the Department of Water and Sanitation via courier on 30 September 2015, at the following physical address: Louisvale Road, Upington, 8801. Letter 2, the Executive Summaries of the Scoping Reports, and the Comment and Registration Form were also sent to representatives of the Department of Water and Sanitation via email on 23 September 2015.
2.2	Regarding our telephonic conversation on the 06th October 2015, The Department of Environment and Nature Conservation is still waiting for the DEA Ref number of the following project Description: Scoping and Environmental Impact Assessment for the proposed Development of a 75MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province. Please do send the DEA Ref Number as we need to Acknowledge the document.	Luzane Tools-Bernado, EIA: Administration, Northern Cape Department of Nature Conservation	12 October 2015, Email	**CSIR:** A response was sent to Ms. Luzane Tools-Bernado on 14 October 2015 via email confirming that, at that point in time, the DEA Reference Numbers had not yet been received. The DEA Reference Numbers were only received from the DEA, together with an acknowledgement of receipt of the Applications for EA and Scoping Reports, on 26 October 2015 via email. The following reference numbers have been assigned to the proposed projects: ▪ Kenhardt PV 1 – DEA EIA Reference: 14/12/16/3/3/2/837; ▪ Kenhardt PV 2 – DEA EIA Reference: 14/12/16/3/3/2/838; and ▪ Kenhardt PV 3 – DEA EIA Reference: 14/12/16/3/3/2/836. A further response was sent to Ms. Luzane Tools-Bernado on 27

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
				October 2015 via email informing her of the receipt of the DEA Reference Numbers.
2.3	Can you please send me the registration form to register my company as an I&AP under your database and I'm asking Mr Abed that in future I want to be informed and attend the meetings for the developments you bring to us. For enquiry please send me emails, or contact me: 072 056 2833 or 071 984 6106.	Gloria Matlakala, !Kheis Municipality	26 October 2015, Email	**CSIR:** Ms. Gloria Matlakala has been included on the project database of I&APs as requested. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs.
2.4	Thank you very much to update me on the above mentioned correspondence.	Gloria Matlakala, !Kheis Municipality	30 October 2015, Email	**CSIR:** Comment noted.
2.5	The draft Scoping Report (SR) dated October 2015 and received by this Department on 02 October 2015, and the acknowledgement letter of the SR issued by this Department on 23 October 2015 refer. This Department has the following comments on the abovementioned application: Please ensure that all relevant listed activities are applied for, are specific and that it can be linked to the development activity or infrastructure as described in the project description.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.6	If the activities applied for in the application form differ from those mentioned in the final SR, an amended application form must be submitted. Please note that the Department's application form template has been amended and can be downloaded from the following link: http://www.environment.gov.za/documents/forms.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.7	Please ensure that all issues raised and comments received during the circulation of the SR from registered I&APs and organs of state which have jurisdiction (including this Department's Biodiversity Section) in respect of the proposed activity are adequately addressed in the Final SR.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
2.8	Proof of correspondence with the various stakeholders must be included in the Final SR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 and 44 of the EIA Regulations 2014.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.9	Specialist studies must be submitted to the Department with the Final SR.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.10	Comments from the SKA must be included in the Final SR.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.11	Please provide a description of any identified alternatives for the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed project activity or alternatives will have on the environment and on the community that may be affected by the activity as per Appendix 2 of GN R.982 of 2014. Alternatively, you should submit written proof of an investigation and motivation if no reasonable or feasible alternatives exist in terms of Appendix 2.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.12	In accordance with Appendix 2 of the EIA Regulations 2014, the details of – (i) the EAP who prepared the report; and (ii) the expertise of the EAP to carry out Scoping and Environmental Impact Assessment procedures; must be submitted.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects. It should be noted that Appendix H of this BA Report includes the Curriculum Vitae of the EAP, as well as a declaration of interest.
2.13	You are further reminded that the final SR to be submitted to this Department must comply with all the	Coenrad Agenbach, National DEA, Deputy	2 November 2015, Letter	**CSIR:** This comment is responded to in detail in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	requirements in terms of the scope of assessment and content of Scoping Reports in accordance with Appendix 2 and Regulation 21 (1) of the EIA Regulations, 2014.	Director: Strategic Infrastructure Developments	(dated 29 October 2015) sent via email	
2.14	Further note that in terms of Regulation 45 of the EIA Regulations, 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7).	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** This comment is responded to in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.15	You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	Coenrad Agenbach, National DEA, Deputy Director: Strategic Infrastructure Developments	2 November 2015, Letter (dated 29 October 2015) sent via email	**CSIR:** Comment noted.
2.16	Please find attached a copy of the comments by the Department of Water and Sanitation. The original will be sent to you via registered mail. Please feel free to contact this department should you have any queries.	Ms Chantèl Schwartz, Orange Proto- CMA, Department of Water and Sanitation	3 November 2015, Email	**CSIR:** Comment noted. This correspondence is included in Appendix G of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.17	The following proposed developments have reference: Kenhardt PV 1: CSIR/CAS/EMS/ER/2015/0007/B Kenhardt PV 2: CSIR/CAS/EMS/ER/2015/0008/B Kenhardt PV 3: CSIR/CAS/EMS/ER/2015/0009/B Please refer to attached comments.	Elsabe Swart, Deputy Director – Research and Development Support, Northern Cape Department of Environment and Nature Conservation	5 November 2015, Email	**CSIR:** Ms. Elsabe Swart has been included on the project database of I&APs. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs. The complete correspondence received from the Northern Cape Department of Environment and Nature Conservation is included in Appendix G of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.
2.18	Noted, thank you.	Jacoline Mans, Designation: Chief Forester (NFA Regulation), Directorate: Forestry Management (Other Regions) Northern Cape, DAFF	5 November 2015, Email	**CSIR:** This email was sent by Ms. Jacoline Mans of the DAFF, in response to the receipt of the comments issued by the Northern Cape Department of Environment and Nature Conservation. Ms. Elsabe Swart copied the comments from the Northern Cape Department of Environment and Nature Conservation to the DAFF.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
2.19	Point 3 - The proposed development do not form part of the Strategic Environmental Assessment (SEA) for Eskom's electricity grid upgrades and roll-outs as it falls outside one of the corridors identified by Eskom (i.e. the Western Corridor; one of the five identified corridors; refer to Figure 3). Comprehensive field surveys (within appropriate seasons) should thus be done for this specific area; it didn't form part of Eskom's assessment and the former project's surveys can thus not be used as baseline studies. Caption Figure 3 - Strategic Environmental Assessment (SEA) for ESKOM's electricity grid upgrades and roll-outs (Feb 2014) in relation to the proposed development (black arrow) near Kenhardt The proposed development falls outside one of the corridors identified by ESKOM (i.e. the Western Corridor; one of the five identified corridors), hence, it didn't form part of Eskom's assessment.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. Field surveys were undertaken by the relevant specialists. The only specialist study that did not entail a field visit is the Desktop Palaeontological Impact Assessment (Appendix D.4 of this BA Report), which as explained in the Response to Comment 1.1 in Section E.3.2 above; a desktop study is warranted based on the low palaeontological sensitivity of the area. The findings of the field surveys have been included in the relevant specialists studies (Appendix D) as part of the BA Reports (which are currently being released for a 30-day comment period). The relevance of the site visits are described in the relevant specialist studies. In addition, the proposed project area did not form part of the preliminary corridors identified as part of the EGI SEA. However based on the final corridors, the proposed project does fall within one of the corridors identified as part of the EGI SEA. It is also important to note that the proposed project area also falls within a REDZ, as discussed in the BA Report.
2.20	Point 8 - Once the proponent decides on a project name, the latter should be made explicit. If the project name should change during the EIA phase of the project, this should be thoroughly communicated will all I&APs. It has come to light that RE project names continuously change for various reasons and confusion is then caused by the interchangeable use of the various project names for a single project.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. If the project name changes during the BA or EIA Process, I&APs will be informed of the change accordingly. However, the CSIR Reference Number provided for all six projects will be unchanged during the EIA and BA processes.
2.21	Point 11 - Information regarding the probability of a site-visit to be conducted by officials from DEA / DAFF should be communicated with the DENC. This is to ensure cooperative governance, liaison and to enable a collaborative site-visit to be conducted.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature	5 November 2015, Letter sent via email	**CSIR:** Comment noted. The Department of Environment and Nature Conservation will be contacted if any site visits are to be conducted by the DEA or DAFF during the EIA and BA Phases.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
		Conservation		
2.22	Conclusion and recommendations: The proposed development is supported provided that the recommendations in this document are incorporated.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted.

3. Project Description and Impact on Existing Infrastructure

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
3.1	Please send us three different drawings as this is 3 separate applications.	Marina Lourens, Transnet Freight Rail	25 September 2015, Email	**CSIR:** This comment is responded to in Chapter 6 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects. Discussions have been held between the Applicant and Transnet Freight Rail to discuss the proposed project and the potential use of the Transnet Service Road.
3.2	Please find attached Eskom requirements for renewable infrastructure development at or near Eskom infrastructure.	John Geeringh (*Pr. Sci. Nat*), Senior Consultant Environmental Management, Eskom	29 September 2015, Email	**CSIR:** Comment noted. The following documents were received from Mr. John Geeringh via email on 29 September 2015: ▪ Eskom requirements for work in or near Eskom servitudes; and ▪ Renewable Energy Generation Plant Setbacks to Eskom Infrastructure. The abovementioned complete documents are included in Appendix G of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects, and have been sent to the Project Applicant for consideration in the design, where required and as applicable (i.e. in terms of work in or near Eskom servitudes and setback distances for Solar PV Facilities from power lines and substations). Some of Eskom's general requirements in terms of work in or near Eskom servitudes are addressed in the EMPr (Appendix G of the BA Report), such as waste management and

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
				ensuring that rubble or other material will not be dumped within the servitude. Discussions have been held between the Applicant and Eskom to discuss the proposed project and the connection point to the Eskom Nieuwehoop Substation.
3.3	This serves as a notice of receipt and confirms that your application has been captured in our electronic AgriLand tracking and management system. It is strongly recommended that you use the on-line AgriLand application facility in future. Detail of your application as captured: Application Type: Scoping Reports: Three Solar Photovoltaic Facilities Your reference number: Property Description: Onder Rugzeer 168 Dated: 25 September 2015 Please use the following reference number in all enquiries: AgriLand reference number: 2015_10_0050 Enquiries can be made to the above postal, fax or e-mail address.	HJ Buys, Director: Land Use and Soil Management, Department of Agriculture, Forestry and Fisheries (National)	6 October 2015, Letter sent via email	**CSIR**: Comment noted. The Department of Agriculture, Forestry and Fisheries on-line AgriLand application facility will be used in future, as required, and the assigned reference number will be used in all future enquiries submitted to the Department in relation to the proposed project (as required).
3.4	I would herewith like to register as an IAP for the above listed project. May I also request a locality plan please. I would like to know if there is a transport plan available for this project yet.	Nicole Abrahams, Environmental Coordinator, SANRAL – Western Region	14 October 2015, Email	**CSIR:** SANRAL was identified as a key stakeholder and thus pre-included on the project database of I&APs and Organs of State at the outset of the BA and EIA Processes. Ms. Nicole Abrahams has been included on the project database of I&APs as requested. Refer to Appendix E.5 of this BA Report for a copy of the current database of I&APs. The anticipated traffic loads on the R27, R383, unnamed farm road and Transnet Service Road are expected to be significantly less than the design capacity of these roads. With this in mind, the traffic volumes contributed by the construction and operation phases of the facility on the existing traffic volumes are considered acceptable. To this end, a Traffic Impact

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				Statement has been prepared by the EAP and is included in Appendix D.8 of this BA Report. Recommendations for traffic impacts have been included in the EMPr (Appendix G of the BA Report).
3.5	In summary, a detailed EMI and RFI survey would need to be undertaken to characterise the expected radio emissions from the facility. Once this has been conducted, radio frequency propagation modelling would need to be undertaken to determine the quantitative impact the proposed facility would have on the SKA. The relevant developer would need to contract EMI specialists to undertake these studies. I can suggest a group based in Pretoria, who have undertaken similar studies.	Dr. Adrian Tiplady Head: Strategy, SKA South Africa	29 October 2015, Email	**CSIR:** This comment was received in response to a follow up correspondence sent by the CSIR on 23 October 2015 and 27 October 2015 regarding the EMI and RFI specialist surveys required by the SKA Project Office. As noted above, Scatec Solar has complied with the requirements from the SKA Project Office. A technical EMI and RFI study has been commissioned by Scatec Solar. Scatec Solar appointed MESA Solutions (PTY) Ltd to undertake the Cumulative Topographical Analysis of Proposed PV Projects in AGA Area, which is included in Appendix D.9 of this BA Report. The SKA Project Office will review the findings of this study and provide feedback during the 30-day review period.
3.6	I will confirm tomorrow - however, I suspect our comments will be no different from what we have already submitted. Should we send no further comments, please treat our previous comments as still valid as we have not received any evidence of studies having been conducted. Unless I have missed something?	Dr. Adrian Tiplady Head: Strategy, SKA South Africa	29 October 2015, Email	**CSIR:** This comment was received in response to a further follow up correspondence sent by the CSIR on 29 October 2015.
3.7	I would like to confirm that our letter applies to all potential facilities of the same nature located at this site, and future requests for comments on this and other facilities. Once we have been able to assess and analyse appropriate measurement reports, we will issue a further comment.	Dr. Adrian Tiplady Head: Strategy, SKA South Africa	30 October 2015, Email	**CSIR:** Refer to the responses provided to Comment 2.2 in Section E.3.1 above, as well as Comments 3.5 and 3.6 in Section E.3.2 above.
3.8	Thank you for the locality plans. If any transport plan will be developed then you should forward that to me please.	Nicole Abrahams, Environmental Coordinator, SANRAL – Western Region	30 October 2015, Email	**CSIR:** Refer to the response provided to Comment 3.4 in Section E.3.2 above.

4. Impact on Aquatic/Freshwater Resources

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
4.1	The Department of Water and Sanitation (DWS) hereby acknowledges receipt of your scoping and environmental impact assessment for the proposed development of three Solar Photovoltaic Facilities (Referred to as Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province. The department has reviewed the document and the comments are as follows: ▪ Please note that no development should take place within 100 m horizontal distance from a water course or within 1:100 year flood line. Operation and storage of equipment within the riparian zone must be limited as far as possible. ▪ All sewage, grey and wash water, as well as any waste generated during the construction phase of the facilities will be collected, contained and disposed of at the permitted and/or licenced facilities of the Local Authority. Please note that proof of the agreement between the applicant and the concerned Local Authority must be submitted to this Department. ▪ Any spillage of any hazardous materials including diesel that may occur during construction and operation must be dealt with and reported immediately to this Department. ▪ Storm water must be diverted from the construction works and roads and must be managed in such a manner as to disperse runoff and to prevent the concentration of stormwater flow. Where necessary, works must be constructed to attenuate the velocity of the storm water discharge and to protect the banks of the watercourse. ▪ Please note that no taking of water or storing of	Ms Chantèl Schwartz, Orange Proto- CMA, Department of Water and Sanitation	3 November 2015, Email	**CSIR:** ▪ As noted in the response to Comment 2.1 in Section E.3.2 above, hard copies and CD copies of the Scoping Report for the Kenhardt PV 1, Kenhardt PV 2, and Kenhardt PV 3 projects, including Letter 2, a Comment and Registration Form and Executive Summaries, were sent to Ms. Melinda Mei of the Department of Water and Sanitation via courier on 30 September 2015. ▪ Comment noted. It is important to re-iterate that as far as possible, the proposed structures and infrastructure have been sited outside of the sensitive areas as identified by the specialists (Appendix D of this BA Report). In particular, the Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna) included a survey of the proposed corridor. The specialist highlighted sensitive environmental features (such as watercourses, and protected vegetation species etc.) that occur within the surveyed area. Refer to the Ecological Impact Assessment (included in Appendix D.1 of this BA Report and Chapter 7 of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects), which provides a detailed response to this comment relating to the construction of the proposed project in proximity to watercourses. The Ecological Impact Assessment states that the 100 m set back is noted, however given the fact that hydrogeomorphological indicators and vegetation structure have been used to delineate drainage features; a 100 m non-development area around such features is considered excessive. The specialist study further explains that a 100 m exclusion area around the drainage lines would incorporate extensive tracts of land which are in no way indicative of the concentrated surface hydrology. The use of the more conservative 32 m buffer is appropriate as this incorporates the identified vegetation indicators and provides a cordon around the erosive edges of such

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	water from the water resource shall be lawful without a water use authorisation. Due to the high number of renewable energy projects that are taking part in the Department of Energy (DOE) bidding process, this Department (DWS) will only process applications for water use authorisations received from developers who have attained preferred bidder status. Developers who wish to submit applications for water use authorisations may however proceed to do so, with the understanding that their applications will be processed as soon as we have confirmation of their status with the DOE. Attached to this letter is Annexure 1 that details information, which must be submitted as part of the application for water use authorisation.			hydrological features. The Ecological Impact Assessment has identified zones that should be subject to exclusion from any proposed development. These zones relate to the major drainage features that are associated with and proximal to the Wolfkopseloop drainage system. As mentioned above, a 32 m "buffer" or "setback" around the major drainage lines has been established, which is an indicative "norm" recommended by the various authorities. Minor drainage lines were also identified within the corridor, as noted in the Ecological Impact Assessment (Appendix D.1 of this BA Report). The "minor" drainage features are not considered to require exclusion from any land use change or the proposed development. The sensitive features identified in all relevant specialist studies, including the Ecological Impact Assessment (Appendix D.1 of this BA Report), are summarised and spatially indicated in a sensitivity map shown in Appendix A of this BA Report. ▪ Recommendations for the management of waste in order to reduce potential negative impacts on the surrounding environment have been included in the EMPr ((Appendix G of the BA Report)), as applicable. During the construction phases, all waste will be safely stored, and will be removed from site on a scheduled basis by an appointed contractor. The waste, where applicable, will be disposed at a licenced municipal landfill site. Confirmation from the municipality (in terms of landfill space and provision of services) will be sought during the EIA Phase. All waste generated during the phases of the proposed project will be correctly disposed at a registered waste disposal facility and proof of disposal will be obtained and retained on file, for auditing purposes. ▪ It is important to re-iterate that it is proposed to store less than 30 m^3 of dangerous goods (such as petrol and diesel) on site during the construction phase. Recommendations for

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				the temporary storage of petrol and diesel on site during the construction phase are provided in the EMPr (Appendix G of the BA Report). ▪ These recommendations for stormwater management will be considered by the Applicant during the design phase, as applicable and where possible. Recommendations for erosion control and stormwater management are included in the relevant specialist studies undertaken during the BA Phase, as well as the EMPr (Appendix G of the BA Report). ▪ The need for a Water Use Licence Application is discussed in the Ecological Impact Assessments for the Solar PV EIA Projects. The DWS will be consulted with during the BA Process to confirm the need for a WUL, as well as to seek further comment on the proposed project. It is understood that WUL Applications will only be processed by the DWS if preferred bidder status has been awarded to the Project Applicant. The requirements for WUL Applications have been provided to the Project Applicant for review and consideration.
4.2	Point 6 - It is advisable that RE facilities are not proposed for areas that favour local faunal diversity (e.g. endorheic pans, dry river washes, rocky outcrops, etc.). The Northern Cape is water scarce province, hence any form of sustained water, has the potential to stimulate vegetative growth and attract faunal species. Above-mentioned areas should be noted as sensitive areas during the EIA phase.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. As far as possible, the proposed structures and infrastructure have been sited outside of the sensitive areas identified by the specialists. In particular, the Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna) included a survey of the corridor available for development. The specialist then highlighted sensitive environmental features (such as watercourses, faunal and protected vegetation species etc.) that occur within the surveyed area. A suitable routing was thereafter selected for the siting and layout of the transmission line within the corridor assessed by the specialists. Refer to the Ecological Impact Assessment (included in Appendix D.1 of this BA Report), which also provides a detailed response to this comment.

5. Impact on Terrestrial Ecology (Flora and Fauna)

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
5.1	Point 1 - It should be noted that the areas where the proposed developments are to be constructed have been historically poorly surveyed, hence extrapolations from desktop studies for specialist's studies will give an incomplete representation of the biodiversity within the area (refer to Figure 2). Caption Figure 2- South African National Biodiversity Institute's (SANBI) PRECIS database (2013) indicating the number of plant specimens collected for specific Quarter Degree Grid Squares (QDGS). The proposed development falls within QDGS indicative of a very low species count (i.e. 1 – 50 species sampled per grid). Red squares denote zero specimens.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Refer to the Ecological Impact Assessment (included in Appendix D.1 of this BA Report), which provides a response to this comment. The Ecology Specialist notes that field reconnaissance was undertaken during assessment and that the PRECIS database is noted and confirmed.
5.2	Point 2 - Large *Aloe dichotoma* populations are known to occur in the region. The species is protected under the Northern Cape Nature Conservation Act (Act 9 of 2009) and at present there is a moratorium in place in the Northern Cape on the removal of *A. dichotoma* from the wild due to historic trade related pressures on populations (Proclamation No 968, 1 April 2005). Hence, trees may not be removed until the moratorium is lifted. All trees within the development or close proximity thereof should be mapped and information provided with the EIA documents.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** The Ecological Impact Assessment (Appendix D.1 of this BA Report), explains that Aloe consocies were noted within the electrical infrastructure corridor extending between the Kenhardt PV 1 project and the Nieuwehoop Substation. Buffer areas have been recommended in order to ensure that these species are excluded from the development areas. One single specimen of *Aloe dichotoma* was found within the Kenhardt PV 2 site, which is discussed further in the EIA Report for Kenhardt PV 2. The presence of these protected trees on site is included in the relevant sensitivity mapping.
5.3	Point 5 - The development is proposed for an area that falls within the Bushmanland Arid Grassland, one of the most extensive vegetation types within the Northern Cape (Mucina and Rutherford, 2006). This vegetation types is poorly conserved in formal protected areas and extensive areas have been historically overgrazed. As a result, large areas are currently degraded and drainage lines have been modified as a result of anthropogenic impacts. As a result of the extent of the area, impact would most	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. The Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna) has assessed the impact of the proposed project on the vegetation and aquatic ecology within the study area, as included in Appendix D.1 of this BA Report.

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	likely be on landscape connectivity as the site is in close proximity of drainage lines and wetlands (refer to Figure 5). Caption Figure 5 - Several landscape scale connections through drainage lines are evident within the area in question. The two proposed facilities i.e. the Three Solar PV (blue arrow) and Seven Solar PV (black arrow) are to be located in close proximity of drainage lines and wetlands.			
5.4	Point 7 - The disturbance of soil and indigenous vegetation can initiate the prolific growth of invasive alien plants (IAPs). The latter should be avoided by all means as it has detrimental impacts on indigenous faunal and floral species, as well as underground water resources. A proper IAP management plan must thus be factored into the EIA phase (as part of the EMP). Please consult the National Environment Management: Biodiversity Act's (Act No. 10 of 2004) Regulations on Alien and Invasive Species as promulgated on 1 August 2014.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. Alien plant species occurring within the study area will be managed in line with the EMPr (Appendix D.1 of this BA Report).
5.5	Point 9 - It is advised that the consultants for this project liaise with the Forestry branch of the Department of Agriculture, Forestry and Fisheries (DAFF) if trees protected under the National Forest Act (Act No. 84 of 1998) are to be impacted by the proposed development.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** The National Forest Act (Act 84 of 1998) allows for the protection of certain tree species. The Minister has the power to declare a particular tree to be a protected tree. According to Section 12 (1) d (read with Sections (5) 1 and 62 (2) (c)) of the National Forest Act (Act 84 of 1998), a licence is required to remove, cut, disturb, damage or destroy any of the listed protected trees. The most recent list of protected tree species was published in November 2014. The Department of Agriculture, Forestry and Fisheries (DAFF) is authorised to issue licences for any removal, cutting, disturbance, damage to or destruction of any protected trees. The protected trees that commonly occur in this region are *Acacia erioloba* and Boscia spp. *Boscia albitrunca*. The Ecological Impact Assessment established that none of the protected species in terms of the National Forest Act (Act 84 of 1998) were found on site during the survey. The Ecological Impact Assessment also notes that it is unlikely that an application for the "clearing of a natural

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				forest", as defined within the National Forest Act (Act 84 of 1998), will be required for the site. The DAFF will be consulted with if any protected trees under the National Forests Act (Act 84 of 1998) are found on site.
5.6	Point 10 - If the proposed PV developments triggers biodiversity offsets under the DAFF due to the number of protected trees to be removed, this should be communicated with the DENC (contact Ms E. Swart at elsabe.dtec@gmail.com).	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Comment noted. The Department of Environment and Nature Conservation will be contacted if any biodiversity offsets are required.
5.7	Point A. Specialist's studies: ▪ A thorough baseline survey of the grids 2921AB and 2921AD should be conducted during the EIA phase with at least the following biotic specialists: Ornithologist, Mammologist, Herpetologist (including amphibians) and Botanist. o Surveys for both the faunal and floral specialist reports should be done during the most optimum period for this area i.e. mid-summer to autumn, after the rains and during the growth season when maximum biota can be expected. o This should be done in order to give a good representation of the ecology in the area. o Due to the extreme variability in time and space of rainfall events, even a once-off survey within the rainy season will not provide a representative picture of the ecology of the area. o The number of plants of conservation concern (e.g. *Aloe dichotoma, Aloe spp., Trichocaulon spp., Hoodia spp., Boscia spp.* etc. under the Northern Cape Nature	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** As noted above, an Ecological Impact Assessment has been undertaken by qualified specialists. The Ecological Impact Assessment (Appendix D.1 of this BA Report) includes an assessment of Terrestrial Ecology, Aquatic Ecology and Avifauna. The specialist team includes a Registered Professional Natural Scientist (Ecologist), an Avian Specialist (ornithologist), a Freshwater Ecologist/aquatic specialist (Registered Professional Natural Scientist) and a GIS specialist. The specialist study will also make use of previous surveys undertaken for the adjacent Nieuwehoop Solar Development EIA project, which was recently undertaken by the CSIR. Refer to the Ecological Impact Assessment (included in Appendix D.1 of this BA Report), which also provides a response to this comment. Refer to the responses provided to Comments 5.1, 5.2, 5.3 and 5.5 in this section.

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	Conservation Act No. 9 of 2009 and National Environmental Management: Biodiversity Act No. 10 of 2004, etc.) that may be directly affected by the development must be estimated during the EIA phase. o Large *Aloe dichotoma* [NCNCA protected spp.] populations are known to occur in the region and any populations in close proximity to the planned facilities must be mapped.			
5.8	Point C - Ecology and landscape connectivity: ▪ The proponent should include in the EIA an environmental sensitivity map indicating environmental sensitive areas and features identified during the EIA process and map combining the final layout plan overlain on the environmental sensitivity map. This map should be adequate in size to determine the extent of the development and to identify all aspects adequately as indicated on the maps. No-Go areas should be clearly identified. ▪ The final layout of the proposed developments (all 3 phases) and its constituents should be designed in such a manner as to enhance ecological value to fauna and flora within the area and to avoid pressures associated with surrounding farmland i.e. natural areas for greening and designing to support ecological corridors and landscape connectivity are strongly encouraged. ▪ The actual footprint for all activities related to the whole project (all Solar Park facilities) must be calculated to determine the total natural vegetation land cover transformation and loss. The collective and residual impact of all developments will be assessed also during permit applications. If the collective impact is assessed early enough the developer can better manage his	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** ▪ As noted above, as far as possible, the proposed structures and infrastructure have been sited outside of the sensitive areas identified by the specialists as part of the BA Phase. The relevant specialists have identified sensitive areas, such as no-go areas (based on the desktop research and fieldwork) and maps highlighting these sensitive features (including the layout map) are included in Appendix A of this BA Report. ▪ Recommendations for rehabilitation and re-vegetation are provided in the Ecological Impact Assessment (Appendix G of this BA Report) and the EMPr (Appendix D.1 of this BA Report). ▪ Comment noted. The actual footprint of all three Scoping and EIA Projects and three BA projects, together with other similar proposed projects within 20 km of the proposed projects, are discussed in Section D and Appendix D of the BA Report. ▪ The Ecological Impact Assessment (Appendix D.1 of the BA Report)) includes a Faunal Assessment, which provides recommendations for potential negative impacts on fauna. ▪ Existing roads (such as a private Transnet Service Road or an unnamed farm road) will be used to gain access to the preferred site. The Transnet Service Road can be accessed from the R27 and the farm road can be accessed from the R383 Regional Road also via the R27 National Road. An

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	risks and costs as he/she would know in advance whether a biodiversity offset is triggered also under DENC. ▪ If electrification of the property as security measure is considered, possible electrocution damage to small mammals such as pangolin and tortoises should be taken into consideration. ▪ Existing roads must be used as far as possible. ▪ The EIA should indicate how the Social-Agricultural-Conservation dynamic will change in terms of land use. Will the properties on which the developments occur still be actively farmed or will they become dormant or effectively be converted into conservation land with minimal land use management. Will problem animal control still occur as in standard practice in small livestock farming? How will fencing infrastructure change around the properties which has a bearing on problem animal control, but also on wildlife movement and landscape connectivity. ▪ The application must also be reviewed in the context of cumulative impacts of all RE developments in the region.			internal gravel road will be constructed from either the Transnet Service Road or the unnamed farm road to the proposed project site. A gravel maintenance road will also be constructed below the proposed transmission line. Recommendations to mitigate potential negative impacts during road construction are provided in the EMPr (Appendix G of the BA Report). ▪ At this point it is understood, based on feedback from the landowner, that farming operations will continue on the Onder Rugzeer Farm 168, in the areas surrounding the proposed projects (should an EA be granted). The farmers will continue to implement problem animal control measures to ensure the sustainability of the farm. The impact of the proposed project on fauna (such as the construction of security fencing), has been assessed as part of the Ecological Impact Assessment for the Kenhardt PV 1, PV 2 and PV 3 EIA Projects (Chapter 7 of the EIA Report). Refer to the Ecological Impact Assessment (included in Chapter 7 of the EIA Reports), which also provides a response to this comment. ▪ Cumulative impacts have been assessed by identifying other solar energy projects and other applicable projects, such as construction and upgrade of electricity generation, transmission or distribution facilities in the local area (i.e. within 20 km of the proposed Kenhardt PV projects) that have been approved (i.e. positive EA has been issued) or the EIA is currently underway. The cumulative impacts are discussed in terms of each proposed Kenhardt PV and Transmission Line project as well. Each specialist study (Appendix D of the BA Report), as well as Section D of the BA Report includes a description of the cumulative impacts.

6. Impact on Avifauna

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
6.1	Point 4 - The proposed area does not fall within or close to an Important Bird Area (IBA), yet it does resort within a region of grids classified has being sensitive to Wind Farm facilities (refer to Figure 4). The darker the pendent the more sensitive the specific area is to Wind Farm facilities. Closer scrutiny regarding bird studies is thus a prerequisite due to possible impacts of birds on grid infrastructure as by implication local or regional migratory species that move around in response to surface water availability may be at risk from infrastructure collisions. It is also critical to point out that bird data for this area is based on the South African Bird Atlas Project 1 (SABAP1); data published in 1997 and recorded at a much broader scale than the SABAP2 data survey. Evidently, one can conclude that data for this area is outdated. This is specifically highlighted as a point of concern as each of the three PV projects will be separately linked to the Eskom grid through its own set of powerlines. Caption Figure 4: The three Solar PV facility (blue arrow) is proposed for an area classified as being sensitive to Wind Farm facilities. The darker the pendent the more sensitive the specific area is to Wind Farm facilities. Though the proposed development is not a Wind Farm facility it poses significant risks to birds through collision with grid infrastructure as each of the three facilities will have its own transmission lines connecting to the Eskom Nieuwehoop grid station north east of the proposed development. A seven Solar PV facility (black arrow) is proposed north east of the proposed three Solar PV facility, each also having its own transmission line.	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** Based on input provided by the Ecology Specialist, according to the SABAP2, an average of 182 bird species have been recorded in the greater study area. The study area does not fall within or in close proximity to any IBAs, with the closest being the Augrabies Falls National Park, located over 100 km to the north west of the study area (SDP, 2015). The impact of the proposed project on avifauna has been assessed in the Ecological Impact Assessment (Appendix D.1 of the BA Report). The Ecological Impact Assessment included a desktop and fieldwork component, and it notes electric fencing, rather than overhead powerlines, is considered to be greatest risk to particular species of avifauna. Furthermore, as explained in Section D of the BA Report, the proposed adjacent Mulilo Solar Development consisting of seven 75 MW PV Solar Energy Facilities, has been considered in terms of cumulative impacts during the EIA and BA Phases.
6.2	Section B - Bird Monitoring: ▪ Bird monitoring programmes should form part of	Elsabe Swart (Deputy Director –	5 November 2015, Letter	**CSIR:** Refer to the response provided to Comment 6.1 above. As noted above, an Avifaunal Assessment has been undertaken as

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	the Environmental Management Programme. o Monitoring of birds over a full seasonal period (12 months) is supported. o This will help to support a comparative lack of data on bird species in the study area from the SABAP database. o The information will also provide data on bird flight paths, risk of collision in specific areas, habitat niches etc. o An extensive monitoring area across the study area (i.e. non-resident species) is advised to comprehensively account for the movement of species. ▪ Appropriate bird deterrent devices must be placed around the facility to lessen the impact caused by collision of avifauna with the development infrastructure (Hernandez et al., 2014, Kagan et al., 2014). o All Power lines should be clearly marked with bird flappers / markers. o Bird marker devices must be put on the earth wires (live wires) of the power line as appose to the conductors [Bird Flight Divertor (BFD) as oppose to other bird marker devices are suggested (Anderson, 2001)]. ▪ Relevant Birdlife SA protocols should be consulted to conduct the EIA assessment for birds (Guide to Access Avian Data for Environmental Impact Assessment Reports, Retief et al. 2013; BirdLife South Africa / Endangered Wildlife Trust best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa, Jenkins et al. 2012). Although the Jenkins and others guideline refers specifically to Wind farms, many of the principles apply for a thorough assessment. The electricity grid infrastructure especially	Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	sent via email	part of the Ecological Impact Assessment (Appendix D.1 of the BA Report). The assessment aims to determine the impact of the proposed project on avifauna within the study area. Recommendations for the design of the transmission line are provided in the Ecological Impact Assessment (Appendix D.1 of the BA Report). Refer to the Ecological Impact Assessment, which also provides a response to this comment. It is important to note that Birdlife South Africa and the SKA Project Office were included on the project database of I&APs since the commencement of the EIA and BA processes (as shown in Appendix E.5 of this BA Report). As such, both organizations have been sent all notifications, to date, regarding the PPP associated with the proposed project. The SAEON Arid Node has been placed on the database for the EIA Phase (as shown in Appendix E.5 of this BA Report).

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	remains a significant risk for bird collisions. ▪ Potential impacts on water fowl such as flamingos, ducks and geese as well as large Terrestrial Birds such as bustards and korhaan as well as raptors must be investigated. Potential impacts must speak to the Renewable Energy technologies and infrastructure as well electricity grid infrastructure. ▪ BirdLifeSA must be informed as I&AP to provide comment on the development. ▪ SKA must be consulted as I&AP to provide comment on the development. ▪ SAEON Arid Node must be informed as I&AP to provide comment on the development.			

7. Recommendations for the EMPr

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7.1	Section D: Environmental Management Programme: ▪ Training and awareness on the illegal poaching and removal of succulents (e.g. *Hoodia gordonii, Euphorbia spp*.) and the protected quiver tree, *Aloe dichotoma*. ▪ The EIA must address how risk of alien plan infestation by predominantly *Prosopis* will be addressed, since the region is known to be under threat from infestation. ▪ A proper invasive alien management plan should be written into the EMPr. The area should be kept clear of invasive alien species; active management is a prerequisite. ▪ Bird deterrent devices to lessen the impact caused by collision of avifauna with development infrastructure. ▪ Possible electrocution of small mammals should be taken into account if electric fences are	Elsabe Swart (Deputy Director – Research and Development Support) and Samantha De la Fontaine (District Ecologist), Northern Cape Department of Environment and Nature Conservation	5 November 2015, Letter sent via email	**CSIR:** ▪ The EMPr (Appendix G of the BA Report) recommends that staff are inducted and provided with Environmental Awareness Training in order to inform them of the presence, sensitivity of and importance of fauna. ▪ The Ecological Impact Assessment (Appendix D.1 of the BA Report) addresses the impact of the spread of alien invasive vegetation as a result of construction, operational and decommissioning activities. Alien plant species will be managed in line with the EMPr (Appendix G of the BA Report). ▪ Refer to the responses provided to Comment 6.1 and Comment 6.2 above. ▪ The Ecological Impact Assessment (Appendix D.1 of the BA Report) includes a Faunal Assessment, which provides recommendations for potential negative impacts on fauna. Refer to the Ecological Impact Assessment, which also

NO	ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
	considered as a security measure. ▪ Free movement of small mammals if the development property is to be fenced. ▪ Rehabilitation plans must be provided as to how post construction rehabilitation will be approached as well as operational phase control measures for protecting equipment, for example cutting/scraping/ herbicide applications underneath solar panels.			provides a response to this comment. ▪ As noted above, the Ecological Impact Assessment (Appendix G of the BA Report) includes a Faunal Assessment, which provides recommendations for potential negative impacts on fauna. Refer to the Ecological Impact Assessment, which also provides a response to this comment. ▪ Rehabilitation recommendations (as applicable) have been incorporated into the EMPr (Appendix G of the BA Report).

Appendix E.4 Correspondence Sent to Organs of State Prior to and During the Release of the Draft BA Report (Refer to Appendix E.2)

Appendix E.5 Database of I&APs and Organs of State

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
Organs of State															
1.	Mmatlala	Rabothatha	National DEA: Integrated Environmental Authorisations		X			X		X					
2.	Muhammad	Essop	National DEA: Integrated Environmental Authorisations		X			X		X					
3.	Director-General		National DEA: Biodiversity and Conservation					X							
4.	Herman	Alberts	National DEA: Integrated Environmental Authorisations							X					
5.	A	Yaphi	Provincial Department of Environment and Nature Conservation (DENC): Northern Cape		X			X		X					
6.	M	Mathews	Provincial DENC: Northern Cape		X			X		X					
7.	Samantha	De la Fontaine	Provincial DENC: Northern Cape		X	X	X	X	X	X					
8.	Elsabe	Swart	Provincial DENC: Northern Cape						X	X					
9.	Sibonelo	Mbanjwa	Provincial DENC: Northern Cape		X			X		X					
10.	Luzane	Tools-Bernado	Provincial DENC: Northern Cape						X	X					
11.	Eric	Ngxanga	ZF Mgcawu District Municipality - Municipal Manager		X			X		X					
12.	Frikkie	Ruping	ZF Mgcawu District Municipality - Environmental Manager		X			X		X					
13.	H.T	Scheepers	!Kheis Municipality - Municipal Manager		X			X		X					
14.	Gloria	Matlakala	!Kheis Municipality						X	X					

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
15.	JG	Lategan	Kai ! Garib Municipality - Municipal Manager		X			X		X					
16.	M.	Clarke	Kai ! Garib Municipality - Manager: Electromechanical Services							X					
17.	Mashudu	Randwedzi	Department of Water and Sanitation		X			X							
18.	Melinda	Mei	Department of Water and Sanitation		X		X	X	X	X					
19.	Shaun	Cloete	Department of Water and Sanitation					X		X					
20.	Chantèl	Schwartz	Department of Water and Sanitation						X	X					
21.	Mandla	Ndzilili	Ministry of Environment and Nature Conservation		X			X		X					
22.	Mashudu	Marubini	National Department of Agriculture, Forestry and Fisheries (DAFF)		X			X		X					
23.	Thoko	Buthelezi	National DAFF - AgriLand Liaison office		X			X		X					
24.	D	Nhlakad	National DAFF - AgriLand Liaison office		X			X		X					
25.	Anneliza	Collett	National DAFF - AgriLand Liaison office		X			X		X					
26.	H. J.	Buys	National DAFF (Land Use and Soil Management)						X	X					
27.	Jacoline	Mans	Provincial DAFF		X			X	X	X					
28.	Ali	Diteme	Provincial Department of Agriculture, Land Reform & Rural Development		X			X		X					
29.	Pieter	Buys	National Energy Regulator of South Africa		X			X		X					
30.	IA	Bulane	Department of Public Works, Roads and Transport		X			X							
31.	Denver	Van Heerden	Department of Public Works, Roads and Transport		X			X		X					

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
32.	Rene	de kock	South African Roads Agency Limited - Northern Cape (Western Region)		X		X	X		X					
33.	Nicole	Abrahams	South African Roads Agency Limited (Western Region)						X	X					
34.	M	Lepheane	Department of Labour		X			X		X					
35.	A	Botes	Department of Social Development		X			X		X					
36.	Riaan	Warie	Northern Cape Economic Development Agency		X			X		X					
37.	Andrew	Timothy	Directorate Heritage, Department - Sports, Arts and Culture		X			X		X					
38.	Lizell	Stroh	South African Civilian Aviation Authority		X			X		X					
39.	John	Geeringh	ESKOM		X			X	X	X					
40.	Kevin	Leask	ESKOM		X			X		X					
41.	Justine	Wyngaardt	ESKOM (Western Operating Unit, Distribution)		X			X		X					
42.	Lindi	Haarhoff	ESKOM (Nieuwehoop Substation)					X		X					
43.	Sharon	Steyn	Northern Cape Chamber of Commerce and Industry		X			X		X					
44.	P.J.J	van Rensburg	Agri Northern Cape		X					X					
45.	H.	Myburgh	Agri Northern Cape[1]					X		X					
46.	Adrian	Tiplady	SKA SA		X		X	X	X	X					

[1] Note that during the Project Initiation Phase, correspondence was sent to Mr. P. J. J. van Rensburgh of Agri Northern Cape. However, the CSIR was requested (via telephone), to replace Mr. P. J. J. van Rensburgh with Mr. H. Myburgh on the database. Mr. P. J. J. van Rensburgh has therefore been removed from the project database going forward. For record purposes, Mr. P. J. J. van Rensburgh will still be reflected on the database in the BA Reporting to show interaction during the Project Initiation Phase only.

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
47.	Marina	Lourens	Transnet Freight Rail					X	X	X					
48.	Gilbert	Nortier	Transnet Freight Rail		X		X	X		X					
49.	Mayvyn	Bhana	Transnet		X			X		X					
50.	Clive	Stephenson	Transnet		X			X		X					
51.	Director		Department of Energy Northern Cape		X			X							
52.	Ragna	Redelstorff	South African Heritage Resources Agency[2]		X		X	X		X					
53.	Kgauta	Mokoena	Department of Mineral Resources												
54.	Elliot	Sibeko	Department of Telecommunication & Postal Services												
55.	Director		Department of Communications												
56.	Chris	Coetzee	Southern African Large Telescope (SALT) Sutherland												
57.	Raoul	Van den Berg	Southern African Large Telescope (SALT) Sutherland												
Stakeholders (NGOs and Conservation Organisations)															
58.	Simon	Gear	Birdlife South Africa		X			X		X					
59.	Lubabalo	Ntsolo	C.A.P.E. Co-ordination Unit: Northern Cape		X			X		X					
60.	Freyni	du Toit	Grasslands Society of Southern Africa		X			X		X					
61.			Endangered Wildlife Trust, Wildlife and Energy Programme		X			X		X					
62.	Dr. Howard	Hendricks	South African National Parks - Snr GM: Policy & Governance		X			X		X					

[2] Note that submissions to the SAHRA have been made via the online SAHRIS. The details provided are those of the designated case officer assigned to the application.

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
			Conservation Services Division												
63.	Dr. Joh R	Henschel	SAEON Arid Lands Node												
64.	Praneel	Ruplal	Independent Communications Authority of South Africa (ICASA)												
Landowner															
65.	Andre	Van Niekerk	Van Niekerk Gesins Trust					X		X					
Adjacent Property Owners															
66.	Andre	Van Niekerk	Kamkuip Boerdery (Pty) Ltd		X			X		X					
67.	D.J/Sarel	Strauss	Kamkuip Boerdery (Pty) Ltd		X			X		X					
68.	Rudolph	Grobler	Farm Name: Brussel and Gerhards Puts		X			X		X					
69.	Hendrik	Van Wyk	Wilcaris Pty Ltd		X			X		X					
70.	Ernest	Connan	Ernest Connan Trust		X			X		X					
71.	Johan	Steenkamp	JHJ Steenkamp Trust		X			X		X					
72.	Handre	van Wyk	Farm Name: Narougas (Straus Heim)		X										
73.	Plankiesd	Van der Walt	Farm Name: Varsputs		X										
Additional I&APs															
74.	Mitchell	Hodgson	Scatec Solar		X			X		X					
75.	Claude	Bosman	Veroniva (PTY) Ltd - Renewable Energy		X			X		X					

Number	First Name	Surname	Company/ Organisation	Deregister interest	Let 1: BID	Request to Register	Comment BID	Let 2: Notice of Release of Consultation Scoping Reports	Comment on Consultation Scoping Reports	Email: Notice of Submission of Scoping Reports to DEA	Let 3: Notice of Release of Consultation EIA Reports and BA Reports	Comment on Consultation EIA Reports and BA Reports	Email: Notice of Submission of EIA Reports and BA Reports to DEA	Let 4: Notice of EA for BAs and EIAs	Let 5: Outcome of Appeal Process
76.	Naveenraj	Challa	Marcyrox NPC		X			X		X					
77.	Karen	Low	Mulilo Renewable Energy Developments		X		X	X		X					
78.	Melanie	Miles	Leads 2 Business		X	X	X	X		X					
79.	Morgan	Townsend			X	X		X		X					
80.	John	de Bruin	Henrohn Security			X	X	X		X					

Appendix E.6 Copies of Comments Received and Minutes of Meetings

1. Copies of Comments Received from I&APs Prior to the Release of the BA Report (i.e. during the 30-day Project Initiation Phase)

To: <RAbed@csir.co.za>
CC: Elsabe Swart <elsabe.dtec@gmail.com>
Date: 29/07/2015 13:37
Subject: I&AP: Three proposed solar PV facilities NE of Kenhardt

Dear Rohaida

Kindly register me as an I&AP for the proposed development with CSIR
Reference: EMS0102/SCATEC/2015.

Kind regards

Samantha

Samantha De la Fontaine
District Ecologist (Candidate Scientist)

Northern Cape Department of Environment and Nature Conservation
Provincial Building (First Floor)

Corner of Rivier & Nelson Mandela Road
Upington
8800

E-mail: sdelafontaine@gmail.com <sdelafontaine@gmail.com>

From: "Karen Low" <karen@mulilo.com>
To: "'Rohaida Abed'" <RAbed@csir.co.za>
Date: 30/07/2015 09:27
Subject: RE: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Attachments: SBIZHUB10815073009220.pdf

Dear Rohaida,

Attached please find the completed comment and registration form.

Regards,

Karen

Karen Low *(Pri. Sci. Nat.)*
Environmental Manager

MULILO
RENEWABLE PROJECT DEVELOPMENTS

Tel: *+27 21 934 5278* **Fax:** *+27 21 935 0505* **Email:** *karen@mulilo.com*
Physical: 303c Execujet Business Centre Tower Road Cape Town International Airport South Africa 7525
Postal: PO Box 50 Cape Town International Airport South Africa 7525

From: Rohaida Abed [mailto:RAbed@csir.co.za]
Sent: 29 July 2015 4:01 pm
To: Rohaida Abed <RAbed@csir.co.za>
Subject: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE

NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.

The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
- Kenhardt PV 1	- Kenhardt PV 1 – Transmission Line
- Kenhardt PV 2	- Kenhardt PV 2 – Transmission Line
- Kenhardt PV 3	- Kenhardt PV 3 – Transmission Line

The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.
Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available.

In addition, the above-mentioned project information can be accessed at the following website: **http://www.csir.co.za/eia/ScatecSolarPV/**

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

Bevoegde Owerheid: *Die Nasionale Departement van Omgewingsake*

WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

Hierdie e-pos korrespondensie se doel is om u in kennis te stel van die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte, wat 80 km suid van Upington en 30 km noord-oos van Kenhardt in die !Kheis munisipaliteit voorgestel word. Die Aansoeker vir die projek is Scatec Solar SA 163 (PTY) Ltd ("Scatec Solar"). Die WNNR is aangestel deur Scatec Solar om die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte uit te voer.

‘n Bestek en Omgewingsimpakevalueringsproses word vereis vir elk van die drie 75 MW Fotovoltaïese (PV) sonkragfasiliteite wat op die plaas Restant van Onder Rugzeer 168 voorgestel word. Aparte Basiese evalueringsprosesse word ook vereis vir die voorgestelde 132 kV kraglyne en die konneksiepunte aan die Eskom Nieuwehoop Substasie (wat tans gebou word) op die plaas Restant van Gedeelte 3 van Gemsbok Bult 120.

Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat ‘n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

Bestek en Omgewingsimpakevalueringsproses: Voorgestelde drie 75 MW PV sonkragprojekte	**Basiese evalueringsprosesse: Voorgestelde drie 132 kV kraglyne**
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

Vind asseblief aangeheg die volgende:
- Beskrywing van die projek (word na verwys as die “BID”)
- Brief aan die Belanghebbende en Geïnteresseerde Partye (B&GP’e)
- Kommentaar en Registrasievorm

*Die BID, wat dien as agtergrond van die projek, bevat ‘n beskrwying van die projek, die gelyste aktiwiteite en is vir 30-dae beskikaar vir oorsig en kommentaar (**30 Julie 2015 - 31 Augustus 2015**). ‘n Harde kopie van die bogenoemde dokumente is ook gestuur aan diegene vir wie ons posadresse het. Inligting van die projek is ook beskikbaar op die projekwebtuiste: **http://www.csir.co.za/eia/ScatecSolarPV/**.*

*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed

CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

From: "Melanie Miles" <MelanieM@L2B.co.za>
To: <RAbed@csir.co.za>
Date: 03/08/2015 10:25
Subject: Proposed Development of Three Solar Photovoltaic Facilities and Associated Electrical Infrastructure

Good Morning,

Your company is currently conducting an Environmental Impact Assessment for the Proposed Development of Three Solar Photovoltaic Facilities and Associated Electrical Infrastructure North East of Kenhardt. Please could you forward me the BID for this application and register me as a Interested & Affected party?

Thanking you in anticipation of a favourable response.

Kindest Regards,

Melanie Miles
Content Researcher
MelanieM@L2B.co.za

Leads 2 Business (www.L2B.co.za)

0860836337 or 0860 TENDER
Fax: 033 343 5882

From:	"Mei Melinda (UPN)" <MeiM@dws.gov.za>
To:	Rohaida Abed <RAbed@csir.co.za>
CC:	Cloete Shaun <CloeteS@dws.gov.za>
Date:	04/08/2015 13:48
Subject:	Hard Copies: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Good morning Mr. Abed

Your notice received with regards to Basic Assessment; Scoping and Environmental Impact Assessment for the Proposed Development of the three Solar Photovoltaic Facilities and Associated Electrical Infrastructure; North-East of Kenhardt; Northern Cape is of reference.

DWS requires you to forward hard copies of the above mentioned project to either of the following address:

Physical Address:
Department Of Water and Sanitation
Louisvale Road Upington
8801

OR

Postal Address:
Department Of Water and Sanitation
Private Bag X 5912
Upington
8800

Your co-operation and assistance is highly appreciated.

With kind regards,

Melinda Mei
Senior Administration Clerk
Water Quality Management: Lower Orange Water Management Area
Tel: 054 338 5836
Fax: 054 334 0205
Mail: *MeiM@dwa.gov.za*

From: Rohaida Abed [mailto:RAbed@csir.co.za]
Sent: 29 July 2015 4:01 pm
To: Rohaida Abed <RAbed@csir.co.za>
Subject: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.
The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute

the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
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The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.
Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available.

In addition, the above-mentioned project information can be accessed at the following website: **http://www.csir.co.za/eia/ScatecSolarPV/**

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

Bevoegde Owerheid: *Die Nasionale Departement van Omgewingsake*

WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

Hierdie e-pos korrespondensie se doel is om u in kennis te stel van die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte, wat 80 km suid van Upington en 30 km noord-oos van Kenhardt in die !Kheis munisipaliteit voorgestel word. Die Aansoeker vir die projek is Scatec Solar SA 163 (PTY) Ltd ("Scatec Solar"). Die WNNR is aangestel deur Scatec Solar om die Basiese evaluerings- en Bestek en Omgewingsimpakevalueringsproses vir die bogenoemde projekte uit te voer.

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Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

Bestek en Omgewingsimpakevalueringsproses: Voorgestelde drie 75 MW PV sonkragprojekte	Basiese evalueringsprosesse: Voorgestelde drie 132 kV kraglyne
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

Vind asseblief aangeheg die volgende:
- Beskrywing van die projek (word na verwys as die "BID")
- Brief aan die Belanghebbende en Geïnteresseerde Partye (B&GP'e)
- Kommentaar en Registrasievorm

*Die BID, wat dien as agtergrond van die projek, bevat 'n beskrwying van die projek, die gelyste aktiwiteite en is vir 30-dae beskikaar vir oorsig en kommentaar (**30 Julie 2015 - 31 Augustus 2015**). 'n Harde kopie van die bogenoemde dokumente is ook gestuur aan diegene vir wie ons posadresse het. Inligting van die projek is ook beskikbaar op die projekwebtuiste: **http://www.csir.co.za/eia/ScatecSolarPV/**.*

*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed

CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

From: "Marina Lourens Transnet Freight Rail SLD" <Marina.Lourens@transnet.net>
To: "RAbed@csir.co.za" <RAbed@csir.co.za>
Date: 19/08/2015 15:54
Subject: NOTICE OF BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Attachments: 2773_001.pdf

Letter regarding issued/concerns

TRANSNET

19 August 2015

Rohaida Abed
CSIR
P.O. BOX 17001
Congella
DURBAN
4013

Gilbert Nortier
Depot Engineering Manager
Private Bag X11
Vredenburg
7380

Dear Rohaida

RE: ISSUES/CONCERNS TO PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVALTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Your e-mail of 29 July 2015 refers.

The following immediate concerns are:
Possible glare from the solar panels which may influence the Train Drivers and staff travel on the TFR service road.

Future concerns:
During construction, planned access routes to the facilities that might influence TFR (Dust on High Voltage Electrical Equipment).
The location of the High Voltage transmission lines.
Level crossing requirements (High risk of accidents).
During maintenance same issues as above.

Regards

GILBERT NORTIER
DEM

From: <jdbhenrohn@gmail.com>
To: <RAbed@csir.co.za>
Date: 25/08/2015 08:41
Subject: CSIR REF EMS0102/SCATEC/2015

Good morning Rohaida
I want to register for the facility because I support the project.

John de Bruin - Henrohn Security
Sent from my Nokia phone

From: Adrian Tiplady <atiplady@ska.ac.za>
To: Rohaida Abed <RAbed@csir.co.za>
CC: Tshegofatso Monama <temonama@ska.ac.za>
Date: 02/09/2015 11:44
Subject: Re: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape
Attachments: Letter reg Establishment of Kenhardt 3PV CSIR.pdf

Dear Rohaida,

Please find attached comment.

Regards,

Adrian

On 29/07/2015 4:01 PM, Rohaida Abed wrote:

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

CSIR Reference: EMS0102/SCATEC/2015

This e-mail correspondence serves to inform you of the initiation of a Basic Assessment (BA) Process and Scoping and Environmental Impact Assessment (EIA) Process for the above-mentioned proposed project, located approximately 80 km south of Upington and 30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province. The Project Applicant is Scatec Solar SA 163 (PTY) Ltd (hereinafter referred to as Scatec Solar). The CSIR has been appointed by Scatec Solar to undertake the required BA Process, and Scoping and EIA Process.

A full Scoping and EIA Process is required for the development of three 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facilities on the remaining extent of Onder Rugzeer Farm 168. A separate BA Process is also required and will be undertaken for the development of three transmission lines and the connection points to the Eskom Nieuwehoop Substation (which is currently being constructed) on the remaining extent of Portion 3 of Gemsbok Bult Farm 120.

The proposed 75 MW Solar PV facilities and transmission lines are located within the same geographical area and constitute the same type of activity; hence an integrated Public Participation Process will be undertaken. However, separate Applications for Environmental Authorisation will be lodged with the National Department of Environmental Affairs (DEA) for each proposed 75 MW Solar PV facility and transmission line. Furthermore, separate BA, Scoping and EIA Reports will be compiled for each project, which will be referred to as:

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	BA Processes: Proposed 132 kV Transmission Lines
- Kenhardt PV 1 - Kenhardt PV 2 - Kenhardt PV 3	- Kenhardt PV 1 – Transmission Line - Kenhardt PV 2 – Transmission Line - Kenhardt PV 3 – Transmission Line

The proposed projects are being assessed in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the NEMA EIA Regulations, published in Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014.

Please find attached the following:
- Background Information Document (BID);
- Letter 1 to Interested & Affected Parties (I&APs); and
- Comment and Registration Form.

The BID, which provides an overview of the proposed project, is being released to Stakeholders and I&APs for a 30-day comment period extending from **30 July 2015** to **31 August 2015**.

Hard copies of the above-mentioned documents have also been sent to those of you for which postal addresses are available.

In addition, the above-mentioned project information can be accessed at the following website: **http://www.csir.co.za/eia/ScatecSolarPV/**

Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

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Aangesien die sonkragprojekte en die voorgestelde elektriese infrastruktuur in dieselfde geografiese area gebou gaan word en dieselfde tipe projekte is, word dit voorgestel dat 'n geïntegreerde Publieke Deelname Proses gedoen gaan word. Aparte aansoeke gaan by die Nasionale Departement van Omgewingsake ingedien word vir die verskillende projekte en aparte verslae sal ook vir elke projek saamgestel en uitgestuur word. Die projekte sal na verwys word as:

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Die voorgestelde projekte sal ge-evalueer word volgens die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA) en die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskennisgewing R982 in Staatskoerant No 38282 van 08 Desember 2014.

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By voorbaat dankie,
Rohaida Abed

CSIR - Environmental Management Services

Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

SKA SOUTH AFRICA
SQUARE KILOMETRE ARRAY

17 Baker Street
Rosebank
Johannesburg
South Africa
2196

Tel: +27 (0) 11 442 2434
Fax: +27 (0) 11 442 2454
Email: atiplady@ska.ac.za

Rohaida Abed
CSIR-Environmental Management Services
P. O. Box 17001
Congella
Durban
4013

E-mail: RAbed@csir.co.za

Date: 17 August 2015

Dear Rohaida,

Re: DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE (CSIR REFERENCE: EMS0102/SCATEC/2015)

This letter is in response to your email request, to provide an assessment on the potential development of three solar PV electricity generation facilities in the Northern Cape Province and the risk they may pose on the Square Kilometre Array Project.

A high level risk assessment has been conducted at the South African SKA Project Office to determine the potential impact of such facilities on the Square Kilometre Array. This letter serves to confirm the outcomes of the risk assessment, and proposals for any future investigations associated with this facility.

I. The location of the proposed facility has been provided in the background information document compiled by CSIR ,
II. The nearest SKA station has been identified as SKA Station ID 2362, at approximately 20 km from the proposed installation;
III. Based on distance to the nearest SKA station, and the information currently available on the detailed design of the PV installations, these facilities poses a medium to high risk of detrimental impact on the SKA;
IV. Any transmitters that are to be established, or have been established, at the site for the purposes of voice and data communication will be required to comply with the relevant AGA regulations concerning the restriction of use of the radio frequency spectrum that applies in the area concerned;
V. As a result of the medium to high risk associated with the PV facilities, The SKA project office recommends that further EMI and RFI detailed studies be conducted as significant mitigation measures would be required to lower the risk of detrimental impact to an acceptable level. The South African SKA

S O U T H   A F R I C A   S Q U A R E   K I L O M E T R E   A R R A Y
SKA South Africa Project Office

NRF

SKA SOUTH AFRICA

Project Office would like to be kept informed of progress with this project, and reserves the right to further risk assessments at a later stage.

This technical advice is provided by the South African SKA Project Office on the basis of the protection requirements of the SKA in South Africa, and does not constitute legal approval of the renewable energy projects in terms of the Astronomy Geographic Advantage Act, the Management Authority, and its regulations or declarations.

Regards,

Dr. Adrian Tiplady
Head: Strategy
SKA South Africa
Tel: 011 442 2434
Fax: 011 442 2454
atiplady@ska.ac.za

SOUTH AFRICA SQUARE KILOMETRE ARRAY
SKA South Africa Project Office

NRF

From: René de Kock (WR)<Dekockr@nra.co.za>
To: "'RAbed@csir.co.za'" <RAbed@csir.co.za>
CC: "Nicole Abrahams (WR)" <AbrahamsN@nra.co.za>, "Colene Runkel (WR)" <Runkelc@nra.co.za>
Date: 04/09/2015 16:09
Subject: FW: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Rohaida Abed

Thank you for your letter dated 29 July 2015, send to Mr van der Walt.
Please note that this solar development will not impact on a national road, therefore SANRAL has no jurisdiction and have no further comment with regard to the Solar Facility.

Should any service, e.g. power line and/or water pipe will be situated within 60m from the national road or will cross the national road application should be made to SANRAL for approval in terms of the National Roads Act.

Kind regards

Ms René de Kock

Statutory Control
Tel: +27 21 957 4607
Fax: +21 946 1630
Cell:
Email: Dekockr@nra.co.za

Western Region
1 Havenga Street Oakdale Bellville
Private Bag X19
www.nra.co.za
SANRAL Fraud Hotline: 0800204558

From: Kobus van der Walt (WR)
Sent: 31 July 2015 01:58 PM
To: René de Kock (WR) <Dekockr@nra.co.za<mailto:Dekockr@nra.co.za>>
Cc: Colene Runkel (WR) <Runkelc@nra.co.za<mailto:Runkelc@nra.co.za>>
Subject: FW: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

fyi

From: Rohaida Abed [mailto:RAbed@csir.co.za]
Sent: 29 July 2015 04:01 PM
To: Rohaida Abed
Subject: Notice of BA and EIA Process - Solar PV Facilities and Associated Electrical Infrastructure, Northern Cape

Dear Stakeholders and Interested and Affected Parties

NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THREE SOLAR PHOTOVOLTAIC FACILITIES AND ASSOCIATED ELECTRICAL INFRASTRUCTURE NORTH-EAST OF KENHARDT, NORTHERN CAPE PROVINCE

Competent Authority: National Department of Environmental Affairs

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Kindly ensure that all comments are submitted to the CSIR Project Manager (details provided below) by **31 August 2015**.

Thank you and kind regards,

Rohaida Abed

CSIR - Environmental Management Services
P. O. Box 17001, Congella, Durban, 4013
Tel: 031 242 2300
Fax: 031 261 2509
Email: RAbed@csir.co.za

Beste Belanghebbende en Geïnteresseerde Party

GESAMENTLIKE KENNISGEWING VAN BASIESE EN OMGEWINGSIMPAKEVALUERINGSPROSESSE VIR DIE VOORGESTELDE ONTWIKKELING VAN DRIE SONKRAGAANLEGTE EN ELEKTRIESE INFRASTRUKTUUR NOORD-OOS VAN KENHARDT, NOORD- KAAP PROVINSIE

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WNNR/CSIR verwysingsnommer: EMS0102/SCATEC/2015

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*Ons versoek graag dat alle kommentaar aan die WNNR Projekbestuurder (kontakbesonderhede onder aangedui) teen **31 Augustus 2015** verskaf word.*

By voorbaat dankie,

Rohaida Abed

CSIR - Environmental Management Services
Posbus 17001, Congella, Durban, 4013
Tel: 031 242 2300
Faks: 031 261 2509
E-pos: RAbed@csir.co.za

---

2. Copies of Correspondence from I&APs during the 30-day Review of the Scoping Report

Note from the CSIR: As previously noted, an integrated PPP is being undertaken for the proposed BA Transmission Line Projects and the EIA Kenhardt PV 1, PV 2 and PV 3 Projects. For the complete set of correspondence received from I&APs during the Scoping Phase (i.e. up until the submission of the Scoping Report to the DEA for decision-making), kindly refer to Appendix G of the EIA Reports for the Kenhardt PV 1, PV 2 and PV 3 Projects.

BASIC ASSESSMENT REPORT

APPENDIX F:
IMPACT ASSESSMENT

contents

Alternative 1 (Preferred Alternative) – Planning/Design Phase Direct Impacts

Note: No indirect and cumulative impacts have been identified for the Planning and Design Phase

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Impact on existing infrastructure (roads, Transnet Service Road, Transnet Freight Rail Sishen-Saldanha Railway Line, stormwater pipelines, sewers, and electrical infrastructure and cables etc.).	Negative	Site Specific	Medium Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium
Impact on the existing users of the Transnet Service Road and the unnamed Farm Road leading to the site.	Negative	Site Specific	Medium Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium

Alternative 1 (Preferred Alternative) – Construction Phase Direct, Indirect and Cumulative Impacts

DIRECT IMPACTS – CONSTRUCTION PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project.	Negative	Site Specific (i.e. along the transmission line route)	Long-Term	Substantial	Very likely	Low	Low	Moderate	Very Low	5	High
Changes in the geomorphological state of drainage lines.	Negative	Site Specific (i.e. along the transmission line route)	Medium-Term	Moderate	Likely	High	Low	Low	Very low	5	Medium
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Short term	Slight	Likely	High	Low	Low	Very low	5	High
Visual Impacts											
Potential visual intrusion of construction activities on existing views of sensitive visual receptors	Negative	Local	Very Short Term	Moderate	Likely	High	Low	Low	Low	5	High
Heritage Impacts											
Damage to and destruction of archaeological resources during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Site	Permanent	Moderate	Extremely unlikely	Non-reversible	High	Very low	Very low	5	High

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Damage to and destruction of graves during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Site	Permanent	Extreme	Extremely unlikely	Non-reversible	High	Very low	Very low	5	High
Impacts to the natural and cultural landscape during the construction phase as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Local	Long term	Slight	Very likely	High	Moderate	Very low	Very low	5	High
Palaeontological Impacts											
Impact on Palaeontology: Loss of fossil heritage at or beneath the ground surface as a result of surface clearance and excavations into superficial sediments.	Negative	Site	Permanent	Slight	Likely	Non-reversible	Low	Very low	Very low	5	Medium
Geohydrological Assessment											
Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps.	Negative	Site	Short-term	Moderate	Very unlikely	High	Low	Low	Very low	5	High
Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.	Negative	Site	Short - term	Moderate	Very unlikely	High	Low	Low	Very low	5	High
Soils and Agricultural Potential Assessment											
Degradation of veld vegetation beyond the direct footprint of the proposed transmission line due to construction disturbance and potential trampling by vehicles (including dust generation).	Negative	Site	Medium term	Slight	Likely	Moderate (i.e. Partially)	Low	Very Low	Very Low	5	High

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Loss of topsoil due to poor topsoil management and constructional activities that disturb the soil profile.	Negative	Site	Medium term	Slight	Likely	Moderate (i.e. Partially)	Low	Very Low	Very Low	5	High
Loss of agricultural land use as a result of the occupation of the land by the project infrastructure.	Negative	Site	Long term	Slight	Very Likely	High	Low	Very Low	Not Applicable	5	High
Soil erosion due to the alteration of the land surface characteristics and surface cover.	Negative	Site	Long term	Slight	Likely	Low	Low	Very Low	Very Low	5	High
Social Impacts											
Influx of job seekers into the Kenhardt area resulting in disruption of existing social structures.	Negative	Local	Medium to Long-term	Substantial	Likely	Low	Moderate	Moderate	Low	4	Medium
Increases in social deviance as a result of outsiders moving into the Kenhardt area.	Negative	Local	Medium-term	Substantial	Likely	Low	Moderate	Moderate	Low	4	Medium
Expectations created regarding possible employment resulting in increased frustration in the local community.	Negative	Local	Short-term	Moderate	Likely	High	Moderate to Low	Low	Very low	5	Medium
Local spending resulting in socio-economic benefits as a result of the multiplier effect.	Positive	Local	Medium to long-term	Moderate	Likely	n/a	n/a	Low	Low	4	Medium
Local employment resulting in socio-economic benefits.	Positive	Local	Long-term	Substantial	Very likely	n/a	n/a	Moderate	Moderate	3	High
Economic Development Plan contributing to local employment, local spending and human capacity development.	Positive	Local	Long-term	Substantial	Very likely	n/a	n/a	Moderate	Moderate	3	High
Traffic Impacts											
Increased traffic generation during the construction phase.	Negative	Regional	Short term	Moderate	Very likely	Yes	Replaceable	Low	Low	4	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads.	Negative	Local	Long term	Extreme	Likely	No	High irreplaceability	High	Moderate	3	Medium
Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and construction equipment.	Negative	Local	Medium term	Moderate	Unlikely	Yes	Replaceable	Moderate	Low	4	Medium
Change in the quality and surface condition of the roads leading to and surrounding the site.	Positive	Local	Long term	Slight	Likely	Yes	Replaceable	Low	Low	4	Medium
Additional Impacts											
Impact on existing infrastructure (roads, stormwater pipelines, sewers, and electricity cables etc.).	Negative	Site Specific	Medium Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium
Removal of alien invasive vegetation from the proposed project area.	Positive	Site Specific	Short Term	Substantial	Very Likely	Moderate	N/A	Moderate	Moderate	3	Low
Increased faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site.	Negative	Local	Medium Term	Substantial	Very Likely	Low	High	Moderate	Low	4	Medium
Impact on the regional water balance as a result of increased water usage.	Negative	Local	Short Term	Moderate	Very Likely	Low	High	Low	Low	4	Medium
Potential spillage of effluent (from portable sanitation facilities for construction personnel) resulting in potential impacts on soil and surface/groundwater.	Negative	Local	Short Term	Substantial	Unlikely	Moderate	Moderate	Moderate	Low	4	Medium
Pollution caused by spillage or discharge of construction waste water into the surrounding environment.	Negative	Local	Short Term	Substantial	Unlikely	Moderate	Moderate	Moderate	Low	4	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc.	Negative	Local	Short Term	Substantial	Likely	Moderate	Moderate	Moderate	Low	4	Medium
Sedimentation of the surrounding drainage lines as a result of stormwater runoff and stockpiling of excavated material during the construction phase. The excavated material could potentially be washed into the drainage lines via stormwater. This could also impact on avifauna.	Negative	Local	Short Term	Substantial	Likely	High	Moderate	Moderate	Low	4	Medium
Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of general waste during the construction phase.	Negative	Local	Short Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium
Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of hazardous waste, as well as the removal of the soil contaminated with oil and diesel.	Negative	Local	Short Term	Substantial	Unlikely	High	Low	Moderate	Low	4	Medium
Generation of noise as a result of construction activities and the use of diesel powered vehicles, equipment and machinery.	Negative	Local	Short Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium

INDIRECT IMPACTS – CONSTRUCTION PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project.	Negative	Site Specific (i.e. along the transmission line route)	Long-Term	Substantial	Very likely	Low	Low	Moderate	Very Low	5	High
Changes in the geomorphological state of drainage lines.	Negative	Site Specific (i.e. along the transmission line route)	Medium-Term	Moderate	Likely	High	Low	Low	Very low	5	Medium
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Short term	Slight	Likely	High	Low	Low	Very low	5	High
Geohydrological Assessment											
Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps.	Negative	Site	Short-term	Moderate	Very unlikely	High	Low	Low	Very low	5	High
Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.	Negative	Site	Short-term	Moderate	Very unlikely	High	Low	Low	Very low	5	High

CUMULATIVE IMPACTS – CONSTRUCTION PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project.	Negative	Regional	Long-Term	Substantial	Very Likely	Low	Low	Moderate	Not Applicable	3	High
Changes in the geomorphological state of drainage lines.	Negative	Regional	Medium-Term	Moderate	Likely	High	Low	Low	Very low	5	Medium
Increases in the prevalence of exotic and invasive plants (leading to alteration of ecological processes within the wider region)	Negative	Regional	Short term	Slight	Likely	High	Low	Low	Very low	5	High
Heritage Impacts											
Damage to and destruction of archaeological resources as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Site	Permanent	Moderate	Extremely unlikely	Non-reversible	High	Very low	Very low	5	High
Damage to and destruction of graves as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Site	Permanent	Extreme	Extremely unlikely	Non-reversible	High	Very low	Very low	5	High
Impacts to the natural and cultural landscape as a result of the proposed construction of the transmission line and associated infrastructure.	Negative	Local	Long term	Slight	Very likely	High	Moderate	Very low	Very low	5	High
Palaeontological Impacts											
Impact on Palaeontology: Loss of fossil heritage at or beneath the ground surface as a result of surface clearance and excavations into superficial sediments.	Negative	Site	Permanent	Slight	Likely	Non-reversible	Low	Very low	Very low	5	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Traffic Impacts											
Increased traffic generation as a result of many projects (as outlined in the impact methodology section above) occurring at the same time.	Negative	Regional	Long term	Moderate	Very likely	High	Replaceable	Low	Low	4	Medium

Alternative 1 (Preferred Alternative) – Operational Phase Direct, Indirect and Cumulative Impacts

DIRECT IMPACTS – OPERATIONAL PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Overhead transmission lines, as well as subtle changes in habitat are likely to result in the alteration of avian behaviour in and around the route.	Negative	Local	Long-Term	Substantial	Likely	Moderate	Low	Moderate	Very Low	5	High
The powerlines may increase the risk of collision and electrocution in some avifauna.	Negative	Local	Short term	Moderate	Likely	High	Low	Low	Low	4	High
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Long term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High
Visual Impacts											
Potential landscape impact of the proposed 132 kV powerline on a rural agricultural landscape.	Negative	Local	Long Term	Slight	Likely	High	Low	Very Low	Not Applicable	5	High
Potential visual intrusion of the proposed 132 kV power line on the views of sensitive visual receptors.	Negative	Local	Long Term	Slight	Likely	High	Low	Very Low	Very Low	5	High
Heritage Impacts											
Impacts to the natural and cultural landscape during the operational phase as a result of the operation of the transmission line and associated infrastructure.	Negative	Local	Long term	Slight	Very likely	High	Moderate	Very low	Very low	5	High
Soils and Agricultural Potential Assessment											
Loss of agricultural land use as a result of the occupation of the land by the project infrastructure.	Negative	Site	Long term	Slight	Very Likely	High	Low	Very Low	Not Applicable	5	High
Soil erosion due to the alteration of the land surface characteristics and surface cover.	Negative	Site	Long term	Slight	Likely	Low	Low	Very Low	Very Low	5	High

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Social Impacts											
Influx of job seekers into the Kenhardt area resulting in disruption of existing social structures.	Negative	Local	Medium to Long-term	Substantial	Likely	Low	Moderate	Moderate	Low	4	Medium
Increases in social deviance as a result of outsiders moving into the Kenhardt area.	Negative	Local	Medium-term	Substantial	Likely	Low	Moderate	Moderate	Low	4	Medium
Expectations created regarding possible employment resulting in increased frustration in the local community.	Negative	Local	Short-term	Moderate	Likely	High	Moderate to Low	Low	Very low	5	Medium
Local spending resulting in socio-economic benefits as a result of the multiplier effect.	Positive	Local	Medium to long-term	Moderate	Likely	n/a	n/a	Low	Low	4	Medium
Local employment resulting in socio-economic benefits.	Positive	Local	Long-term	Substantial	Very likely	n/a	n/a	Moderate	Moderate	3	High
Economic Development Plan contributing to local employment, local spending and human capacity development.	Positive	Local	Long-term	Substantial	Very likely	n/a	n/a	Moderate	Moderate	3	High
Traffic Impacts											
Increased traffic generation during the operational phase.	Negative	Regional	Short term	Slight	Very likely	High	Replaceable	Very low	Very low	5	Medium
Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads.	Negative	Local	Long term	Extreme	Likely	No	High irreplaceability	High	Moderate	3	Medium
Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and construction equipment.	Negative	Local	Medium term	Moderate	Unlikely	Yes	Replaceable	Moderate	Low	4	Medium
Change in the quality and surface condition of the roads leading to and surrounding the site.	Positive	Local	Long term	Slight	Likely	Yes	Replaceable	Low	Low	4	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Additional Impacts											
Removal of alien invasive vegetation from the proposed project area.	Positive	Site Specific	Long Term	Substantial	Very Likely	Moderate	N/A	Moderate	Moderate	3	Low
Increased faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site.	Negative	Local	Medium Term	Substantial	Very Likely	Low	High	Moderate	Low	4	Medium
Generation of noise as a result of activities and the use of diesel powered vehicles, equipment and machinery when required during the maintenance phase.	Negative	Local	Long Term	Substantial	Unlikely	High	Low	Moderate	Low	4	Medium

INDIRECT IMPACTS – OPERATIONAL PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Increases in the prevalence of exotic and invasive plants.	Negative	Regional	Long term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High

CUMULATIVE IMPACTS – OPERATIONAL PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Overhead transmission lines, as well as subtle changes in habitat are likely to result in the alteration of avian behaviour in and around the route.	Negative	Local	Long-Term	Substantial	Likely	Moderate	Low	Moderate	Very Low	5	High
The powerlines may increase the risk of collision and electrocution in some avifauna. An increase in towers and powerlines will result in greater mortalities in the region.	Negative	Local	Short term	Moderate	Likely	High	Low	Low	Low	4	High
Increases in the prevalence of exotic and invasive plants.	Negative	Regional	Long term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High
Visual Impacts											
Cumulative impact of solar energy generation projects and large scale electrical infrastructure on the existing rural-agricultural landscape.	Neutral	Regional	Long term	Slight	Unlikely	High	Low	Very Low	Not Applicable	5	High
Cumulative visual impact of solar energy generation projects and large scale electrical infrastructure on existing views of sensitive visual receptors in the surrounding landscape.	Negative	Regional	Long Term	Slight	Likely	High	Low	Very Low	Not Applicable	5	High

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Soils and Agricultural Potential Assessment											
Regional loss of agricultural land and resources as a result of the occupation of the land by the infrastructure of multiple projects.	Negative	Regional	Long term	Slight	Very Likely	Moderate	Low	Very Low	Not Applicable	5	High
Social Impacts											
Exacerbated in-migration resulting in a disruption of social structures as more solar energy facilities and associated electrical infrastructure (such as transmission lines) are developed in the study area.	Negative	Local	Medium to long-term	Substantial	Likely	Low	Moderate	Moderate	Moderate	3	Medium

Alternative 1 (Preferred Alternative) – Decommissioning Phase Direct, Indirect and Cumulative Impacts

DIRECT IMPACTS – DECOMMISSIONING PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Removal of overhead transmission lines, as well as subtle changes in habitat, is likely to result in the alteration of avian behaviour following the loss of roosts and perches.	Negative	Local	Long-Term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High
Minor and subtle changes in the geomorphological state of drainage lines as hydraulic changes arise within the catchment.	Undefined	Local to regional	Short term	Slight	Likely	High	Low	Very low	Very Low	5	High
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Long term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High
Visual Impacts											
Potential visual intrusion of decommissioning activities on views of sensitive visual receptors.	Negative	Local	Very Short-Term	Moderate	Likely	High	Low	Low	Low	4	High
Heritage Impacts											
Impacts to the natural and cultural landscape during the decommissioning phase as a result of the presence of construction vehicles.	Negative	Local	Short Term	Slight	Very likely	High	Moderate	Very low	Very low	5	High

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Geohydrological Impacts											
Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.	Negative	Site	Short-term	Moderate	Very unlikely	High	Low	Low	Very low	5	High
Soils and Agricultural Potential Assessment											
Degradation of veld vegetation beyond the direct footprint of the proposed transmission line due to decommissioning disturbance and potential trampling by vehicles (including dust generation).	Negative	Site	Medium term	Slight	Likely	Moderate (i.e. Partially)	Low	Very Low	Very Low	5	High
Loss of topsoil due to poor topsoil management and decommissioning activities that disturb the soil profile.	Negative	Site	Medium term	Slight	Likely	Moderate (i.e. Partially)	Low	Very Low	Very Low	5	High
Loss of agricultural land use as a result of the occupation of the land by the project infrastructure.	Negative	Site	Long term	Slight	Very Likely	High	Low	Very Low	Not Applicable	5	High
Soil erosion due to the alteration of the land surface characteristics and surface cover.	Negative	Site	Long term	Slight	Likely	Low	Low	Very Low	Very Low	5	High
Social Impacts											
Job losses as a result of the decommissioning of the proposed development.	Negative	Local	Long-Term	Substantial	Very likely	Moderate	Moderate	Moderate	Low	4	High
Traffic Impacts											
Increased traffic generation during the decommissioning phase.	Negative	Regional	Short term	Moderate	Very likely	Yes	Replaceable	Low	Low	4	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads.	Negative	Local	Long term	Extreme	Likely	No	High irreplaceability	High	Moderate	3	Medium
Impact on air quality due to dust generation, noise and release of air pollutants from vehicles and decommissioning equipment.	Negative	Local	Medium term	Moderate	Unlikely	Yes	Replaceable	Moderate	Low	4	Medium
Change in the quality and surface condition of the roads leading to and surrounding the site.	Positive	Local	Long term	Slight	Likely	Yes	Replaceable	Low	Low	4	Medium
Additional Impacts											
Removal of alien invasive vegetation from the proposed project area.	Positive	Site Specific	Short Term	Substantial	Very Likely	Moderate	N/A	Moderate	Moderate	3	Low
Increased faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site.	Negative	Local	Medium Term	Substantial	Very Likely	Low	High	Moderate	Low	4	Medium
Impact on the regional water balance as a result of increased water usage.	Negative	Local	Short Term	Moderate	Very Likely	Low	High	Low	Low	4	Medium
Potential spillage of effluent (from portable sanitation facilities for decommissioning personnel) resulting in potential impacts on soil and surface/groundwater.	Negative	Local	Short Term	Substantial	Unlikely	Moderate	Moderate	Moderate	Low	4	Medium
Pollution caused by spillage or discharge of waste water into the surrounding environment.	Negative	Local	Short Term	Substantial	Unlikely	Moderate	Moderate	Moderate	Low	4	Medium

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc.	Negative	Local	Short Term	Substantial	Likely	Moderate	Moderate	Moderate	Low	4	Medium
Sedimentation of the surrounding drainage lines as a result of stormwater runoff and stockpiling of excavated material during the decommissioning phase. The excavated material could potentially be washed into the drainage lines via stormwater. This could also impact on avifauna.	Negative	Local	Short Term	Substantial	Likely	High	Moderate	Moderate	Low	4	Medium
Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of general waste during the decommissioning phase.	Negative	Local	Short Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium
Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of hazardous waste, as well as the removal of the soil contaminated with oil and diesel.	Negative	Local	Short Term	Substantial	Unlikely	High	Low	Moderate	Low	4	Medium
Generation of noise as a result of decommissioning activities and the use of diesel powered vehicles, equipment and machinery.	Negative	Local	Short Term	Substantial	Likely	High	Low	Moderate	Low	4	Medium

INDIRECT IMPACTS – DECOMMISSIONING PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Removal of overhead transmission lines, as well as subtle changes in habitat, is likely to result in the alteration of avian behaviour following the loss of roosts and perches.	Negative	Local	Long-Term	Slight	Likely	Moderate	Low	Very Low	Very Low	5	High
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Medium Term	Moderate	Very Likely	Moderate	Low	Low	Very low	5	High
Geohydrological Impacts											
Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.	Negative	Site	Short-term	Moderate	Very unlikely	High	Low	Low	Very low	5	High

CUMULATIVE IMPACTS – DECOMMISSIONING PHASE

Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance of Impact		Ranking of Impact/ Risk	Confidence Level
								Without Mitigation	With Mitigation		
Ecological Impacts											
Increases in the prevalence of exotic and invasive plants.	Negative	Local	Medium Term	Moderate	Very Likely	Moderate	Low	Low	Very low	4	High

BASIC ASSESSMENT REPORT

APPENDIX G: ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

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1 INTRODUCTION

This Environmental Management Programme (EMPr) is prepared as part of the requirements of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations promulgated in Government Gazette 38282 and Government Notice (GN) R982, R983, R984 and R985 on 8 December 2014. This EMPr is being submitted to the National Department of Environmental Affairs (DEA) as part of the Application for Environmental Authorisation (EA) for the proposed construction of a transmission line and associated electrical infrastructure (within an electrical infrastructure corridor) to support the proposed 75 Megawatt (MW) Solar Photovoltaic (PV) power generation facility (i.e. Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, approximately 80 km south of Upington and 20-30 km north-east of Kenhardt within the !Kheis Local Municipality, Northern Cape Province (Figure 1). The proposed project is referred to as Kenhardt PV 2 – Transmission Line and the DEA Reference Number was pending at the time of completion of this report. The Project Applicant for this proposed Kenhardt PV 2 – Transmission Line project is Scatec Solar SA 350 (PTY) Ltd (hereinafter referred to as Scatec Solar).

Scatec Solar intend to construct two other transmission lines within the electrical infrastructure corridor to support two other 75 MW Solar PV facilities adjacent to the Kenhardt PV 2 facility, on the remaining extent of Onder Rugzeer Farm 168. Separate full Scoping and EIA Processes have been undertaken for these proposed Solar PV facilities referred to as Kenhardt PV 1 (DEA Reference Number: 14/12/16/3/3/2/837), Kenhardt PV 2 (DEA Reference Number: 14/12/16/3/3/2/838) and Kenhardt PV 3 (DEA Reference Number: 14/12/16/3/3/2/836).

This proposed transmission line and electrical infrastructure project is required in order to connect the proposed PV facilities to the national grid via the Eskom Nieuwehoop Substation. Separate Basic Assessment (BA) Processes have been undertaken for the development of the proposed transmission lines. Figure 1 shows the overall locality of the electrical infrastructure corridor (within which the transmission lines and electrical infrastructure will be constructed to support each Solar PV project), as well as the three proposed 75 MW Solar PV facility projects (which are the subject of separate EIA Processes).

This EMPr is being made available to Interested and Affected Parties (I&APs), stakeholders and Organs of State, as part of the BA Report, for a 30-day review period. Comments received from stakeholders during this aforementioned review period will be incorporated into the EMPr, where applicable. Following the incorporation of comments from I&APs, stakeholders and Organs of State, this EMPr is intended as a "living" document and should continue to be updated regularly, as needed.

1.1 PROJECT DESCRIPTION

The proposed 75 MW Solar PV facilities will make use of PV solar technology to generate electricity from the sun's energy (which, as noted above, is being assessed as part of separate Scoping and EIA Processes). The Applicant is proposing to develop three facilities with a possible maximum installed capacity of 100 MW Direct Current (DC) which produces 75 MW

Alternating Current (AC) of electricity from PV solar energy. As noted above, the electricity produced will be transmitted to the Eskom Nieuwehoop Substation via transmission lines (this component is the subject of this BA Process). Once a Power Purchase Agreement (PPA) is awarded, the proposed Kenhardt PV 2 facility will generate electricity for a minimum period of 20 years. It is proposed that Scatec Solar will implement the Self-Build Option for the additional electrical infrastructure to be constructed (which is assessed separately as part of this BA Process). Following the construction phase, the proposed transmission line and electrical infrastructure will either be transferred into the ownership of Eskom or remain in the ownership of Scatec Solar.

The Eskom Nieuwehoop Substation (which is currently being constructed and is located approximately 5 km from the project site) will be used to connect the proposed PV facilities to the national grid. An EA for the construction of the Eskom Nieuwehoop Substation was granted to Eskom Holdings SOC Limited on 21 February 2011 by the DEA (Reference Number: 12/12/20/1166). In addition, an EA (DEA Reference Number: 12/12/20/2606; NEAS Reference Number: DEA/EIA/0000785/2011), dated 14 February 2014, was also granted to Eskom Holdings SOC Limited to construct transformer feedback bays, transformers, busbars and 132 kV feeder bays and associated lines within the existing development footprint of the Nieuwehoop Substation.

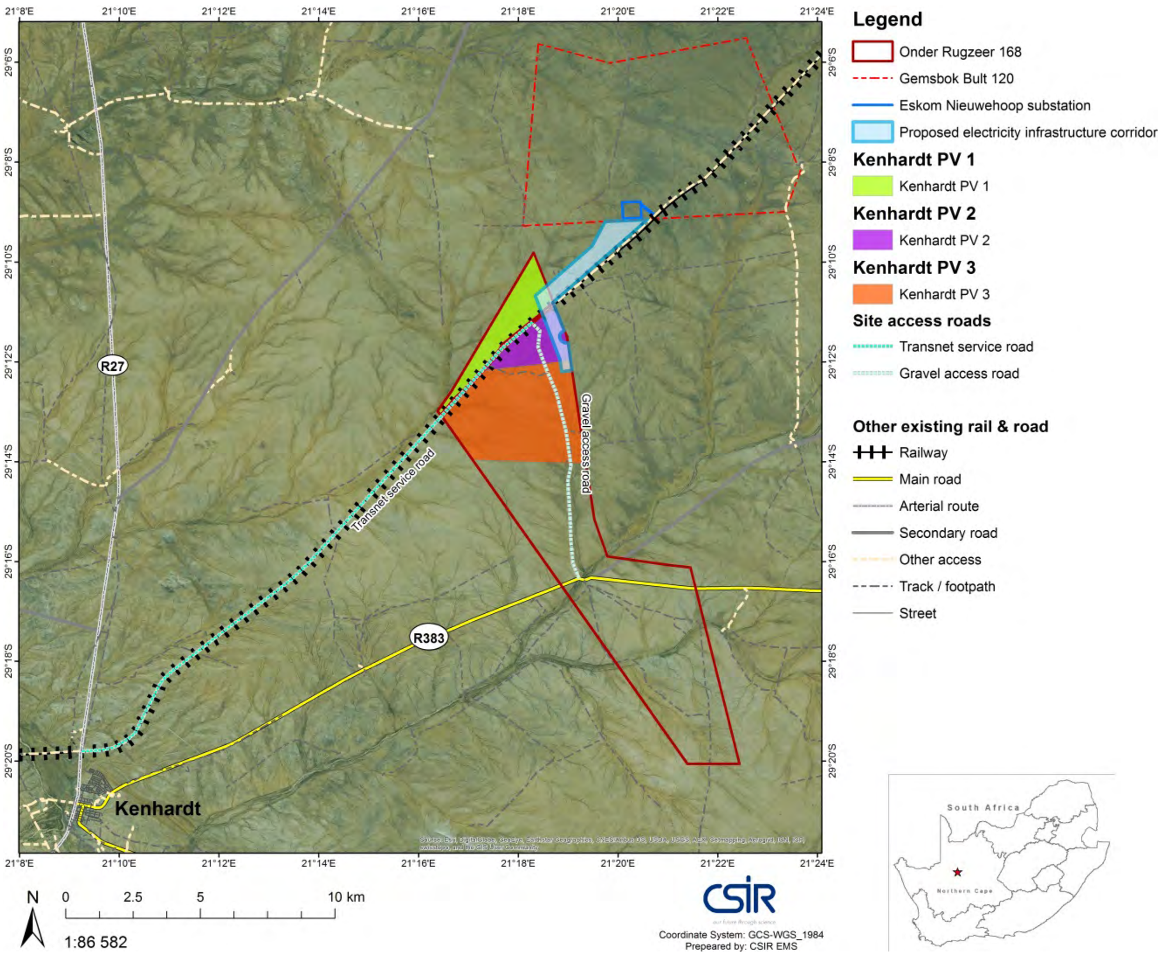


Figure 1: Locality of the three proposed 75 MW PV Facilities and Electrical Infrastructure Corridor

A large corridor area (as shown in Figure 1) was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix A of the BA Report, as well as Appendix B of this EMPr). This map shows the sensitivities on site (terrestrial, aquatic, and sensitive heritage features) within the corridor that was assessed. Based on this map, the preferred location and routing for the Kenhardt PV 2 transmission line avoids the sensitive features that were identified by the specialists within the corridor. Specifically, Aloe consocies (discussed in the Kenhardt PV 1 – Transmission Line Report), a dolerite koppie, a pan and minor drainage lines were identified within the larger corridor by the specialists. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, the preferred routing has also been preliminarily determined for this project (Appendix A of this EMPr). It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative routing or revisions to the routing occurring **within the boundaries of the corridor** would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the BA 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 corridor is considered to be a "box" in which the project components can be constructed at whichever location (within the boundary of the corridor) without requiring an additional assessment or change in impact significance. Any changes to the layout **within the boundaries of the corridor** following the issuing of the EA (should it be granted) will therefore be considered to be non-substantive.

Appendix B of this EMPr includes an environmental sensitivity map which indicates the environmental sensitive areas and features identified during the BA Process (as described above). Appendix C of this EMPr includes a map combining the site layout and the environmental sensitivity map.

The proposed **Kenhardt PV 2 – Transmission Line** project will consist of the following main components:

- An overhead transmission line will be constructed with an estimated length of 5 km (extending between the Kenhardt PV 2 facility and the Eskom Nieuwehoop Substation). The proposed transmission line will extend from the remaining extent of Onder Rugzeer Farm 168 to the remaining extent of Portion 3 of Gemsbok Bult Farm 120. The transmission line will span over the Remainder of Boven Rugzeer 169 and Portion 4 of Onder Rugzeer Farm 168. The proposed transmission line is expected to have concrete foundations and steel tower structures (i.e. pylons). The line will consist of either self-supporting suspension structures or guyed monopoles. The towers will all have a maximum height of 30 m. The span lengths are estimated to range between 200 m and 300 m. The servitude width for the 132 kV power line will be 52 m wide.
- Associated electrical infrastructure at the Eskom Nieuwehoop Substation will be constructed in order to ensure that the substation is capable of receiving the additional electricity that is generated by the proposed Kenhardt PV 2 facility. As noted above, this infrastructure includes, but is not limited to, feeders, Busbars, transformer bay and extension to the platform at the Eskom Nieuwehoop Substation. Discussions have been initiated with the Project Applicant and Eskom to determine the requirements of connecting to the Nieuwehoop Substation.

- An on-site substation (with a capacity of 80 MVA) will also be constructed. The on-site substation building is expected to extend approximately 12 m in height, with a maximum footprint of 20 000 m^2 (2 ha).
- The proposed project will also include the construction of a gravel road below the proposed transmission line. The proposed gravel road will follow the route of the transmission line and will extend approximately 4 km to 9 km in length and less than 6 m in width.

The following proposed transmission line and electrical infrastructure connectivity options have been considered for the three transmission line projects (i.e. Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line and Kenhardt PV 3 – Transmission Line):

- Construction of a separate 132 kV transmission line from the proposed Kenhardt PV 1, Kenhardt PV 2 and Kenhardt PV 3 facilities to the Eskom Nieuwehoop Substation that is currently being constructed on Farm Gemsbok Bult (remaining extent of Portion 3 of Farm 120); or
- Construction of separate 22/33 kV transmission lines to connect the Kenhardt PV 2 and Kenhardt PV 3 projects to the proposed Kenhardt PV 1 on-site substation which will link via a 132 kV line to the Eskom Nieuwehoop Substation; or
- Construction of one 132 kV transmission line from the Kenhardt PV 1 project to the Eskom Nieuwehoop Substation and connect the Kenhardt PV 2 and Kenhardt PV 3 facilities together via medium voltage transmission lines to either the on-site substation of Kenhardt PV 2 or PV 3, followed by the construction of one 132 kV transmission line from the on-site substation to the Eskom Nieuwehoop Substation.

As noted above and shown in Figure 1 above, all transmission lines and connectivity options (as described above) will be constructed within a single electrical infrastructure corridor. The corridor will extend between 300 m and 1000 m wide. This corridor was assessed for the proposed transmission lines and associated electrical infrastructure (for all three Kenhardt PV Transmission Line projects) to ensure that the line routing and placement of the structures avoid sensitive areas that have been identified by the specialists.

The proposed project can be divided into the following three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and has therefore been assessed by the specialist studies (Appendix D of the BA Report). It is important to note that for the operational phase, the transmission line will result in impacts on avifauna and the surrounding environment; however requirements for water, sewage management and waste disposal do not apply (as explained above). The construction phase will take place subsequent to the issuing of an EA from the DEA and a successful BID in terms of the REIPPPP (i.e. the issuing of a PPA from the DOE). The construction phase is expected to extend 12 to 14 months (however the construction period is subject to the final requirements of Eskom and the REIPPPP Request for Proposal provisions at that point in time). The proposed Kenhardt PV 2 project is expected to become operational by 2018.

The main activities that will form part of the construction phase are:

- Removal of vegetation for the proposed infrastructure;
- Excavations for infrastructure and associated infrastructure;
- Establishment of a laydown area for equipment;
- Stockpiling of topsoil and cleared vegetation;
- Transportation of material and equipment to site; and
- Construction of the transmission lines and additional infrastructure.

The following main activities will occur during the operational phase:

- The transmission of electricity generation from the proposed 75 MW Kenhardt PV 2 facility to the Eskom Nieuwehoop Substation; and
- Maintenance of the transmission line servitude including the gravel road.

Should it be decided not to extend the operational lifespan of the project beyond 20 years, the project will be decommissioned. The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise, the decommissioning procedure will involve removing the infrastructure, and covering the concrete footings with soil to a depth sufficient for the re-growth of natural vegetation. Any other supporting infrastructure no longer in use will be removed from the site and either disposed of at a registered disposal facility or recycled if possible.

It should be noted that a detailed project description (based on the conceptual design) is provided in Section A of the BA Report.

1.2 AUTHORS OF THE EMPr

This EMPr has been compiled by the Environmental Assessment Practitioners (Paul Lochner, Surina Laurie and Rohaida Abed) and the various specialists on the team (as indicated in Table 1). The details and expertise of the Environmental Assessment Practitioners and the specialists are respectively provided in Appendix H and Appendix D of the BA Report.

Paul Lochner has more than 20 years of experience in environmental assessment and management studies, primarily in the leadership and integration functions. This has included Strategic Environmental Assessments (SEA), EIAs and Environmental Management Plans. In July 2003, he obtained certification as a registered EAP with the Interim Certification Board for EAPs of South Africa (EAPSA). Paul has extensive experience in conducting environmental assessment and management processes throughout South Africa.

Surina Laurie has a Masters degree in Environmental Management and more than 5 years of experience in environmental assessment and management. She has experience in undertaking BAs and Scoping and EIAs for various sectors, including renewable energy, industry and tourism. She is a registered Professional Natural Scientist (Registration Number: 400033/15) with the South African Council for Natural Scientific Professions (SACNASP). Rohaida Abed has a Masters degree in Environmental Science and is a registered Professional Natural Scientist (Registration Number: 400247/14) with the SACNASP. She has experience in conducting BAs and Scoping and EIAs for various sectors, including Port infrastructure and Bulk Liquid Storage facilities, and has been involved in various transport infrastructure related projects as an Environmental Control Officer.

Table 1: The BA Management Team

NAME	ORGANISATION	ROLE/ SPECIALIST STUDY UNDERTAKEN
Environmental Assessment Practitioners		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Surina Laurie	CSIR	Project Leader (*Pr. Sci. Nat.)*
Rohaida Abed	CSIR	Project Manager (*Pr. Sci. Nat.)*
Specialists		
Simon Bundy	Sustainable Development Projects cc	Ecological Impact Assessment (including Terrestrial Ecology, Aquatic Ecology and Avifauna)
Henry Holland	Private	Visual Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Dr. John Almond	Natura Viva cc	Desktop Palaeontological Impact Assessment
Julian Conrad	GEOSS	Geohydrological Assessment
Johann Lanz	Private	Soils and Agricultural Potential Assessment
Rudolph du Toit	CSIR	Social Impact Assessment
P. S. van der Merwe and A. J. Otto	MESA Solutions (PTY) Ltd	Electromagnetic Interference and Radio Frequency Interference Surveys

As noted above, an Electromagnetic Interference and Radio Frequency Interference Survey Technical Study was commissioned by the Project Applicant to determine the impact of the proposed project on the Square Kilometre Array (SKA), as requested by the SKA Project Office. This report is not a standard specialist study in terms of Appendix 6 of the 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. The mitigation measures recommended mainly relate to the actual PV facility; however they have nonetheless been included in this EMPr for the purpose of completeness.

1.3 IMPACTS IDENTIFIED DURING THE BA PROCESS

Based on the specialist studies (as shown in Table 1), the following main direct potential impacts, as indicated in Table 2, have been identified and appropriate management and mitigation measures included within the EMPr (where required) as per the recommendations made in the specialist studies to ensure the potential impacts are suitably addressed and managed during all phases of the project. Indirect and cumulative impacts are noted in Section 4 to 12 of this EMPr.

It should be noted that other impacts for which specialist studies were not undertaken but where mitigation or management actions may be required, are also included in the EMPr.

Table 2: Impacts Identified in the BA

KEY IMPACT	IMPACTS IDENTIFIED
Terrestrial Ecology, Aquatic Ecology and Avifauna	**Construction Phase:** ▪ Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project; ▪ Changes in the geomorphological state of drainage lines; and ▪ Exotic weed invasion. **Operational Phase:** ▪ Changes in avian behaviour within increased perch and predation opportunities arising for raptors, which in turn have indirect impacts on prey species in the general locale; ▪ Bird collisions and mortalities arising from electrocution of birds perching on site and possibly direct collisions with the transmission line; and ▪ Exotic weed invasion as a consequence of regular and continued disturbance of route. **Decommissioning Phase:** ▪ A reversion back to the present seral stage, where continued grazing by livestock and herbivory by game will arise. ▪ A reversion of present faunal population states within the subject route. ▪ Exotic weed invasion as a consequence of abandonment of route and cessation of weed control measures.
Visual	**Construction Phase:** ▪ Potential visual intrusion of construction activities on views of sensitive visual receptors. **Operational Phase:** ▪ Potential landscape impact of the proposed 132 kV powerline on a rural agricultural landscape; and ▪ Potential visual intrusion of the proposed 132 kV powerline on the views of sensitive visual receptors. **Decommissioning Phase:** ▪ Potential visual intrusion of decommissioning activities on views of sensitive visual receptors.
Heritage (Archaeology and Cultural Landscape)	**Construction Phase:** ▪ Damage to or destruction of archaeological resources and graves; and ▪ Impacts to the cultural and natural landscape. **Operational Phase:** ▪ Impacts to the cultural and natural landscape. **Decommissioning Phase:** ▪ Impacts to the cultural and natural landscape.
Palaeontology	**Construction Phase:** ▪ Potential 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.
Geohydrology	**Construction Phase:** ▪ Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages; and ▪ Potential impact on the groundwater as a result of the construction of the storage yards and temporary construction labour accommodation site camps. **Decommissioning Phase:** ▪ Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.
Soils and Agricultural Potential	**Construction and Decommissioning Phases:** ▪ Degradation of veld vegetation beyond the direct footprint of the proposed transmission line corridor due to construction and decommissioning phase disturbance and potential trampling by vehicles.

KEY IMPACT	IMPACTS IDENTIFIED
	▪ Loss of topsoil due to poor topsoil management (burial, erosion, etc.) during construction and decommissioning related soil profile disturbance (levelling, excavations etc.) and resultant decrease in that soil's capability for supporting vegetation. ▪ Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production. ▪ Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project. **Operational Phase:** ▪ Loss of agricultural land use due to direct occupation by the infrastructural footprint of the proposed development for the duration of the project (all phases). This will take affected portions of land out of agricultural production. ▪ Soil erosion by wind or water due to the alteration of the land surface characteristics. Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, and the establishment of excavations and surfaces for the proposed pylon bases. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project.
Socio-Economic	**Construction Phase:** ▪ Influx of jobseekers ▪ Increases in social deviance and increases in incidence of HIV/AIDS infections ▪ Expectations regarding jobs ▪ Local spending ▪ Local employment ▪ Human development resulting from the proposed Economic Development Plan **Operational Phase:** ▪ Influx of jobseekers ▪ Increases in social deviance and increases in incidence of HIV/AIDS infections ▪ Expectations regarding jobs ▪ Local spending ▪ Local employment ▪ Human development resulting from the proposed Economic Development Plan **Decommissioning Phase:** ▪ Job losses at the end of the project life-cycle.
Traffic *Note: A Traffic Impact Statement was compiled by the CSIR. It is not a specialist study in terms of Appendix 6 of the EIA Regulations; however it provides a general description of the potential traffic impacts.*	▪ Increase in traffic generation. ▪ Accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads. ▪ Impact on air quality due to noise and release of air pollutants from vehicles and construction equipment. ▪ Decrease in quality of surface condition of the roads.

2 APPROACH TO PREPARING THE EMPr

2.1 COMPLIANCE WITH RELEVANT LEGISLATION

In terms of legal requirements, a crucial objective of the EMPr is to satisfy the requirements of Appendix 4 of the NEMA EIA Regulations promulgated in Government Gazette 38282 and GN R982 on 8 December 2014, and Section 24N of the NEMA. These regulations regulate and prescribe the content of the EMPr and specify the type of supporting information that must accompany the submission of the report to the authorities. An overview of where the requirements are addressed in this EMPr is presented in Tables 3 and 4.

Table 3: Compliance with Section 24N of NEMA

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
2) The environmental management programme must contain- a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of: (i) planning and design; (ii) pre-construction and construction activities; (iii) the operation or undertaking of the activity in question; (iv) the rehabilitation of the environment; and (v) (v) closure, if applicable;	Section 1.3 and the columns detailing the impact description, mitigation and management objectives, and mitigation and management actions in Sections 4 to 12 of this EMPr.
b) details of- (i) the person who prepared the environmental management programme; and (ii) the expertise of that person to prepare an environmental management programme;	Section 1.2 and Appendices D and H of the BA Report
c) a detailed description of the aspects of the activity that are covered by the environmental management programme;	Section 1 and Section 1.1
d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);	Columns in Section 4 to 12 of the EMPr regarding the monitoring responsibility, including the requirements for monitoring and reporting on compliance and the responsible parties noted in Section 3.
e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;	The columns detailing the mitigation and management actions, and the monitoring methodology, frequency and responsibility in Sections 4 to 12 of this EMPr.
f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	Sections 4 to 12 of this EMPr, as applicable to the post-construction, rehabilitation phase and the decommissioning phase.
g) a description of the manner in which it intends to- (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; and (iii) comply with any prescribed environmental management standards or practices.	The columns detailing the mitigation and management objectives, mitigation and management actions, and the monitoring methodology, frequency and responsibility in Sections 4 to 12 of this EMPr.
3) The environmental management programme must, where appropriate- a) set out time periods within which the measures contemplated in the environmental management programme must be implemented; b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of polluted or extraneous water or ecological degradation which may occur inside and outside the boundaries of the operations in question; and c) develop an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.	The columns detailing the mitigation and management actions, and the monitoring methodology, frequency and responsibility in Sections 4 to 12 of this EMPr. Section 11 of this EMPr includes an Environmental Awareness Plan.
5) The Minister, the Minister responsible for mineral resources or an MEC may call for additional information and may direct that the environmental management programme in question must be adjusted in such a way as the Minister, the Minister responsible for mineral resources or the MEC may require.	Not applicable at this stage.
6) The Minister, the Minister responsible for mineral resources or an MEC may at any time after he or she has approved an application for an	Not applicable at this stage.

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
environmental authorisation approve an amended environmental management programme.	
7) The holder and any person issued with an environmental authorisation- a) must at all times give effect to the general objectives of integrated environmental management laid down in section 23; b) must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment; c) must manage all environmental impacts (i) in accordance with his or her approved environmental management programme, where appropriate; and (ii) as an integral part of the prospecting or mining, exploration or production operation, unless the Minister responsible for mineral resources directs otherwise; d) must monitor and audit compliance with the requirements of the environmental management programme; e) must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and f) is responsible for any environmental damage, pollution, pumping and treatment of polluted or extraneous water or ecological degradation as a result of his or her operations to which such right, permit or environmental authorisation relates.	Throughout the EMPr
8) Notwithstanding the Companies Act, 2008 (Act No. 71 of 2008), or the Close Corporations Act, 1984 (Act No. 69 of 1984), the directors of a company or members of a close corporation are jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company or close corporation which they represent, including damage, degradation or pollution.	Section 3 details the responsibility of the Project Applicant.

Table 4: Compliance with Appendix 4 of the 2014 NEMA EIA Regulations

Requirements of Appendix 4 of the 2014 NEMA EIA Regulations (Government Gazette Government Gazette 38282 and GN R982 on 8 December 2014)	Where it is included in this EMPr?
1. (1) An EMPr must comply with section 24N of the Act and include: a) details of: (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.2 and Appendices D and H of the BA Report
b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1 and Section 1.1
c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	Appendix A, Appendix B and Appendix C of this EMPr.
d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including: (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post (v) closure; and (vi) where relevant, operation activities;	Section 1.3 and the columns detailing the impact description, mitigation and management objectives, and mitigation and management actions in Sections 4 to 12 of this EMPr.
e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	The columns detailing the mitigation and management objectives in Sections 4 to 12 of this EMPr.
f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and	The columns detailing the mitigation and management actions in Sections 4 to 12 of

Requirements of Appendix 4 of the 2014 NEMA EIA Regulations (Government Gazette Government Gazette 38282 and GN R982 on 8 December 2014)		Where it is included in this EMPr?
	outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to: (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	this EMPr.
g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	The columns detailing the monitoring methodology in Sections 4 to 12 of this EMPr.
h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	The columns detailing the monitoring frequency in Sections 4 to 12 of this EMPr.
i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	The columns detailing the monitoring responsibility in Sections 4 to 12 of this EMPr.
j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	The columns detailing the mitigation and management actions, and the monitoring methodology and frequency in Sections 4 to 12 of this EMPr.
k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	The columns detailing the mitigation and management actions, and the monitoring methodology, frequency and responsibility in Sections 4 to 12 of this EMPr.
l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 4 to 12 of the EMPr, including the requirements for monitoring and reporting on compliance and the responsible parties noted in Section 3.
m)	an environmental awareness plan describing the manner in which: (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 11 of this EMPr.
n)	any specific information that may be required by the competent authority.	Section 2.2 and the management objectives and management actions in Sections 4 to 11.

2.2 COMPLIANCE WITH DEA REQUIREMENTS

The EMPr is structured in such a way to comply with the requirements of the DEA (that were issued in relation to the separate EIA projects) and to ensure that the mitigation and management measures that have been identified during the BA Process are included in the respective plans. These requirements are detailed in Table 5. It is important to note that other project specific aspects (such as the findings and recommendations of the specialist studies), in addition to those covered by the plans required by the DEA, have been included in Section 12 of the EMPr.

Table 5: DEA Requirements for the EMPr

DEA Requirements	Relevant Section in the EMPr
All recommendations and mitigation measures recorded in the BA Report and the specialist studies conducted.	Recommended mitigation measures and monitoring actions as noted in the BA Report and specialist studies have been included in this EMPr, where relevant.
The final site layout map	Refer to Appendix A of this EMPr for the site layout map. Refer to Section 1.1 of this EMPr

DEA Requirements	Relevant Section in the EMPr
	for a description of the approach followed to determine the site layout.
Measures as dictated by the final site layout map and micro-siting.	Refer to Appendix A of this EMPr for the site layout map. Refer to Section 1.1 of this EMPr for a description of the approach followed to determine the site layout.
An environmental sensitivity map indicating environmental sensitive areas and features identified during the BA Process.	Refer to Appendix B of this EMPr for an environmental sensitivity map. Refer to Section 1.1 of this EMPr for a description of the approach followed to identify the environmental sensitivities.
A map combining the final layout map superimposed (overlain) on the environmental sensitivity map.	Refer to Appendix C of this EMPr for a combined environmental sensitivity and layout map. Refer to Section 1.1 of this EMPr for a description of the approach followed to identify the environmental sensitivities and to determine the site layout.
An alien invasive management plan to be implemented during the construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.	Refer to Section 4 of this EMPr.
A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. This plan must be compiled by a vegetation specialist familiar with the site and be implemented prior to commencement of the construction phase.	Refer to Section 5 of this EMPr. It should be noted that faunal protection and habitat rehabilitation has also been included in this section.
A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility. Restoration must be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	Refer to Section 5 of this EMPr. It should be noted that faunal protection and habitat rehabilitation has also been included in this section.
An open space management plan to be implemented during the construction and operation of the facility.	Refer to Section 6 of this EMPr.
A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimise impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.	Refer to Section 7 of this EMPr.
A transportation plan for the transport of components, main assembly cranes and other large pieces of equipment.	Refer to Section 7 of this EMPr.
A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.	Refer to Section 8 of this EMPr.
A fire management plan to be implemented during the construction and operation of the facility.	Refer to Section 11 of this EMPr. It should be noted that this has been combined with an Environmental Awareness Plan.
An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion.	Refer to Section 9 of this EMPr.
An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems	Refer to Section 10 of this EMPr.

DEA Requirements	Relevant Section in the EMPr
Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants.	Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments have been included throughout the EMPr, such as Sections 8, 9 and 10.

2.3 CONTENTS OF THE EMPr

Where applicable, each section of the EMPr is divided into the following four phases of the project cycle:

- Design Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

The EMPr includes the findings and recommendations of the BA Process and specialists studies. However, the EMPr is considered a "living" document and must be updated with additional information or actions during the design, construction, operational and decommissioning phases if applicable.

The EMPr follows an approach of identifying an over-arching goal and objectives, accompanied by management actions that are aimed at achieving these objectives. The management actions are presented in a table format in order to show the links between the goal and associated objectives, actions, responsibilities, and monitoring requirements and targets.

The management plans for the design, construction, operational and decommissioning phases consist of the following components:

- **Impact:** The potential positive or negative impact of the development that needs to be enhanced, mitigated or eliminated.
- **Objectives:** The objectives necessary in order to meet the goal; these take into account the findings of the specialist studies.
- **Mitigation/Management Actions**: The actions needed to achieve the objectives of enhancing, mitigating or eliminating impacts; taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.
- **Monitoring**: The key monitoring actions required to check whether the objectives are being achieved, taking into consideration methodology, frequency and responsibility.

2.4 GOAL FOR ENVIRONMENTAL MANAGEMENT

The overall goal for environmental management for the Kenhardt PV 2 – Transmission Line project is to construct and operate the project in a manner that:

- Minimises the ecological footprint of the project on the local environment;
- Minimises impacts on fauna, flora and freshwater ecosystems;
- Facilitates harmonious co-existence between the project and other land uses in the area; and

- Contributes to the environmental baseline and understanding of environmental impacts of solar energy facility in a South African context.

3 ROLES AND RESPONSIBILITIES

For the purposes of the EMPr, the generic roles that need to be defined are those of the:

- Project Developer;
- Environmental Control Officer; and
- Construction Manager (Lead Contractor).

It is acknowledged that the specific titles for these functions will vary from project to project. The intent of this section is to give a generic outline of what these roles typically require. It is expected that this will be appropriately defined at a later stage.

3.1 PROJECT DEVELOPER

The Project Developer (i.e. Scatec Solar) is the 'owner' of the project and, as such, is responsible for ensuring that the conditions of the EA issued in terms of NEMA (should the project receive such authorisation) are fully adhered to, as well as ensuring that any other necessary permits or licenses are obtained and complied with. It is expected that the Project Developer will appoint the Environmental Control Officer and the Lead Contractor.

As noted above, it is proposed that Scatec will implement the Self-Build Option for the transmission line and associated electrical infrastructure to be constructed. Following the construction phase, the associated electrical infrastructure will either be transferred into the ownership of Eskom or otherwise remain in the ownership of Scatec. This means that should Eskom take ownership of the electrical infrastructure, the operational, maintenance and decommissioning requirements will be their responsibility. The requirements are included in Section 13 of this EMPr.

3.2 ENVIRONMENTAL CONTROL OFFICER

An independent Environmental Control Officer (ECO) must be appointed to monitor the compliance of the proposed project with the conditions of EA (should such authorisation be granted by the DEA) during the construction and decommissioning phases (and possibly the operational phase, depending on the requirements of the DEA). The ECO must also monitor compliance of the proposed project with environmental legislation and recommendations of the EMPr, as well as oversee the implementation of the EMPr during the phases of the project, monitor environmental impacts, undertake record-keeping.

The ECO will be responsible for updating the EMPr as and when necessary, and compiling a monitoring checklist based on the EMPr. The roles and responsibilities of the ECO should include the following:

- The ECO must undertake periodic environmental audits during the relevant phases of the proposed project in order to monitor and record environmental impacts and non-conformances, and to monitor site activities to ensure adherence to the specifications contained in the EMPr, using a monitoring checklist. The timeframes for environmental audits will be indicated in the EA (should such authorisation be granted by the DEA).

- Environmental compliance/audit reports must be compiled and submitted by the ECO to the Competent Authority (i.e. DEA and/or Provincial Department of Environment and Nature Conservation) on a regular basis (i.e. at intervals as indicated in the EA (should such authorisation be granted by the DEA)).
- The ECO must maintain a diary of site visits and audits, a copy of the Environmental Authorisation (should such authorisation be granted by the DEA) and relevant permits for reference purposes, a non-conformance register, a public complaint register, and a copy of previous environmental audits undertaken.
- Prior to the commencement of construction, the ECO must meet on site with the Contractor to confirm the construction procedure and designated construction areas and work activity zones.
- Reporting of any non-conformances within 48 hours of identification of such non-conformance to the relevant agents.
- Conducting an environmental inspection on completion of the construction period and 'signing off' the construction process with the Contractor.
- Ensure that records are kept of all monitoring activities and results.
- Conducting an environmental inspection on completion of decommissioning and 'signing off' the site rehabilitation process.

The Lead Contractor and sub-contractors may have their own Environmental Officers, or designate Environmental Officer functions to certain personnel.

3.3 LEAD CONTRACTOR

The Lead Contractor will be responsible for the following:

- Ensure that all appointed contractors and sub-contractors are aware of the EMPr and their respective responsibilities;
- Prior to the commencement of construction, the Lead Contractor must meet on site with the ECO in order to confirm the construction procedure and designated construction areas and work activity zones.
- Ensure that each sub-contractor employs an Environmental Officer (or employs a designated suitably qualified individual to fulfil the role of an Environmental Officer) to monitor and report on the daily activities on-site during the construction period;
- Implementation of the overall construction programme, project delivery and quality control for the construction for the transmission line project;
- Overseeing compliance with the Health, Safety and Environmental Responsibilities specific to the project management related to project construction;
- Promoting total job safety and environmental awareness by employees, contractors and sub-contractors and stress to all employees and contractors and sub-contractors the importance that the project proponent attaches to safety and the environment;
- Ensuring that safe, environmentally acceptable working methods and practices are implemented and that sufficient plant and equipment is made available properly operated and maintained, to facilitate proper access and enable any operational to be carried out safely;

- Ensuring that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the Project Developer's ECO;
- Implement the Traffic Management Plan (Section 7), Transportation Plan (Section 7) and Storm Water Management Plan (Section 8).

4 ALIEN INVASIVE VEGETATION MANAGEMENT PLAN

Impact	Mitigation/ Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
A. DESIGN PHASE					
4.1. Impacts due to establishment and increases in the prevalence of exotic and invasive plants	Ensure the appropriate removal of alien invasive vegetation from the proposed project area and prevent the establishment and spread of alien invasive plants due to the project activities. Avoidance of disturbance to land and propagation of exotic plant species.	4.1.1. Ensure compliance with relevant Environmental Specifications for the control and removal of alien invasive plant species. 4.1.2. Appoint a specialist or contact relevant authorities to seek guidance on the removal of the alien vegetation on site. 4.1.3. Compile exotic weed control plan for the transmission line corridor site.	▪ Appoint a suitable specialist/ Contractor or contact the relevant authorities to seek guidance on the removal of the planted alien invasive species. ▪ Appoint a suitable specialist to compile an alien invasive vegetation eradication plan. Identify dominant weed species within the region and compile approach and management plan for exotic weed control during and post construction. ▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the design phase. ▪ Once-off during the design phase (i.e. prior to commencement). ▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar) ▪ Project Developer (Scatec Solar) and ECO ▪ ECO
B. CONSTRUCTION PHASE					
4.2. Increases in the prevalence of exotic and invasive plants	Avoidance of disturbance to land and propagation of exotic plant species	4.2.1. Implement a weed eradication programme. Undertake regular visual monitoring and redress of exotic weeds in and around site, particularly during construction. 4.2.2. Ensure the avoidance of significant sculpting of land and maintenance of the general topography of the proposed transmission line route. Erosion control measures to be implemented where applicable. 4.2.3. Ensure the placement of energy dissipaters if identified around tower footings within minor drainage lines to reduce velocity of flow through such features and consequential disturbance.	▪ Undertake pre-construction and post-construction weed eradication measures. Appoint a suitable vegetation contractor to inspect the site and remove any exotic weeds. ▪ Undertake site and visual inspections and report any non-compliance. ▪ Identify the requirement for energy dissipaters etc. in drainage lines and the propensity for erosion to arise. Stone dissipaters or geofabrics to be implemented.	▪ Twice during construction period ▪ Ongoing during the construction phase ▪ Prior to construction and during construction phase following monitoring.	▪ Project Developer (Scatec Solar), ECO and Weed Eradication Contractor/ Specialist ▪ Contractors, Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO

Impact	Mitigation/ Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
4.3. Impacts due to the establishment of and increased spread of alien invasive plants	Avoid establishment and reduce the spread of alien invasive plants due to the project activities.	4.3.1. Appoint a specialist or contractor to undertake a sweep and survey of the final development footprint site, with an alien invasive eradication team to remove exotic vegetation prior to the commencement of construction. 4.3.2. Establish an ongoing monitoring programme for the construction phase to detect and quantify any alien species that may become established and identify the problem species (as per Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) and National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM: BA)).	▪ Appoint a suitable vegetation contractor to inspect the site and remove any exotic weeds prior to the commencement of construction. ECO to ensure that this is taken into consideration and implemented. ▪ Prepare monitoring programme which will monitor the presence of alien invasive species on the site. If any alien invasive species are detected then the distribution of these should be mapped (GPS co-ordinates of concentrations of plants). The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area.	▪ Prior to the commencement of construction ▪ Once-off	▪ Project Developer (Scatec Solar), ECO and Specialist Contractor ▪ ECO and Contractor
		4.3.3. Ensure proper management of soil stockpiles. Do not import soil stockpiles from areas with alien plants to ensure proper management of stockpiles.	▪ Monitor the presence of alien invasive plants during the construction phase via visual inspections and take action to remove and control these species.	▪ On-going	▪ ECO and Contractor
		4.3.4. Undertake rehabilitation of disturbed areas as soon as possible after construction. Stockpile the shallow topsoil layer separately from the subsoil layers. Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas.	▪ Rehabilitate disturbed areas and monitor the presence of alien invasive species on site.	▪ On-going	▪ ECO and Contractor
		4.3.5. Keep clearance and disturbance of indigenous vegetation to a minimum.	▪ Monitor and manage vegetation clearing by undertaking visual inspections to ensure minimal disturbance and to restrict activities to within demarcated areas.	▪ On-going	▪ ECO and Contractor
		4.3.6. Ensure that the footprint required for the proposed project activities (such as temporary stockpiling, earthworks, storage areas, site establishment etc.) is kept at a minimum.	▪ Verify that the proposed project area is determined and outlined prior to the commencement of the construction phase by undertaking visual inspections.	▪ Once-off prior to construction and as required during the construction process.	▪ ECO and Contractor

Impact	Mitigation/ Management Objectives	Mitigation/Management Actions	Monitoring: Methodology	Monitoring: Frequency	Monitoring: Responsibility
		4.3.7. Ensure that alien invasive vegetation found on site, within the proposed project footprint, is immediately controlled and removed promptly, in a scheduled manner throughout the construction phase. The removal of alien vegetation on site during the construction phase should use registered control methods and take into consideration the Alien and Invasive Species Regulations published in terms of Section 97(1) of the NEM: BA, if applicable.	▪ Monitor the presence of alien invasive plants during the construction phase via visual inspections and take action to remove and control these species. If any alien invasive species are detected then the distribution of these should be mapped (GPS co-ordinates of concentrations of plants). The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area. Any alien invasive should be cleared from site.	▪ On-going	▪ ECO and Contractor
		4.3.8. The removed alien invasive vegetation should be immediately disposed at a suitable waste disposal facility and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	▪ Monitor the removal of the alien vegetation found on site via visual inspections.	▪ As necessary during the construction phase.	▪ ECO
		4.3.9. All construction machinery and plant equipment delivered to site for use during the construction phase should be cleaned in order to limit the introduction of alien species.	▪ Clean machinery and equipment prior to the construction phase. ▪ ECO to conduct visual inspections to verify that machinery and equipment are cleaned, and report any non-compliance.	▪ Prior to the commencement of construction. ▪ As necessary during the construction phase.	▪ ECO and Contractor
C. OPERATIONAL PHASE					
4.4. Increases in the prevalence of exotic and invasive plants	To prevent the excessive growth and propagation of exotic weeds on disturbed lands that form part of the power line. Reduce the establishment and spread of alien invasive plants.	4.4.1. Exotic weed control measures to be instituted through weed control programme. 4.4.2. Implement regular redress of exotic weed through use of herbicide and manual removal. Control any alien plants that become established using registered control methods. Use of herbicides and undertake manual removal of alien vegetation on site where this may arise. Regular address and redress of weeds identified on site by a suitable contractor. The clearance of exotic weed to be undertaken bi-annually at a	▪ Undertake annual routine weed control. ▪ Monitor the use of herbicide sprays and manual removal of alien vegetation by undertaking visual inspections and reporting any non-compliance. ▪ Maintain register of weed spraying activities and ensure that herbicide use is recorded.	▪ Annually	▪ Project Developer (Scatec Solar)

Impact	Mitigation/ Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
	To remove exotic weeds as and when they may arise and thereby prevent alteration of local and adjacent habitat forms.	minimum and on a needs basis at an intermittent level.			
D. DECOMMISSIONING PHASE					
4.5. Exotic weed invasion of the decommissioned site resulting in ecological change	To prevent the excessive growth and propagation of exotic weeds on disturbed lands that formed a portion of the transmission line (and PV facility).	4.5.1. All natural areas must be rehabilitated with species indigenous to the area. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction.	▪ Final external audit of area to confirm that area is rehabilitated to an acceptable level.	▪ Once off	▪ Lead Contractor with advice from specialist
		4.5.2. Exotic weed control measures to be instituted through weed control programme. Regular redress of exotic weed through the use of herbicide and manual removal. 4.5.3. Ensure the stabilization of site, once decommissioning and removal of infrastructure has arisen.	▪ Undertake weed eradication along disturbance sites following dismantling of structures. ▪ Appoint contractor to undertake weed eradication programme. ▪ Monitor newly disturbed areas where infrastructure has been removed to detect and quantify any aliens that may become established after decommissioning and rehabilitation. ▪ Monitor the condition of the transmission line corridor via site inspections throughout the decommissioning phase and at the end to verify that the site is stabilized and all infrastructure has been removed. Record non-compliance and incidents.	▪ Once-off ▪ During the decommissioning phase ▪ During the decommissioning phase ▪ During the decommissioning phase	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar)/ Contractor ▪ ECO

5 PLANT RESCUE AND PROTECTION PLAN INCLUDING RE-VEGETATION AND HABITAT REHABILITATION PLAN (INCLUDING FAUNA AND AVIFAUNA)

<table>
<tr><th rowspan="2">Impact</th><th rowspan="2">Mitigation/Management Objectives</th><th rowspan="2">Mitigation/Management Actions</th><th colspan="3">Monitoring</th></tr>
<tr><th>Methodology</th><th>Frequency</th><th>Responsibility</th></tr>
<tr><td colspan="6">A. DESIGN PHASE</td></tr>
<tr><td>5.1. Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project</td><td>Reduce likelihood of vegetative and related habitat change in and around site.

Ensure compliance with relevant Provincial and National legislation in respect of habitat and vegetation forms.</td><td>5.1.1. Ensure that disturbed areas are maintained and that the footprint required for the proposed project activities is kept at a minimum (such as towers).
5.1.2. Ensure the avoidance of identified dolerite kopjie located within the corridor as identified in the Ecological Impact Assessment (Appendix D.1 of the EIA Report). Ensure the placement of a 120 m radial buffer around the dolerite kopjie. Ensure that sensitive habitat and features (as defined in the Ecological Impact Assessment, Appendix D.1 of the BA Report) are considered in the design.
5.1.3. The detailed design must take cognizance of the existing habitat and avoid or incorporate features into the routing of the proposed transmission line. The detailed design and confirmation of the proposed tower positions along the proposed powerline route should assist with the avoidance of specific vegetation associes and forms. A single specimen of A dichotoma was found to be located to the west of the dolerite kopjie (however outside of the corridor itself).
5.1.4. If required, appoint a specialist to undertake a second assessment of the route in or around February to March in order to identify any additional plant specimens of significance that may be evident on route. Undertake plant rescue operations, where 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</td><td>▪ Verify that the proposed project area is determined and outlined prior to the commencement of the construction phase by reviewing signed minutes of meetings or signed reports.
▪ Review the final route plan giving consideration to the position of the Aloe specimen and dolerite kopjie.
▪ Identify tower positions and the extent of footprint of towers. Review signed minutes of meetings or signed reports and plans.
▪ Appoint a specialist to undertake the survey, and a suitable contractor to complete the search and rescue.
▪ Review permits prior to undertaking search and rescue.
▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.</td><td>▪ Once-off during the design phase
▪ At commencement
▪ At commencement
▪ Prior to commencement
▪ Prior to commencement of construction and search and rescue.
▪ Once-off during the planning and design phase.</td><td>▪ Project Developer (Scatec Solar) and ECO
▪ Project Developer (Scatec Solar) and ECO
▪ Project Developer (Scatec Solar) and ECO
▪ Project Developer (Scatec Solar) and ECO
▪ Project Developer (Scatec Solar) and ECO
▪ ECO</td></tr>
</table>

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		of construction. 5.1.5. Ensure the necessary permits or licences are identified and applied for as applicable for removal of protected, indigenous vegetation. 5.1.6. Await response and provision of permit (as required) from the relevant Authorities prior to the removal of the indigenous species (if required). Once these permits are obtained, search and rescue must be undertaken for the indigenous species.			
5.2. Changes in the geomorphological state of drainage lines.	Reduction in change in present surface hydrology resulting from development activity.	5.2.1. Avoid, where possible, the disturbance to drainage lines (both minor and major) within the corridor. Ensure that major drainage lines are excluded from tower footprints. Ensure that sensitive habitat and features (as defined in the Ecological Impact Assessment, Appendix D.1 of the BA Report) are considered in the design. 5.2.2. A buffer zone of 32 m must be implemented from the edge of the major drainage lines on site (as shown in Appendix B and C of this EMPr). 5.2.3. Implement surface stabilization methods and energy dissipaters within drainage lines where erosion may be prevalent.	▪ Review the final route plan giving consideration to drainage lines. ▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports. ▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Prior to commencement of construction ▪ Once-off during the planning and design phase. ▪ Once-off during the planning and design phase.	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) ▪ Project Developer (Scatec Solar)
5.3. Alteration of avian behaviour in and around the route, as well as subtle changes in habitat due to the overhead transmission line.	Avoidance of changes in avian behaviour as a result of development	5.3.1. Ensure the use of appropriate towers and implementation of perch prevention mechanisms.	▪ Identify appropriate towers and plan for installation of perch prevention mechanisms. ▪ Verify that this is undertaken by reviewing the signed approved designs.	▪ During the design phase ▪ Once off during design	▪ Project Developer (Scatec Solar) and ECO ▪ ECO
5.4. Potential increase in the risk of collision and electrocution in some avifauna as a result of the power line.	Avoid the likelihood of mortalities of avian species as a consequence of the establishment of the power line.	5.4.1. Ensure the placement of Bird Flight Diverters (BFDs) on the proposed power line along the route. 5.4.2. Implement the use of perch prevention methods on towers. 5.4.3. Adopt a design of the towers and lines that avoids any risk of electrocution to birds.	▪ Identify appropriate points within infrastructure for the establishment of BFDs. ▪ Identify appropriate towers and plan for perch prevention mechanisms and BFDs on the transmission line. ▪ Ensure that this is taken into consideration during the design phase	▪ During the design phase ▪ Prior to the commencement of construction	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			by reviewed approved, signed off and final plans.		ECO
B. CONSTRUCTION PHASE					
5.5. Alteration of habitat structure and composition in and around towers and possibly through the stringing phase of the project	Reduce likelihood of vegetative and related habitat change in and around site	5.5.1. Ensure that disturbed areas are maintained and that the footprint required for the proposed project activities is kept at a minimum (such as towers). 5.5.2. Ensure the avoidance of identified dolerite kopjie located within the corridor as identified in the Ecological Impact Assessment (Appendix D.1 of the EIA Report). Ensure the placement of a 120 m radial buffer around the dolerite kopjie. Ensure that sensitive habitat and features (as defined in the Ecological Impact Assessment, Appendix D.1 of the BA Report) are considered in the design. A single specimen of A dichotoma was found to be located to the west of the dolerite kopjie (however outside of the corridor itself). 5.5.3. An initial pre-construction clearance of all exotic vegetation along the route should be undertaken to reduce the possibility of further exotic weed invasion. Continued exotic weed control measures should be implemented during the construction phase that aligns with an exotic vegetation management plan.	▪ Peg and mark the footprint of towers, identifying access points and extent of disturbance allowed during the construction phase. ▪ Confirm that the dolerite kopjie is not affected by the construction of the power line. ▪ Confirm that the Aloe is not affected by the construction of the power line. Undertake site and visual inspections and reporting any non-compliance. ▪ Appoint a suitable specialist/ Contractor or contact the relevant authorities to seek guidance on the removal of the planted alien invasive species.	▪ Prior to construction ▪ Prior to construction ▪ Once-off prior to construction	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO
5.6. Changes in the geomorphological state of drainage lines	Reduction in change in present surface hydrology resulting from the proposed development activity.	5.6.1. Avoid, where possible disturbance to drainage lines – both minor and major. Exclude major drainage lines from the tower footprints. 5.6.2. Implement surface stabilization methods and energy dissipaters within drainage lines where erosion may be prevalent. 5.6.3. Undertaking and completion of earthworks outside of the high rainfall period (if possible). 5.6.4. Ensure maintenance of a high level of housekeeping along the route of the proposed transmission line and within the surrounding regions during the construction phase (i.e.	▪ Confirm placement of towers in relation to minor drainage systems. ▪ Identify the need for energy dissipaters etc. in drainage lines and propensity for erosion to arise. ▪ Monitor the construction period to verify if this is being undertaken (where possible). ▪ Monitor the condition of the site camp and transmission line corridor throughout the construction phase via visual site inspections. Record non-	▪ Prior to construction and during the construction phase following monitoring. ▪ Prior to construction and during the construction phase following monitoring.	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO ▪ Contractor, Project Developer (Scatec Solar) and ECO ▪ Contractor, Project Developer

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		access roads etc.). 5.6.5. Undertake an inspection of drainage features immediately outside of the footprint of the proposed transmission line and undertake removal of solid waste and litter on a regular basis.	compliance and incidents. ▪ Monitor the condition of drainage features immediately outside of the footprint of the transmission line corridor and the condition of the construction area throughout the construction phase via visual site inspections. Record non-compliance and incidents.	▪ Ongoing during construction. ▪ Ongoing during construction. ▪ Ongoing during construction.	(Scatec Solar) and ECO ▪ Contractor, Project Developer (Scatec Solar) and ECO
5.7. Alteration of avian behaviour in and around the route, as well as subtle changes in habitat due to the overhead transmission line.	Avoidance of changes in avian behaviour as a result of development	5.7.1. Ensure the use of appropriate towers and implementation of perch prevention mechanisms.	▪ Erect suitable towers, preventing purchase or nesting of most aves.	▪ During construction	▪ Project Developer (Scatec Solar) and ECO
5.8. Increased risk of collision and electrocution in some avifauna due to the powerlines.	Avoid the likelihood of mortalities of avian species as a consequence of the establishment of the power line	5.8.1. Ensure the use of BFDs along line route. 5.8.2. Implement the use of perch prevention methods on towers.	▪ Confirm that BFDs are in place and can be placed along power lines by undertaking visual inspections and monitoring compliance.	▪ During construction	▪ Project Developer (Scatec Solar) and ECO
5.9. Excessive loss of natural vegetation in and outside the development footprint area and veld degradation	Minimise loss of natural vegetation. Prevent impacts on natural vegetation in sensitive habitats and SSC.	5.9.1. Sensitive habitats and areas outside of the project development area should be clearly demarcated as no go areas during the construction phase to avoid accidental impacts. No development or activities should take place in the high sensitivity ecosystems (shown in Appendix B and Appendix C of this EMPr).	▪ Strict control over the behaviour of construction workers, restricting activities to within demarcated areas for construction. ▪ ECO must monitor activities and record and report non-compliance ▪ Strict control and proper education of staff to prevent misconduct. If ECO is absent, there should be a designated EO present to deal with any urgent issues.	▪ Daily	▪ ECO and Contractor
		5.9.2. Ensure that the footprint required for the proposed project activities is kept at a minimum.	▪ Verify that the proposed project area is determined and outlined prior to the commencement of the construction phase by undertaking visual inspections.	▪ Once-off prior to construction and as required during the construction process.	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		5.9.3. The proposed project footprint must be demarcated to reduce unnecessary disturbance beyond the proposed project area.	▪ Carry out visual inspections to ensure strict control over the behaviour of staff in order to restrict activities to within demarcated areas.	▪ Weekly	▪ ECO
		5.9.4. The Contractors and construction personnel must be made aware that indigenous vegetation must be not be removed or damaged.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO
		5.9.5. Ensure that the temporary site camp is established at least 32 m away from the banks of the major drainage lines.	▪ Monitor the placement of the site camp via visual inspections, and record and report any non-compliance.	▪ Once-off prior to construction and as required during the construction phase.	▪ ECO
		5.9.6. Unnecessary impacts on surrounding natural vegetation must be avoided during construction. All construction vehicles should remain on properly and clearly demarcated roads.	▪ Strict control over the behaviour of construction workers, restricting activities to within demarcated areas for construction. ▪ Include periodical site inspection in environmental performance reporting that specifically records occurrence of off-road vehicle tracks in specific areas.	▪ Daily	▪ ECO and Contractor
		5.9.7. Undertake rehabilitation of disturbed areas as soon as possible after construction. Stockpile the shallow topsoil layer separately from the subsoil layers. Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site during the pre-construction phase.	▪ Undertake following the construction phase and report any non-compliance.	▪ Daily	▪ ECO and Contractor
		5.9.8. The collection, hunting or harvesting of any plants, fuel wood or animals at the site during construction should be strictly forbidden and the	▪ Strict control over the behaviour of construction workers, restricting activities to within demarcated areas	▪ Daily ▪ Once-off training and ensure that all	▪ ECO and Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		staff educated to prevent this from happening.	for construction. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO
		5.9.9. Fires should only be allowed within fire-safe demarcated areas. Open fires must be prohibited. Appropriate fire safety training should also be provided to staff that are to be on site for the duration of the construction phase.	▪ Strict control over the behaviour of construction workers, restricting activities to within demarcated areas. ▪ Ensure fire safety requirements are well understood and respected by workers (by providing basic fire safety training).	▪ Daily	▪ ECO and Contractor
		5.9.10. Existing access roads/servitudes must be used and should be located along the boundaries of existing disturbed areas, if possible.	▪ Compile plan pre-construction.	▪ Prior to construction commencing	▪ Project Developer (Scatec Solar) and ECO
5.10. Disturbance of terrestrial fauna and flora on site due to construction workers and activities.	To advise construction staff of the requirements in respect of management of flora and fauna on site during the construction phase.	5.10.1. Conduct an Environmental Awareness Training and induction for all construction staff and personnel.	▪ Carry out Environmental Awareness Training with a discussion on the management of terrestrial fauna and flora on site. ▪ Conduct audits of the signed attendance registers.	▪ Prior to construction and as required by the ECO. Ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO
5.11. Impact on fauna as a result of construction activities.	To identify any faunal mortalities and record the details (such as the reason, spatial extent etc.) in order to avoid repetition of fatality.	5.11.1. Establish a recording method in order to monitor the construction activities, including species presence within site, mortalities and sitings.	▪ Establish database of species, sitings etc. ▪ Construction personnel should advise on the findings and presence of fauna on site.	▪ Daily to monthly	▪ ECO
	To remove species that may be found present in the construction footprint and laydown area.	5.11.2. The Contractor or Contractors Environmental Officer should monitor trenches at the start and end of each working day to check if any small animals are trapped.	▪ Monitor activities and record and report non-compliance.	▪ As required during construction	▪ ECO and Contractor
		5.11.3. No animals (including snakes) shall be killed on site. An expert or a suitable specialist should be	▪ Monitor activities and record and report non-compliance.	▪ As required during construction	▪ ECO and Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring: Methodology	Monitoring: Frequency	Monitoring: Responsibility
		appointed to remove and relocate any poisonous snakes during the construction phase.			
5.12. Faunal and avifaunal road mortality as a result of increased vehicles travelling to and within the site.	Minimise loss of fauna as a result of road mortalities.	5.12.1. The construction personnel and staff should be made aware of the presence of fauna within the proposed project area. The construction personnel and staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO
		5.12.2. To ensure that animals are not attracted to the site (and potentially resulting in increased road mortality), the waste collection bins and skips should be covered with suitable material, where appropriate, and the site camp must be kept clean on a daily basis.	▪ Monitor the activities via visual inspections, and record and report any non-compliance.	▪ Daily	▪ ECO and Contractor
C. OPERATIONAL PHASE					
5.13. Increased risk of collision and electrocution in some avifauna due to the powerlines.	Avoid the likelihood of mortalities of avian species as a consequence of the establishment of the power line	5.13.1. Monitoring of effectiveness of BFDs and related methodologies implemented to prevent avian mortalities.	▪ Log avian mortalities along the line route and undertake regular site inspections to record any non-compliance.	▪ Ongoing	▪ Project Developer (Scatec Solar)
5.14. Faunal and avifaunal road mortality as a result of vehicles travelling along the maintenance gravel road.	Minimise loss of fauna as a result of road mortalities.	5.14.1. The maintenance personnel and staff should be made aware of the presence of fauna within the proposed project area. The staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Project Developer (Scatec Solar)
D. DECOMMISSIONING PHASE					
5.15. Avian impacts	To avoid undue impacts on avifauna arising from the removal of the powerline and towers.	5.15.1. Avoidance of disturbance to avifauna and review the line route and identify structures that may form roosts and nesting points. Should nests be identified, then devise a strategy to dismantle the line within minimum disturbance e.g. await fledglings leaving nest.	▪ Review line route and identify structures that may form roosts and nesting points. Should nests be identified, then devise a strategy to dismantle the line within minimum disturbance e.g. await fledglings leaving nest. ▪ Log avian presence and nests along	▪ Prior to decommissioning	▪ Project Developer (Scatec Solar) and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
			line route and undertake regular site inspections during the removal phase to monitor the effectiveness of the removal plan and record any non-compliance.		
5.16. Rehabilitation of flora on site	Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operation.	5.16.1. All damaged areas shall be rehabilitated upon completion of the contract. 5.16.2. All natural areas must be rehabilitated with species indigenous to the area. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction. 5.16.3. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.	▪ Conduct a final external audit to confirm that area is rehabilitated to an acceptable level.	▪ Once off	▪ Project Developer (Scatec Solar) with feedback and input from an appropriate specialist. with advice from specialist

6 OPEN SPACE MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. DESIGN PHASE					
6.1. Loss of vegetation and habitat fragmentation	Keeping the area cleared of vegetation to a minimum	6.1.1. Clearing of vegetation should be kept to a minimum and take into consideration the sensitivities on site shown in Appendices A and B of this EMPr.	▪ Ensure that design and layout is uniform and well-adapted to the surrounding environment and that no unnecessary areas are cleared of vegetation.	▪ Once-off during design	▪ Project Developer (Scatec Solar)
6.2. Impacts due to establishment of alien invasive plants	Ensure the appropriate removal of alien invasive vegetation from the proposed project area and prevent the establishment and spread of alien invasive plants due to the project activities.	6.2.1. Ensure compliance with relevant Environmental Specifications for the control and removal of alien invasive plant species. 6.2.2. Appoint a specialist or contact relevant authorities to seek guidance on the removal of the alien vegetation on site. 6.2.3. Compile and finalise an alien weed eradication programme.	▪ Appoint a suitable specialist/ Contractor or contact the relevant authorities to seek guidance on the removal of the planted alien invasive species. ▪ Appoint a suitable specialist to compile an alien invasive vegetation eradication plan. ▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the design phase. ▪ Once-off during the design phase. ▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar) ▪ Project Developer (Scatec Solar) ▪ ECO
6.3. Permanent barriers to animal movement and habitat fragmentation	The reduction in the impact that barrier will have on animal movement within the area	6.3.1. Fencing should allow for the passage of small and medium sized mammals and all forms of mesh fencing should be avoided.	▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the planning and design phase	▪ Project Developer (Scatec Solar)
		6.3.2. All remaining areas that are not impacted upon by the proposed development footprint should remain unfenced to allow for movement corridors between the remainder of the farm.	▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the planning and design phase	▪ Project Developer (Scatec Solar)
		6.3.3. BFDs should be installed on the overhead cables where known flight paths of birds occur.	▪ Identify appropriate points within infrastructure for the establishment of BFDs. ▪ Verify that this is undertaken by reviewing the signed approved designs.	▪ Once-off ▪ Once-off	▪ Project Developer (Scatec Solar) and ECO ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
B. CONSTRUCTION PHASE					
6.4. Permanent barriers to animal movement and habitat fragmentation	The reduction in the impact that barrier will have on animal movement within the area	6.4.1. BFDs should be installed on the overhead cables where known flight paths of birds occur.	▪ The flight paths and birds observed in the area should be monitored by the ECO during the construction phase to determine where these measures should be installed. ▪ Verify whether these have been installed by inspecting the site prior to commencement of the operational phase.	▪ Daily ▪ Once-off	▪ ECO and Contractor ▪ ECO
		6.4.2. Fencing should allow for the passage of small and medium sized mammals and all forms of mesh fencing should be avoided.	▪ This should be monitored by the ECO to determine whether this is effective.	▪ Daily	▪ ECO and Contractor
6.5. Loss of vegetation and habitat fragmentation	Keeping the area cleared of vegetation to a minimum	6.5.1. Clearing of vegetation should be kept to a minimum, keeping the width and length of the earthworks to a minimum.	▪ Monitor activities and record and report non-compliance.	▪ Daily	▪ ECO and Contractor
C. OPERATIONAL PHASE					
6.6. Increased risk of alien plant invasion	Ensure that the site is kept free from alien invasive species.	6.6.1. Continuously monitor the site and remove alien invasive species that are found.	▪ Monitor the presence of alien invasive species on the development site.	▪ Reporting frequency depends on legal compliance framework	▪ Project Developer (Scatec Solar)
6.7. Increased animal road mortality	Minimise loss of fauna as a result of road mortalities.	6.7.1. Create awareness during staff induction programmes. Staff must be made aware of the general speed limits as well as the potential animals that may cross and how to react in these situations.	▪ Conduct staff awareness training programmes.	▪ Once-off training and ensure all new staff are inducted.	▪ Project Developer (Scatec Solar)
6.8. Permanent barriers to animal movement and habitat fragmentation	Avoid or reduce bird collisions with or due to infrastructure related to the project	6.8.1. The impact on birds must be monitored by environmental staff member during the first six months of the operational phase.	▪ Record any evidence of bird collisions, injury or other bird-related incidents (with GPS coordinates). ▪ Where necessary, a bird specialist should oversee the recording and reporting of incidents, help with species identification, assess the significance of any impacts, and if required, suggest mitigation.	▪ Weekly for the first month, thereafter, monthly	▪ Project Developer (Scatec Solar)

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		6.8.2. Annual monitoring by an avifaunal specialist. This should be based on a minimum of 3-5 days observations.	▪ Monitor the flight paths of birds occurring on site, noting which birds are seen.	▪ Annually	▪ Project Developer (Scatec Solar)
		6.8.3. Any avian mortality or injury at the facility should be duly recorded and reported.	▪ Record any bird fatalities and undertake the necessary reporting to relevant authority.	▪ When required	▪ Project Developer (Scatec Solar)
D. DECOMMISSIONING PHASE					
6.9. No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area.	To manage impacts on the surrounding environment during the operational phase.	6.9.1. Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast with the existing landscapes	▪ Final external audit of area to confirm that area is rehabilitated to an acceptable level	▪ Once off	▪ Project Developer (Scatec Solar)
		6.9.2. Stockpiled topsoil should be reapplied to disturbed areas and these areas should be re-vegetated using a mix of native species in such a way that the areas will form as little contrast in form, line, colour and texture with the surrounding undisturbed landscape.	▪ Final external audit of area to confirm that area is rehabilitated to an acceptable level	▪ Once off	▪ Project Developer (Scatec Solar)
		6.9.3. Edges of re-vegetated areas should be feathered to reduce form and line contrasts with surrounding undisturbed landscape.	▪ Final external audit of area to confirm that area is rehabilitated to an acceptable level	▪ Once off	▪ Project Developer (Scatec Solar)

7 TRAFFIC MANAGEMENT PLAN INCLUDING TRANSPORTATION PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
A. DESIGN PHASE					
7.1. Increased traffic generation	Manage impact that additional traffic generation will have on road network	7.1.1. If abnormal loads need 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.	▪ Ensure that the permits are applied for and obtained prior to commencement. ▪ Verify that this has been undertaken by reviewing approved permits.	▪ Once-off during the design phase ▪ Once-off during the design phase.	▪ Contractor ▪ ECO
		7.1.2. If the Transnet Service Road will be used as the designated access road to site, discussions must be held with Transnet Freight Rail prior to commencement to confirm requirements and details of the agreement.	▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar) and ECO
		7.1.3. Ensure that the requirements for use of the Transnet Service Road are addressed and considered in the design, as and where applicable.	▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar) and ECO
		7.1.4. If the Transnet Service Road will be used as the designated access road, the registration details of all vehicles that will make use of the road during the construction and operational phases must be provided to Transnet Freight Rail, in order to obtain official permits.	▪ Ensure that the permits are applied for and obtained prior to commencement. ▪ Verify that this has been undertaken by reviewing approved permits.	▪ Once-off during the design phase ▪ Once-off during the design phase.	▪ Contractor ▪ ECO
		7.1.5. Provide a Transport Traffic Plan to SANRAL (if required).	▪ Ensure that the plan is compiled and submitted prior to commencement. ▪ Verify that this has been undertaken by reviewing approved plans.	▪ Once-off during the design phase ▪ Once-off during the design phase.	▪ Contractor ▪ ECO
7.2. Accelerated degradation of road structure due to	Limit the deterioration of the road condition due to	7.2.1. A Road Maintenance Plan should be developed for the section of the Transnet Service Road that will be used. The plan	▪ Ensure that the plan is compiled and submitted prior to	▪ Once-off during the design phase	▪ Contractor ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
construction traffic.	construction traffic.	should address the requirements of Transnet Freight Rail, including but not limited to, grading, dust suppressant mechanisms, drainage, signage, and speed limits.	commencement. ▪ Verify that this has been undertaken by reviewing approved plans.	▪ Once-off during the design phase.	
B. CONSTRUCTION PHASE					
7.3. Increased traffic generation during the construction phase resulting in a reduction of road based level of service	Reduce the amount of road based traffic during the construction phase.	7.3.1. Well maintained vehicles should be used together with well-trained drivers during the construction phase. Vehicle maintenance and driver competency should be monitored. Proof of driver competency as well as the vehicle checks should be verified and undertaken to ensure that vehicles are roadworthy and hence, do not pose a safety risk. The Contractors must ensure that construction vehicles are roadworthy, properly serviced and maintained, and respect the vehicle safety standards implemented by the Project Developer.	▪ Carry out random checks of driver licenses and conduct random visual inspections of construction vehicles for roadworthiness.	▪ Random visual inspection of vehicles weekly.	▪ Contractor
		7.3.2. Plan trips so that it occurs during the day but avoid construction vehicle movement on the regional road during peak time (06:00-10:00 and 16:00-20:00).	▪ Monitor and management of traffic generated and when trips are made.	▪ During construction	▪ Contractor and ECO
		7.3.3. During the construction phase, suitable parking areas should be designated for trucks and vehicles.	▪ Monitor the placement of the designated parking area for trucks and vehicles via visual inspections and record and report any non-compliance.	▪ Once-off prior to construction and as required during the construction phase.	▪ Project Developer (Scatec Solar) and ECO
		7.3.4. The use of public transport (buses and/or minibus taxis) to convey construction personnel to the site should be encouraged.	▪ Contractor may record arrival and departure times as well as number of workers using minibuses.	▪ Once a month on a randomly selected day.	▪ Appointed Contractor
		7.3.5. It is recommended that vehicles are not overloaded during the construction phase in order to reduce impacts on the road structures, particularly the access roads leading to the site. Random visual inspection of vehicles should be undertaken in order to	▪ Perform visual inspection of vehicles during the construction phase.	▪ Random visual inspection of vehicles weekly.	▪ Appointed Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring: Methodology	Monitoring: Frequency	Monitoring: Responsibility
		monitor for overloading. The inspections should also verify if the trucks are covered with appropriate material (such as tarpaulin) if and where possible.			
7.4. Increased level of road accidents (involving pedestrians, animals, other motorists on the surrounding tarred/ gravel road network) due to increased traffic during construction.	Minimise the impact of the construction activities on the local traffic and avoid accidents with pedestrians, animals and other drivers on the surrounding tarred/ gravel roads. Reduce number of road accidents due to increased traffic during construction.	7.4.1. Well maintained vehicles should be used together with well-trained drivers during the construction phase. Vehicle maintenance and driver competency should be monitored. Proof of driver competency as well as the vehicle checks should be verified and undertaken to ensure that vehicles are roadworthy and hence, do not pose a safety risk. The Contractors must ensure that construction vehicles are roadworthy, properly serviced and maintained, and respect the vehicle safety standards implemented by the Project Developer.	▪ Carry out random checks of driver licenses and conduct random visual inspections of construction vehicles for roadworthiness.	▪ Random visual inspection of vehicles weekly.	▪ Contractor
		7.4.2. Road kill monitoring programme (inclusive of wildlife collisions record keeping) should be established and fences should be installed, if needed, to direct animals to safe road crossings.	▪ Appropriate monitoring should be undertaken and fences installed, if needed to direct animals to safe road crossings.	▪ Weekly	▪ Contractor and ECO
		7.4.3. Adhere to all speed limits applicable to all roads used. All heavy load vehicles should maintain a speed limit of 40 km/hour in the proposed section of the Transnet Service Road.	▪ Ensure that speed limits are adhered to. ▪ Carry out random visual inspections to verify speed limits and general awareness of vehicle drivers.	▪ Daily ▪ Random during the construction phase	▪ Contractor and ECO ▪ ECO
		7.4.4. Implement clear and visible signage and signals indicating movement of vehicles at the intersection with the Transnet Service Road to ensure safe entry and exit.	▪ Implement clear signalisation. ▪ Carry out random inspections to verify whether proper construction signage is being implemented.	▪ On-going ▪ Random during the construction phase	▪ Contractor and ECO ▪ ECO
7.5. Accelerated degradation of road structure due to construction traffic.	Limit the deterioration of the road condition due to construction traffic.	7.5.1. Construction activities will have a higher impact than the normal road activity and therefore the main access roads to site should be inspected on a weekly basis for structural damage.	▪ Ensure that the main access road to site maintains current condition through photographic surveys and monitoring.	▪ Weekly	▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		7.5.2. Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles.	▪ Ensure dust management measures are in place to adequately decrease the generation of dust.	▪ On-going	▪ Contractor and ECO
		7.5.3. It is recommended that vehicles are not overloaded during the construction phase in order to reduce impacts on the road structures, particularly the access roads leading to the site. Random visual inspection of vehicles should be undertaken in order to monitor for overloading. The inspections should also verify if the trucks are covered with appropriate material (such as tarpaulin) if and where possible.	▪ Perform visual inspection of vehicles during the construction phase.	▪ Random visual inspection of vehicles weekly.	▪ Appointed Contractor
		7.5.4. Make provision for the repairing of subgrade deterioration (i.e. pot holes, dust holes) that could possibly result due to loading of heavy construction vehicles on the Transnet Service Road.	▪ Make provision for repairs required to road	▪ Agree to with Transnet	▪ Contractor and ECO
7.6. Impact on air quality due to dust generation, noise and exhaust emissions from construction vehicles and equipment.	Limit the release of noise, pollutants and dust emissions	7.6.1. Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles.	▪ Ensure dust management measures are in place to adequately decrease the generation of dust.	▪ On-going	▪ Contractor and ECO
		7.6.2. Construction vehicles must have their lights on at all times. Lights to be properly set to not blind train drivers (SPAD).	▪ Ensure lights are on and properly set.	▪ On-going	▪ Contractor and ECO
		7.6.3. Postpone or reduce dust-generating activities during periods with strong wind. Earthworks may need to be rescheduled or the frequency of application of dust control/suppressant increased.	▪ Ensure dust management measures are in place to decrease the dust generated	▪ On-going	▪ Contractor and ECO
		7.6.4. Avoid using old and unmaintained construction equipment (which generate high sound levels) and ensure equipment is well maintained. Keep all equipment and machinery in good working order and ensure	▪ Manage the air pollutants form construction vehicles through checking the condition of vehicles	▪ On-going	▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		that regular maintenance is undertaken. Ensure that equipment is operated within specifications and capacity (e.g. do not overload machines). Ensure that the equipment is turned off when not in use			
C. OPERATIONAL PHASE					
7.7. Increased level of road accidents (involving pedestrians, animals, other motorists on the surrounding tarred/ gravel road network) due to traffic on the maintenance road during the operational phase.	Minimise the impact of the operational activities on the local traffic and avoid accidents with pedestrians, animals and other drivers on the surrounding tarred/ gravel roads. Reduce number of road accidents due to traffic during the operational phase.	7.7.1. Adhere to all speed limits applicable to all roads used. All heavy load vehicles should maintain a speed limit of 40 km/hour in the proposed section of the Transnet Service Road.	▪ Ensure that speed limits are adhered to. ▪ Carry out random visual inspections to verify speed limits and general awareness of vehicle drivers.	▪ Daily ▪ Random during the operational phase	▪ Project Developer (Scatec Solar)
		7.7.2. Implement clear and visible signage and signals indicating movement of vehicles at the intersection with the Transnet Service Road to ensure safe entry and exit.	▪ Implement clear signalisation. ▪ Carry out random inspections to verify whether proper construction signage is being implemented.	▪ Ongoing ▪ Random during the operational phase	▪ Project Developer (Scatec Solar)
D. DECOMMISSIONING PHASE					
7.8. Ensure that the construction mitigation and management measures are adhered to during the decommissioning phase.					

8 STORM WATER MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. DESIGN PHASE					
8.1. Impact of the project if a detailed storm water management plan is not correctly prepared.	To limit the effect of uncontrolled storm water run-off from developed areas onto natural areas	8.1.1. Prepare a detailed stormwater management plan outlining appropriate treatment measures to address runoff from disturbed portions of the site, such that they do not: ▪ result in concentrated flows into natural watercourses i.e. provision should be made for temporary or permanent measures that allow for attenuation, control of velocities and capturing of sediment upstream of natural water courses; ▪ result in any necessity for concrete or other lining of natural water courses to protect them from concentrated flows of the development; ▪ divert flows out of their natural flow pathways, thus depriving downstream watercourses of water.	▪ Check compliance with specified conditions. ▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during design followed by regular control ▪ During the design phase	▪ Contractor ▪ ECO
B. CONSTRUCTION PHASE					
8.2. Diversion and impedance surface water flows – changes to the hydrological regime and increased potential for erosion. Diversion and increased velocity of surface water	Prevent interference with natural run-off patterns, diverting flows and increasing the velocity of surface water flows.	8.2.1. The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase.	▪ Compile a Method Statement for Stormwater Management during the construction phase. ▪ Inspect and verify if a Method Statement for Stormwater Management has been compiled by the Contractor via audits prior to the commencement of the construction phase.	▪ Prior to the construction phase. ▪ Once-off prior to the commencement of the construction phase.	▪ Contractor ▪ ECO
		8.2.2. Erosion and sedimentation into water bodies must be minimised through the effective stabilisation (gabions and Reno	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method	▪ Weekly or Bi-weekly	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
flows – reduction in permeable surfaces		mattresses or similar) and the re-vegetation of any disturbed riverbanks.	Statement.		
		8.2.3. Place energy dissipation structures in a manner that allows the management of flows prior to being discharged into the natural environment, thus not only preventing erosion, but supporting the maintenance of natural base flows within these systems i.e. hydrological regime (water quantity and quality) is maintained.	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method Statement.	▪ Weekly or bi-weekly	▪ ECO
		8.2.4. Reinforce soil slopes to minimise erosion during rehabilitation (as needed, and once construction in a specific area has ceased).	▪ Monitor activities and record and report non-compliance.	▪ As needed during the construction phase	▪ ECO
		8.2.5. Drainage along the sides of the roads should be designed so that it does not result in concentrated flows into watercourses.	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method Statement.	▪ Weekly or bi-weekly	▪ ECO
		8.2.6. Perform periodic inspections and maintenance of soil erosion measures and stormwater control structures.	▪ Monitor activities and record and report non-compliance.	▪ As needed during the construction phase	▪ ECO
8.3. Pollution of the surrounding environment as a result of the contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc.	To prevent contaminated stormwater from entering into and adversely impacting on freshwater ecosystems and reducing the water quality. To reduce sedimentation of nearby water systems. To apply best practice principles in managing risks to storm water pollution.	8.3.1. The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase.	▪ Compile a Method Statement for Stormwater Management during the construction phase. ▪ Inspect and verify if a Method Statement for Stormwater Management has been compiled by the Contractor via audits prior to the commencement of the construction phase.	▪ Prior to the construction phase. ▪ Once-off prior to the commencement of the construction phase.	▪ Contractor ▪ ECO
		8.3.2. Provide secure storage for fuel, oil, chemicals and other waste materials to prevent contamination of stormwater runoff. Fuels and chemicals (i.e. any hazardous materials and dangerous goods) used during the construction phase must be stored safely on site and in bunded areas.	▪ Monitor the storage and handling of dangerous goods and hazardous materials on site via site audits and record non-compliance and incidents. Monitor if spillages have taken place and if they are removed correctly.	▪ Weekly	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		Fuel and chemical storage containers must be inspected to ensure that any leaks are detected early.			
		8.3.3. All stockpiles must be protected from erosion and stored on flat areas where run-off will be minimised. Erosion and sedimentation into water bodies must be minimised through effective stabilisation. No stockpiling should take place within a watercourse. 8.3.4. Stockpiles must be located away from river channels i.e. greater than 32 m.	▪ Monitor the excavations and stockpiling process throughout the construction phase via visual site inspections. Record non-compliance and incidents.	▪ Daily	▪ ECO
		8.3.5. Littering and contamination of water resources during construction must be prevented by effective construction camp management.	▪ Monitor via site audits and record non-compliance and incidents (i.e. by implementing walk through inspections).	▪ Weekly	▪ Contractor and ECO
		8.3.6. Emergency plans must be in place to deal with potential spillages (especially those leading to any watercourses).	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method Statement.	▪ Weekly or Bi-weekly	▪ ECO
		8.3.7. Erosion and sedimentation into water bodies must be minimised through the effective stabilisation (gabions and Reno mattresses or similar) and the re-vegetation of any disturbed riverbanks.	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method Statement.	▪ Weekly or Bi-weekly	▪ ECO
		8.3.8. Ensure that the temporary site camp and ablution facilities are established at least 32 m away from the banks of the major drainage lines.	▪ Monitor the placement of the site camp via visual inspections, and record and report any non-compliance.	▪ Once-off prior to construction and as required during the construction phase.	▪ ECO
		8.3.9. Ensure that there is no ad-hoc crossing of channels by vehicles during the construction phase. Access routes across the site should be strictly demarcated and selected with a view to minimise impacts on drainage lines.	▪ Check compliance with specified conditions of the Stormwater Management Plan and Method Statement.	▪ Weekly or Bi-weekly	▪ ECO
		8.3.10. Ensure that no waste materials or	▪ Check compliance with specified	▪ Weekly or Bi-weekly	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		sediments are left in the surrounding drainage lines (as a result of the construction).	conditions of the Stormwater Management Plan and Method Statement.		
		8.3.11. Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds.	▪ Monitor via site audits and record non-compliance and incidents (i.e. by implementing walk through inspections).	▪ Weekly	▪ Contractor and ECO
C. DECOMMISSIONING PHASE					
8.4. Ensure that the construction mitigation and management measures are adhered to during the decommissioning phase.					

9 EROSION MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. CONSTRUCTION PHASE					
9.1. Increased wind erosion and resultant deposition of dust	Prevent wind erosion and resultant deposition of dust on surrounding indigenous vegetation.	9.1.1. Sand, stone and cement should be stored in demarcated areas, and covered or sealed to prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation.	▪ Undertake regular inspections of the via site audits to verify that sand, stone and cement are stored and handled as instructed.	▪ Daily	▪ ECO and Contractor
		9.1.2. During construction, efforts should be made to retain as much natural vegetation as possible on the site, to reduce disturbed areas and maintain plant cover, thus reducing erosion risks.	▪ Monitor activities via site inspections and record and report non-compliance.	▪ Daily	▪ ECO and Contractor
		9.1.3. All stockpiles must be protected from erosion and stored on flat areas where run-off will be minimised. Erosion and sedimentation into water bodies must be minimised through effective stabilisation.	▪ Monitor the stockpiling process throughout the construction phase via visual site inspections. Record non-compliance and incidents.	▪ Daily	▪ ECO
9.2. Excessive loss of natural vegetation within the development footprint area	Prevent loss of natural vegetation through erosion.	9.2.1. Vegetation clearing during construction must be restricted to the footprint of the proposed project components and planned infrastructure only. It should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.	▪ Monitor vegetation clearing throughout the construction phase via visual site inspections. Record non-compliance and incidents. ▪ Undertake regular monitoring for erosion to ensure is reduced and rectified as soon as possible.	▪ Daily ▪ Daily	▪ ECO and Contractor ▪ ECO
		9.2.2. Stockpile the shallow topsoil layer separately from the subsoil layers (especially if the excavation exceeds 0.5 m). Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas.	▪ Rehabilitate disturbed areas and monitor the presence of alien invasive species on site.	▪ Daily (stockpiling) and once-off for the reinstatement of the top soil layer	▪ ECO and Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		9.2.3. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction.	▪ Re-seed with seeds of indigenous grass species.	▪ Once off	▪ ECO with advice from specialist (if required)
		9.2.4. Topsoil stockpiles not used in three months after stripping must be seeded to prevent dust and erosion.	▪ Regular monitoring for erosion to ensure that no erosion problems are occurring at the site. All erosion problems observed should be rectified as soon as possible.	▪ Weekly initially and thereafter monthly	▪ ECO and Contractor
9.3. Erosion of surface soils, rilling and gulleys.	Measures to be implemented that address or avoid the loss of surface soils and exacerbates gulley formation.	9.3.1. Identify cause of erosion and possible means of redress (i.e. implement erosion control measures, where applicable), such as the use of geofabric, stone gabions and re-vegetation or similar measures. 9.3.2. Erosion control measures should seek to reduce surface flow velocity and allow for settlement on site of silt laden surface waters. Washaways, excessive loss of soils and gulleys can be considered to be indicative of excessive erosion.	▪ Monitor the erosion on site during construction, as well as the implementation and effectiveness of erosion control on site (such as the use of geofabric, stone gabions and re-vegetation or similar measures).	▪ Ongoing and as required during erosion events.	▪ ECO and Project Developer (Scatec Solar)
9.4. Sedimentation of the surrounding drainage lines as a result of stormwater runoff and stockpiling of excavated material during the construction phase. The excavated material could potentially be washed into the drainage lines via stormwater. This could also impact on avifauna.	Reduce sedimentation as a result of erosion caused by stockpiling and stormwater runof.	9.4.1. All material that is excavated during the construction phase must be stored appropriately on site in order to minimise impacts on the on the surrounding aquatic environment. 9.4.2. Exposed soil surfaces should be graded to minimise runoff and increase infiltration. 9.4.3. Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material. 9.4.4. Undertake periodic inspections and maintenance of soil erosion measures and stormwater control structures. 9.4.5. Stockpiles must be located at least 32 m away from the drainage lines, on flat areas where run-off will be minimised.	▪ Monitor activities via site inspections and record and report non-compliance.	▪ Daily	▪ ECO and Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		9.4.6. Stockpiles should not exceed 2 m in height. 9.4.7. During periods of strong winds and heavy rain (in line with relevant rainfall patterns), the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.).			
B. OPERATIONAL PHASE					
9.5. Excessive loss of natural vegetation in the development footprint area and resulting impacts on SSC, faunal habitat and habitat fragmentation.	Prevent loss of natural vegetation and minimise habitat fragmentation and the loss of connectivity as a result of erosion.	9.5.1. To prevent erosion, indigenous grasses that seed themselves should (where possible) be left to form a ground cover and kept short.	▪ ECO to advise on seed to be used.	▪ Prior to re-vegetation.	▪ Project Developer (Scatec Solar)
		9.5.2. The use of silt fences, sand bags or other suitable methods must be implemented in areas that are susceptible to erosion. Other erosion control measures that can be implemented are as follows: 1) Brush packing with cleared vegetation, 2) Planting of vegetation, 3) Hydro seeding/hand sowing. All erosion control mechanisms need to be regularly maintained.	▪ Monitor efficiency of erosion control measures.	▪ Weekly or monthly	▪ Project Developer (Scatec Solar)
		9.5.3. Conduct regular monitoring for erosion to ensure that no erosion problems are occurring at the site as a result of the roads and other infrastructure. Ensure that all erosion problems are rectified as soon as possible.	▪ Undertake regular monitoring for erosion to ensure is reduced and rectified as soon as possible.	▪ Monthly	▪ Project Developer (Scatec Solar)
9.6. Increased wind erosion and resultant deposition of dust.	Prevent wind erosion and resultant deposition of dust on surrounding indigenous vegetation.	9.6.1. Implement an effective system of 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.	▪ Include periodic site inspections in environmental performance reporting that inspects the effectiveness and integrity of the run-off control system and specifically records occurrence or non-occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	▪ Quarterly	▪ Project Developer (Scatec Solar)

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
C. DECOMMISSIONING PHASE					
9.7. No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. Monitoring: Final external audit of area to confirm that area is rehabilitated to an acceptable level (once off event to be conducted by ECO).					

10 HAZARDOUS SUBSTANCES LEAKAGE OR SPILLAGE MONITORING SYSTEM

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. CONSTRUCTION PHASE					
10.1. Contamination of soil and risk of damage to vegetation and/or fauna through spillage of concrete and cement.	To control concrete and cement batching activities in order to reduce spillages and resulting contamination of soil, groundwater and the vegetation and/or fauna.	10.1.1. If any concrete mixing takes placed on site, this must be carried out in a clearly marked, designated area at the site camp on an impermeable surface (such as on boards or plastic sheeting and/or within a bunded area with an impermeable surface).	▪ Monitor the handling and storage of sand, stone and cement as instructed.	▪ Daily	▪ Project Developer (Scatec Solar), Contractor and ECO
		10.1.2. Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains.	▪ Monitor the handling and storage of sand, stone and cement as instructed.	▪ Daily	▪ Project Developer (Scatec Solar), Contractor and ECO
		10.1.3. A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted.	▪ Monitor the handling and storage of sand, stone and cement as instructed.	▪ Daily	▪ Project Developer (Scatec Solar), Contractor and ECO
		10.1.4. Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility. Proof of disposal (i.e. waste disposal slips or waybills) should be retained on file for auditing purposes.	▪ Monitor the handling and storage of sand, stone and cement as instructed. ▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	▪ Daily ▪ Monthly	▪ Project Developer (Scatec Solar), Contractor and ECO ▪ ECO
		10.1.5. Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site. Empty cement bags must be collected from the construction area at the end of every day. Sand and aggregates containing cement must be kept damp to prevent the generation of dust.	▪ Monitor the handling and storage of sand, stone and cement as instructed.	▪ Daily	▪ Project Developer (Scatec Solar), Contractor and ECO
		10.1.6. Any excess sand, stone and cement must be removed from site at the completion of the construction period and disposed at a licenced waste disposal facility. Proof of disposal (i.e. waste	▪ Monitor the handling and storage of sand, stone and cement as instructed.	▪ Daily ▪ Monthly	▪ Project Developer (Scatec Solar), Contractor and

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		disposal slips or waybills) should be retained on file for auditing purposes.	▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.		ECO ▪ ECO
10.2. Contamination of soil and risk of damage to vegetation and/or fauna through spillage of fuels and oils.	To control and eliminate fuel and oil spillages which may result in soil contamination and damage to vegetation and/or fauna.	10.2.1. Ensure that adequate containment structures are provided for the temporary storage of liquid dangerous goods and hazardous materials on site (such as chemicals, oil, fuel, hydraulic fluids, lubricating oils etc.). Appropriate bund areas must be provided for the storage of these materials at the site camp. Bund areas should contain an impervious surface in order to prevent spillages from entering the ground. Bund areas should have a capacity of 110 % of the volume of the largest tank in the bund (tanks include storage of fuel/diesel).	▪ Monitor the storage and handling of dangerous goods and hazardous materials on site via site audits and record non-compliance and incidents.	▪ Weekly	▪ Contractor and ECO
		10.2.2. Monitor and inspect construction equipment and vehicles to ensure that no fuel spillage takes place. Ensure that drip trays are provided for construction equipment and vehicles as required.	▪ Monitor the construction equipment and vehicles and monitor the occurrence of spills and the management process thereof. ▪ Record all spills and lessons learnt.	▪ Daily ▪ During spill events	▪ Contractor and ECO ▪ ECO
		10.2.3. Contractor to compile a Method Statement for refuelling activities under normal and emergency situations. If on-site servicing and refuelling is required in emergency situations, a designated area must be created at the construction site camp for this purpose. Drip trays or similar impervious materials must be used during these procedures.	▪ Verify if a Method Statement is compiled by reviewing approved and signed off reports. ▪ Monitor the refuelling/ servicing process and record the occurrence of any spillages.	▪ Once-off prior to commencement of construction. ▪ During emergency refuelling and servicing activities.	▪ ECO ▪ ECO
		10.2.4. Spilled fuel, oil or grease must be retrieved and contaminated soil removed, cleaned and replaced.	▪ Monitor the handling and storage of fuels and oils via site audits and monitor if spillages have taken place and if so, are removed correctly. Monitor waste disposal slips and waybills	▪ Daily (or during spills)	▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
			via site audits and record non-compliance and incidents.		
		10.2.5. Contaminated soil to be collected by the Contractor (under observation of the ECO) and disposed of at a registered waste facility designated for this purpose. Proof of disposal (i.e. waste disposal slips or waybills) should be retained on file for auditing purposes.	▪ Monitor the correct removal of contaminated soil. Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	▪ Daily (or during spills)	▪ Contractor and ECO
		10.2.6. A Spill Response Method Statement must be compiled by the Contractor for the construction phase in order to manage potential spill events.	▪ Compile a Spill Response Method Statement. ▪ Audit signed and approved Spill Response Method Statement.	▪ Once-off (and thereafter updated as required during the construction phase). ▪ Once-off (and thereafter as required during the construction phase).	▪ Contractor and Project Developer (Scatec Solar) ▪ ECO
		10.2.7. The Contractor must ensure that adequate spill containment and clean-up equipment are provided on site for use during spill events.	▪ Monitor via site audits and record incidents and non-compliance.	▪ Daily/Weekly	▪ ECO and Contractor
		10.2.8. Portable bioremediation kit (to remedy chemical spills) is to be held on site and used as required.	▪ Ensure that a well-maintained portable bioremediation kit is available on site and that construction personnel and contractors are aware of its location and instructions	▪ Daily	▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		10.2.9. In case of a spillage of hazardous chemicals where contamination of soil occurs, depending on the degree and level of contamination, excavation and removal to a hazardous waste disposal facility could be necessary. If the spillage is widespread and the soil is considered to be significantly contaminated, a specialist will need to be immediately appointed to address the spillage. This will usually entail the collection of samples of the contaminated soil followed by analysis in terms of the 2014 National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (i.e. GN 331). If the soil is determined to be significantly contaminated, then compliance with Part 8 of the NEMWA should be achieved by the Applicant, including notifying the Minister of Environmental Affairs of the significant contamination. 331).	▪ Ensure that a suitably qualified specialist is appointed to collect and analyse the contaminated soil samples in terms of the 2014 Norms and Standards (i.e. GN 331) in order to determine if the soil is significantly contaminated or not. ▪ If the contaminated soil is considered to be significantly contaminated, then compliance with Part 8 of the NEMWA should be achieved by the Applicant.	▪ During spill events	▪ Project Developer (Scatec Solar)
		10.2.10. The Contractor must record and document all significant spill events.	▪ Monitor documentation and records of significant spill events via audits and record non-compliance and incidents.	▪ During spill events	▪ ECO
B. DECOMMISSIONING PHASE					
10.3. No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area.					

11 ENVIRONMENTAL AWARENESS AND FIRE MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
A. DESIGN PHASE					
11.1. Potential impacts resulting from the lack of overall compliance with the conditions of the EA (issued by the DEA)	Ensure compliance with all environmental conditions of approval (issued by DEA as part of the EA).	11.1.1. Audit the implementation of the EMPr requirements.	▪ Audit report on compliance with actions and monitoring requirements.	▪ Weekly	▪ Project Developer (Scatec Solar)
		11.1.2. Establish clear and transparent reporting of the activities undertaken with regard to all recommendations included in the EMPr.	▪ Audit report on compliance with actions and monitoring requirements.	▪ Weekly	▪ Project Developer (Scatec Solar)
B. CONSTRUCTION PHASE					
11.2. Potential risk of fire due to construction activities or behaviour of staff on site during the construction phase	Prevent fire on site resulting of workers smoking or starting fires (i.e. cooking, heating purposes).	11.2.1. Designate smoking areas, as well as areas for cooking, where the fire hazard could be regarded as insignificant.	▪ Ad-hoc checks to ensure workers are smoking or cooking in designated areas only.	▪ Daily	▪ ECO and Contractor
		11.2.2. Educate workers on the dangers of open and/or unattended fires.	▪ Ensure fire safety requirements are well understood and respected by construction personnel. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Ongoing. ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ Contractor/ ECO ▪ ECO
		11.2.3. Open fires must be prohibited. Appropriate fire safety training should also be provided to staff that are to be on the site for the duration of the construction phase.	▪ Ensure fire safety requirements are well understood and respected by construction personnel. Provide basic fire safety training.	▪ On-going	▪ ECO and Contractor
		11.2.4. Ensure that cooking takes place in a designated area shown on the site map. Ensure that no firewood or kindling may be gathered from the site or surrounds.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		11.2.5. Fire-fighting equipment must be made available at various appropriate locations on the construction site.	▪ Ensure fire safety requirements are well understood and respected by workers. ▪ Assurance of functionality of fire extinguishers via inspections and certification by an accredited fire service company.	▪ On-going ▪ Bi-annually	▪ ECO and Contractor ▪ Contractor
11.3. Inappropriate behaviour of civil contractors and sub-contractors during the construction phase	Prevent unnecessary impacts on the surrounding environment by ensuring that contractors are aware of the requirements of the EMPr. Ensure that contractors and sub-contractors do not induce impacts on the surrounding environment as a result of unplanned pollution on site. Ensure that actions by on-site contractors and sub-contractors and workers are properly managed in order to minimise impacts to surrounding environment	11.3.1. Ensure that the EMPr and the EA (should it be granted by the DEA), are included in all tender documentation and contractors and sub-contractors contracts.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors
		11.3.2. Contractors and sub-contractors must use the ablution facilities situated in a designated area within the site; and no bathing/washing should be permitted outside the designated area.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors
		11.3.3. All litter will be deposited in a clearly labelled, closed, animal-proof disposal bin in the construction area; particular attention needs to be paid to food waste.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors
		11.3.4. No person other than a qualified specialist or personnel authorised by the Project Developer, will disturb or remove plants outside the demarcated construction area.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors
		11.3.5. No person other than a qualified specialist or personnel authorised by the Project Developer, will disturb animals on the site.	▪ Check compliance with specified conditions using a report card, and allocate fines when necessary.	▪ On-going	▪ ECO and Contractors
		11.3.6. Educate workers on site about suitable behaviour on site and initiate environmental awareness. Staff must be informed that no trapping, snaring or feeding of any animal will be allowed.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
11.4. Inappropriate planning and of site camp establishment.	Ensure that environmental issues are taken into consideration in the planning for site establishment.	11.4.1. All construction activities, materials, equipment and personnel must be restricted to the actual construction area specified (as required to undertake the construction work). The construction area must be demarcated by the Contractor.	▪ Monitor compliance and record non-compliance and incidents.	▪ Before construction	▪ ECO
		11.4.2. The Contractor should install and maintain Construction Site Information Boards in the position, quantity, design and dimensions specified by the Project Developer.	▪ Monitor compliance and record non-compliance and incidents.	▪ Before construction	▪ ECO
		11.4.3. General building materials should be stored in appropriate designated areas on site such that there will be no runoff from these areas towards sensitive systems. The site camp must be removed after construction.	▪ Monitor compliance and record non-compliance and incidents.	▪ Before construction	▪ ECO
11.5. Increased animal road mortality	Reduction in animal mortality	11.5.1. The construction staff should be made aware of the presence of fauna and within the proposed project area. The construction personnel and staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings, and should be trained on how to react in these situations.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO
		11.5.2. To ensure that animals are not attracted to the site (and potentially resulting in increased road mortality), the waste collection bins and skips should be covered with suitable material, where appropriate, and the site camp must be kept clean on a daily basis.	▪ Monitor the activities via visual inspections, and record and report any non-compliance.	▪ Daily	▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		11.5.3. Establish a monitoring programme to record the number of faunal road mortalities and collisions. If it is established that the number of collisions and faunal fatalities increase within an area, particularly with regards to smaller species (reptiles), then measures such as exclusion fences within these areas only should be installed.	▪ Appropriate monitoring and recording should be undertaken. ▪ Exclusion fences should be installed, if needed to direct animals to safe road crossings.	▪ Weekly ▪ As required	▪ ECO ▪ ECO and Contractor
11.6. Increased energy consumption during the construction phase.	Reduce energy consumption where possible.	11.6.1. Encourage the use of energy saving equipment at the site camp site (such as low voltage lights and low pressure taps) and promote recycling. Construction personnel must be made aware of energy conservation practices as part of the Environmental Awareness Training programme.	▪ Contractor to monitor energy usage via audits. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Monthly ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor ▪ Contractor/ ECO ▪ ECO
11.7. Impact on the regional water balance as a result of increased water usage.	Reduce water usage during the construction phase.	11.7.1. Water conservation should be practiced as follows: ▪ Cleaning methods utilised for cleaning vehicles, floors, etc. should aim to minimise water use (e.g. sweep before wash-down). ▪ Ensure that regular audits of water systems are conducted to identify possible water leakages. 11.7.2. Avoid the use of potable water for dust suppression during the construction phase and consider the use of alternative approved sources, where possible.	▪ Monitor via site audits and record non-compliance and incidents.	▪ Monthly	▪ ECO
		11.7.3. Make construction personnel aware of the importance of limiting water wastage, as well as reducing water use.	▪ Carry out Environmental Awareness Training with a discussion on water usage and conservation. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
C. DECOMMISSIONING PHASE					
11.8. Ensure that the construction mitigation and management measures are adhered to during the decommissioning phase.					

12 Specific Project Related Environmental Impacts

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. DESIGN PHASE					
A.1. VISUAL IMPACTS					
12.1. Potential visual intrusion of construction activities on existing views of sensitive visual receptors	Reduce visual intrusion of construction activities project wide.	12.1.1. Ensure plans are in place to minimise fire hazards and dust generation. 12.1.2. Ensure plans are in place to rehabilitate temporary cleared areas as soon as possible.	▪ Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ During design cycle and before construction commences.	▪ Project Developer (Scatec Solar) ▪ ECO
A.2. HERITAGE IMPACTS (ARCHAEOLOGY AND CULTURAL LANDSCAPE)					
12.2. Impacts to archaeology and graves (note that none are expected).	Achieve a layout that minimizes the potential later impacts to archaeological resources and/or graves.	12.2.1. Ensure that project layout avoids as many sensitive areas as possible. This includes the dolerite koppie (which should be avoided with a buffer of 120 m radius from the summit of the koppie as a precautionary measure), and the pan (which should be avoided with a buffer of 75 m radius from the centre of the pan as a precautionary measure).	▪ Take cognizance of the archaeological sites and graves reported in the HIA when designing layout and routing.	▪ Once-off	▪ Project Developer (Scatec Solar)
A.3. SOCIAL IMPACTS					
12.3. In-migration of potential job seekers into the Kenhardt area	Proactively manage the in-migration of potential employment seekers and in so doing mitigate impacts on existing social structures.	12.3.1. Develop and implement a Workforce Recruitment Plan 12.3.2. Reserve employment, where practical, for local residents 12.3.3. Clearly define and agree upon the Project Affected People (PAP) 12.3.4. Develop a database of PAP and their relevant skills and experience 12.3.5. Develop and implement a Stakeholder Engagement Plan	▪ Mitigation measures (12.3.1); (12.3.4) and (12.3.5) requires the drafting of a document which would in each instance serve as the method through which the mitigation actions are monitored. ▪ Mitigation measures (12.3.2) and (12.3.3) requires clear statements regarding for whom work would be reserved (i.e. mitigation measure (12.5.2)) and who the PAP is (i.e. mitigation measure (12.3.3)).	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar)

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
12.4. Economic Development Plan	Draft an Economic Development Plan to align local investment with bona fide local needs.	12.4.1. The proponent should engage with local NGOs, CBOs and local government structures to identify and agree upon relevant skills and competencies required in the Kenhardt community. 12.4.2. Such skills and competencies should then be included in the Economic Development Plan. 12.4.3. Where possible, align Economic development Plan with Local Municipality's IDP. 12.4.4. Delivery on the Economic development Plan must be contractually binding on the proponent.	▪ Mitigation measures 12.4.1; 12.4.2; 12.4.3 and 12.4.4 require the drafting of a document (i.e. the Economic development Plan) which would in each instance serve as the method through which the mitigation actions are monitored.	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar)
A.4. ELECTROMAGNETIC AND RADIO FREQUENCY INTERFERENCE					
12.5. Impact on the nearest and surrounding SKA telescopes and the overall SKA project	To reduce the impact of the proposed PV project on the SKA. To implement the mitigation measures correctly and achieve an improvement of between 20 and 40 dB in emissions levels.	12.5.1. The inverter units, transformers, communication and control units for an array of panels should all be housed in a single shielded environment. For shielding of such an environment it must be ensured that: ▪ Radio Frequency Interference (RFI) gasketting is placed on all the seams and doors. ▪ RFI Honeycomb filtering should be placed on all ventilation openings. 12.5.2. It is important to ensure that the cables are laid directly in the soil or properly grounded cable trays (not plastic sleeves). 12.5.3. The use of bare copper directly in the soil for earthing is recommended to shunt Common Mode (CM) interference currents to ground. 12.5.4. In the case of a tracking PV plant design, care will need to be taken to shield the noise associated with the relays, contactors and hydraulic pumps/motors of the tracking units. 12.5.5. Data communications to and from the plants should be via fibre optic.	▪ Ensure that the requirements and mitigation practices are incorporated into the design of the proposed PV plant during the planning and design phase by reviewing signed minutes of meetings or signed reports.	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar)

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A.5. IMPACT ON SURFACE WATER RESOURCES					
12.6. Impact on surface water resources.	To reduce the impact of the proposed PV project on the surrounding drainage lines	12.6.1. Ensure that the Department of Water and Sanitation are consulted with to confirm the need and requirements of a Water Use Licence, as noted in the Ecological Impact Assessment.	▪ Ensure that the requirements of the Department of Water and Sanitation are considered during the planning and design phase. ▪ Ensure that the Water Use Licence is submitted and approved prior to the commencement of construction (if required), based on the requirements of the Department of Water and Sanitation.	▪ Once-off during the design phase.	▪ Project Developer (Scatec Solar)
B. CONSTRUCTION PHASE					
B.1. VISUAL IMPACTS					
12.7. Potential visual intrusion of construction activities on existing views of sensitive visual receptors	Prevent unnecessary visual clutter and focusing attention of surrounding visual receptors on the proposed development.	12.7.1. Parking areas should be demarcated and strictly controlled so that vehicles are limited to specific areas only.	▪ Carry out visual inspections to ensure the construction area and parking area is demarcated clearly, and record and report any non-compliance. ▪ Carry out visual inspections to ensure strict control over the parking of construction vehicles and access routes in order to restrict activities to within demarcated areas.	▪ Weekly ▪ Weekly	▪ ECO ▪ ECO
		12.7.2. Night time construction should be avoided where possible.	▪ Construction operation times to be monitored and managed (as well as included in the tender contract).	▪ Weekly	▪ ECO
		12.7.3. Night lighting of the construction sites should be minimised within requirements of safety and efficiency.	▪ Complaints about night lights should be investigated and documented in a register.	▪ Weekly or bi-weekly	▪ Contractor and ECO
	Reduce the visual impact of construction activities project wide	12.7.4. Maintain good housekeeping on site to avoid litter and minimize waste. 12.7.5. Monitor construction sites for strict adherence to	▪ Carry out site visits and inspections of the construction sites and ensure good housekeeping is maintained. Record and report any non-	▪ Daily ▪ Daily ▪ Daily and as	▪ Construction Manager and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		demarcated boundaries. 12.7.6. Monitor adherence to lighting plan. 12.7.7. Monitor adherence to rehabilitation plan. 12.7.8. Monitor adherence to erosion control plan. 12.7.9. Monitor adherence to dust and fire control plans.	compliance. ▪ Carry out site visits and record and report any non-compliance. ▪ Complaints about night lights should be investigated and documented in a register. Investigate any complaints about night lights and document it in a register. ▪ Visit sites requiring rehabilitation. ▪ Carry out site visits and record and report any non-compliance. ▪ Carry out site visits and record and report any non-compliance.	complaints arise. ▪ Daily ▪ Daily ▪ Daily	
B.2. HERITAGE IMPACTS (ARCHAEOLOGY AND CULTURAL LANDSCAPE)					
12.8. Construction vehicles and activities could result in damage to or destruction of archaeological sites and/or graves.	Minimise the chances of significant archaeological sites and/or graves being disturbed. Minimise the chances of impacts to other heritage resources located outside of the transmission corridor.	12.8.1. Ensure that all sensitive areas are cordoned off and protected prior to the start of construction with the buffers as stated in the Heritage Impact Assessment (i.e. the pan and koppie should be avoided with buffers of 75 m from the centre of the pan and 120 m from the summit of the koppie). 12.8.2. Ensure that no activity takes place outside of the authorized construction footprint (and construction vehicles should remain within the construction corridor).	▪ Identify and cordon off sites with appropriate barriers. ▪ Carry out visual inspections to ensure strict control over the behaviour of construction staff in order to restrict activities to within demarcated areas.	▪ Once-off, prior to start of construction. ▪ Weekly	▪ ECO
		12.8.3. The Contractor and ECO must be informed of the possibility of archaeological resources and graves (i.e. ensure that all personnel are vigilant and aware of the potential of encountering graves and what to do if this occurs (i.e. to report any suspicious stone features prior to disturbance)).	▪ Carry out Environmental Awareness Training to ensure that the Contractors are informed of the possible type of heritage features that may be encountered during the construction phase. ▪ Conduct audits of the signed attendance registers.	▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ Contractor/ ECO ▪ ECO
		12.8.4. If any potential graves found on site during construction cannot be avoided then an	▪ Appoint a professional archaeologist to conduct a test excavation to	▪ As potential graves are encountered	▪ Project Developer

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		archaeologist should be contracted to conduct a test excavation to determine the status of the feature. If it is determined to be a grave, then exhumation would need to occur (if necessary) with the permission of SAHRA (and in accordance with any requirements that SAHRA might impose at the time).	determine if the sites are graves. ▪ Conduct an audit to verify that the necessary permits are obtained by the archaeologist for the test excavation, if required.		(Scatec Solar)
		12.8.5. If any concentrations of archaeological material, graves or stone features are uncovered during the proposed construction, 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. Sufficient time should be allowed to remove/collect such material.	▪ Monitor excavations and construction activities for archaeological materials via visual inspections and report the finds accordingly. ▪ Contact the heritage authorities and the identified archaeologist if any heritage features are uncovered.	▪ Daily or during excavations. ▪ As required/necessary during the construction phase.	▪ Contractor and ECO ▪ Project Developer (Scatec Solar)
B.3. PALAEONTOLOGICAL HERITAGE IMPACTS					
12.9. Loss of legally-protected palaeontological heritage resources at or beneath ground surface within development footprint (fossils, fossil sites and contextual geological data).	Reporting, conservation, recording and judicious sampling of scientifically important fossil material exposed during the construction phase of development.	12.9.1. Reporting chance fossil finds to SAHRA for possible professional mitigation.	▪ Monitoring of all substantial excavations into sedimentary bedrocks for fossil material (e.g. vertebrate bones & teeth, fossilized wood, shells) ▪ Safeguarding of chance fossil finds, preferably *in situ*.	▪ Throughout the construction phase ▪ Throughout the construction phase	▪ ECO ▪ ECO
		12.9.2. Recording and sampling of fossil material and associated geological data (only necessary for chance fossil finds made during the proposed development).	▪ Application by a qualified palaeontologist for fossil collection permit from SAHRA. ▪ Palaeontologist to undertake field study of fossil finds in situ on site. Photography and sampling of important finds. ▪ Curation of fossils collected in an approved repository (museum/ university collection).	▪ Following alert of chance fossil finds on site (It is important to note that there is no need for on-site palaeontological monitoring unless new fossil finds are made during development).	▪ Qualified palaeontologist appointed and commissioned by the Project Developer. ▪ Qualified palaeontologist appointed and commissioned by the Project Developer ▪ Qualified

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
					palaeontologist appointed and commissioned by the Project Developer
B.4. SOILS AND AGRICULTURAL POTENTIAL IMPACTS					
12.10. Degradation of veld beyond the direct footprint of the proposed transmission line corridor due to construction disturbance and potential trampling by vehicle	To conserve the surrounding natural veld vegetation.	12.10.1. Minimize footprint of disturbance during the construction phase and ensure that construction work is undertaken within the demarcated area only. 12.10.2. Confine vehicle access on roads only. 12.10.3. Control dust generation during construction activities by implementing standard construction site dust control measures (dampening with water) where required. Because of water scarcity, this should only be done where and when dust generation is a significant problem.	▪ Monitor the construction activities via site audits to ensure that they are undertaken within the demarcated construction area, and record non-compliance and incidents. ▪ Include periodic site inspection in environmental performance reporting that specifically records occurrence or not of off-road vehicle tracks surrounding the site. Monitor via site audits and record non-compliance and incidents. ▪ Monitor dust suppression mechanisms via visual inspections and record non-compliances. Maintain an incidents/ complaints register. The date, time, nature of complaint, name of complainant and corrective actions must be logged for all complaints. Complaints must be investigated and, if appropriate, acted upon.	▪ Daily ▪ Monthly during the construction phase ▪ Monthly and during complaints/incidents	▪ Contractor and ECO ▪ ECO ▪ Contractor and ECO
12.11. Loss of topsoil due to poor topsoil management	Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.	12.11.1. Strip and stockpile topsoil from all areas where soil (below surface) will be disturbed. 12.11.2. After cessation of disturbance, re-spread topsoil over the surface. 12.11.3. Dispose of any sub-surface spoils from excavations where they will not impact on land that supports vegetation, or where they can be effectively covered with topsoil.	▪ Establish an effective record keeping system for each area where soil is disturbed for construction purposes. These records should be included in environmental performance reports, and should include all the records below: o Record the GPS coordinates of each area.	▪ As needed, dependent on the specifics of construction activities.	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			o Record the date of topsoil stripping. o Record the GPS coordinates of where the topsoil is stockpiled. o Record the date of cessation of construction activities at the particular site. o Photograph the area on cessation of construction activities. o Record date and depth of re-spreading of topsoil. o Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.		
12.12. Soil erosion due to alteration of the land surface characteristics	To reduce erosion on site and downstream of the site as a result of run-off from the site, or due to wind erosion.	12.12.1. Implement an effective system of 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.	▪ Include periodic site inspection in environmental performance reporting that inspects the effectiveness and integrity of the run-off control system and specifically records the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	▪ Monthly during the construction phase.	▪ ECO
B.5. SOCIAL IMPACTS					
12.13. Influx of job seekers into the Kenhardt area.	Control influx of job seekers into the Kenhardt area with the aim of protecting local social structures.	12.13.1. Implement the Workforce Recruitment Plan. 12.13.2. Ensure employment is reserved, where practical, for local residents. 12.13.3. Actively use the database of PAP and their relevant skills and experience to guide local employment. 12.13.4. Implement the Stakeholder Engagement Plan.	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database. ▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			with the PAP.		
12.14. Outsiders moves into the Kenhardt area	Limit incidences of in social deviance in the Kenhardt area.	12.14.1. Implement the Workforce Recruitment Plan 12.14.2. Ensure employment is reserved, where practical, for local residents 12.14.3. Actively use the database of PAP and their relevant skills and experience to guide local employment 12.14.4. Implement the Stakeholder Engagement Plan	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database. ▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO
12.15. Expectations created regarding possible employment	Prevent frustration resulting from miscommunication of employment opportunities and project-related benefits in the local community.	12.15.1. Implement the Stakeholder Engagement Plan	▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO
12.16. Local spending	Ensure the generation of socio-economic benefits as a result of the multiplier effect.	12.16.1. Procure goods and services, where practical, within the study area 12.16.2. Obtain regularly required goods and services from as large a selection of local service providers as possible	▪ Verify purchase of local goods and services through proof of purchase.	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO
12.17. Local employment	Ensure optimum employment creation while taking cognizance of the local levels of experience and education.	12.17.1. Implement the Workforce Recruitment Plan	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database.	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO
12.18. Economic Development Plan	Ensure contribution to local employment, local spending and human capacity development is being made.	12.18.1. Implement the Economic Development Plan	▪ Verify that the Economic development Plan is being implemented.	▪ Three times during the estimated 14 month construction period (i.e. at 3 months, 6 months, and 9 months).	▪ Construction Manager and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
B.6. GEOHYDROLOGY IMPACTS					
12.19. Potential impact on groundwater as a result of the construction of storage yards and temporary labour accommodation camps (i.e. wastewater from construction activities disposed of on the site leading to environmental impacts (e.g. groundwater pollution))	To prevent unnecessary infiltration of polluted surface water	12.19.1. Waste water from labour accommodation site camps or yards must be collected in a designated container and disposed of at a suitable disposal point off site (i.e. a licenced waste disposal facility). A suitable waste contractor must be appointed to collect waste from site on a regular basis for correct disposal. Proof of disposal (waybills or waste disposal slips) must be retained and kept on file for auditing purposes. 12.19.2. Other non-hazardous solid waste (e.g. refuse) to be disposed of at a licensed landfill. A suitable waste contractor must be appointed to collect waste from site on a regular basis for correct disposal. Proof of disposal (waybills or waste disposal slips) must be retained and kept on file for auditing purposes. 12.19.3. Avoid using old or damaged construction equipment and vehicles and ensure that they are well maintained and regularly serviced in order to ensure no leakages. 12.19.4. Any engines that stand in one place must have drip trays, fuel storage tanks should be above ground on an impermeable surface (within a bunded area) and construction vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for refuelling activities and drip trays or similar impervious materials must be used during these procedures. Vehicle and washing areas must also be on paved surfaces and the by-products correctly managed.	▪ Monitor the placement of structures, storage yards, accommodation camps and infrastructure during the construction phase to ensure existing wind pumps / boreholes are not damaged. ▪ Waste removal and disposal to be monitored. Monitor via site audits and record non-compliance and incidents. Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents. ▪ Construction vehicles need to be monitored throughout the construction phase. Monitor via site audits and record non-compliance and incidents. ▪ Monitor the placement and designation of the area for refuelling at the site camp via visual inspections. Monitor the usage of spill containment measures and record and report non-compliance.	▪ Once off prior to the commencement of construction. ▪ Weekly ▪ Four times per annum for the construction period, i.e. at 3 months, 6 months, 9 months and 12 months. ▪ Weekly	▪ Project Developer (Scatec Solar) ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO
12.20. Potential impact on groundwater quality as a result of accidental oil spillages or fuel	To reduce the potential of groundwater pollution.	12.20.1. Avoid using old or damaged construction equipment and vehicles and ensure that they are well maintained and regularly serviced in order to ensure no leakages and that they do not spill oil. 12.20.2. Any engines that stand in one place must have	▪ Construction vehicles need to be monitored throughout the construction phase. Monitor via site audits and record non-compliance and incidents. ▪ Monitor the placement and	▪ Four times per annum for the construction period, i.e. at 3 months, 6 months, 9 months and 12 months.	▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
leakages.		drip trays, fuel storage tanks should be above ground on an impermeable surface (within a bunded area) and construction vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for refuelling activities and drip trays or similar impervious materials must be used during these procedures. If liquid product is being transported it must be ensured this does not spill during transit. 12.20.3. If spillages occur during refuelling, they should be contained and removed as rapidly as possible, with correct disposal of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes. During the operational phase, the same principles should be adhered to. Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.	designation of the area for refuelling at the site camp via visual inspections. Monitor the usage of spill containment measures and record and report non-compliance. ▪ Monitor the refuelling/ servicing process and record the occurrence of any spillages.	▪ Weekly ▪ Weekly	(Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO
B.7. WASTE MANAGEMENT					
12.21. Pollution of the surrounding environment (including drainage lines) as a result of the handling, temporary stockpiling and disposal of general waste.	Reduce environmental impacts such as soil, surface water and groundwater contamination as a result of incorrect storage, handling and disposal of general waste. Minimise the production of waste.	12.21.1. General waste (i.e. construction waste, building rubble, discarded concrete, bricks, tiles, wood, glass, window panes, air conditioners, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) generated during the construction phase should be stockpiled temporarily (i.e. once-off) on site in a designated area within suitable waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate.	▪ Monitor the strategic placement of the temporary, designated waste stockpiling area at the site camp via visual inspections, and record and report any non-compliance. ▪ Monitor the temporary storage and handling of general waste on site via site audits and record non-compliance and incidents (i.e. conduct visual inspections of the temporary waste storage area).	▪ Once-off prior to the commencement of the construction phase and as required as the construction phase process evolves. ▪ Daily	▪ ECO and Contractor ▪ ECO
	Prevent environmental problems (e.g. pollution / change in soil pH) due to solid and liquid wastes disposed of on the site.	12.21.2. Should the on-site stockpiling of general waste exceed 100 m^3 and a period of 90 days, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to.	▪ Record the amount of general waste that is temporarily stockpiled at the designated area on site, as well as the duration and record non-compliance and incidents. ▪ Monitor the duration and amounts of	▪ Daily ▪ Weekly ▪ Monthly	▪ Contractor ▪ ECO ▪ Project Developer (Scatec Solar).

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
	Ensure compliance with waste management legislation.		general waste that is temporarily stockpiled at the designated area on site via site audits and record non-compliance and incidents (i.e. conduct visual inspections of the temporary waste storage area). ▪ Audit compliance with the Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) if the storage amounts are exceeded (i.e. only if required).		
		12.21.3. Ensure that the designated stockpiling area for general waste (i.e. skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events.	▪ Monitor the temporary, designated waste stockpiling area at the site camp, as well as the handling of general waste on site via site audits and record non-compliance and incidents.	▪ Daily	▪ ECO
		12.21.4. Ensure that general waste generated during the construction phase is removed from the site on a regular basis, and safely disposed of at an appropriate, licenced waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file as proof of disposal. As a general principle, waste manifests must be obtained to prove legal disposal of waste.	▪ Ensure that a suitable Waste Management Contractor is appointed to remove and dispose the general waste at an appropriate, licenced waste disposal facility. ▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	▪ Once-off prior to the construction phase. ▪ Weekly	▪ Project Developer (Scatec Solar)/ Contractor ▪ ECO
		12.21.5. Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management.	▪ Monitor the condition of the site camp throughout the construction phase via visual site inspections. Record non-compliance and incidents. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Daily ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO and Contractor ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		12.21.6. Sufficient general waste disposal bins must also be provided for use by construction personnel throughout the site. These bins must be emptied on a regular basis.	▪ Monitor general waste generation by construction staff and collection via audits throughout the construction phase.	▪ Daily or Weekly	▪ ECO and Contractor.
		12.21.7. Ensure that all general waste emanating from the construction phase is removed from site prior to the commencement of the rehabilitation and operational phases.	▪ Undertake a final inspection at the end of the construction phase in order to verify and ensure that all general waste is removed from site and correctly disposed, prior to the commencement of the rehabilitation and operational phases.	▪ At the end of the construction phase.	▪ ECO and Contractor.
		12.21.8. Promote waste reduction, re-use, and recycling opportunities on site during the construction phase.	▪ Monitor waste generation and collection throughout construction. ▪ Investigate if any complaints have been expressed by the surrounding community regarding waste handling.	▪ Weekly or bi-weekly	▪ ECO and Contractor
		12.21.9. Ensure an adequate and sustainable use of resources.	▪ Monitor waste generation and collection throughout construction.	▪ Weekly or bi-weekly	▪ ECO and Contractor
		12.21.10. Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected.	▪ Control of waste management practices throughout construction phase	▪ Weekly or bi-weekly	▪ ECO and Contractor
		12.21.11. Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is contained and transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. No waste water must be discharged to the natural environment. 12.21.12. As part of the Environmental Awareness Training, all construction personnel should be made aware	▪ Monitor the placement of sanitation facilities during the construction phase via visual site inspections. Record non-compliance and incidents. ▪ Ensure that a suitable Contractor is appointed to remove and dispose the sewage at an appropriate, licenced facility. ▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	▪ Weekly ▪ During construction ▪ Weekly ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO ▪ ECO ▪ ECO and Contractor ▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		of the sewage management practises.	▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.		
12.22. Pollution of the surrounding environment as a result of the handling, temporary stockpiling and disposal of hazardous waste.	Reduce environmental impacts such as soil, surface water and groundwater contamination as a result of incorrect storage, handling and disposal of hazardous waste.	12.22.1. Hazardous waste (i.e. empty tins, oils, fuel spillages, spilled materials and chemicals etc.) generated during the construction phase should be stockpiled temporarily (i.e. once-off) on site in a designated area in suitable waste collection bins and leak-proof storage skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Hazardous waste must be stored separately from all other general waste. The designated stockpiling area must be labelled correctly.	▪ Monitor the strategic placement of the temporary, designated waste stockpiling area at the site camp via visual inspections, and record and report any non-compliance. ▪ Monitor the temporary storage and handling of hazardous waste on site via site audits and record non-compliance and incidents (i.e. conduct visual inspections of the temporary waste storage area).	▪ Once-off prior to the commencement of the construction phase and as required as the construction process evolves. ▪ Daily	▪ ECO and Contractor ▪ ECO
		12.22.2. Should the on-site stockpiling of hazardous waste exceed 80 m^3, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to.	▪ Record the amount of hazardous waste that is temporarily stockpiled at the designated area on site, as well as the duration and record non-compliance and incidents. ▪ Monitor the duration and amounts of hazardous waste that is temporarily stockpiled at the designated area on site via site audits and record non-compliance and incidents (i.e. conduct visual inspections of the temporary waste storage area). ▪ Audit compliance with the Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) if the storage amounts are exceeded (i.e. only if required).	▪ Daily ▪ Weekly ▪ Monthly	▪ Contractor ▪ ECO ▪ Project Developer (Scatec Solar).
		12.22.3. Ensure that the designated stockpiling area for hazardous waste (i.e. leak proof skips and waste collection bins) is inspected on a daily basis to verify its condition and integrity, particularly after rainfall events.	▪ Monitor the temporary, designated waste stockpiling area at the site camp, as well as the handling of hazardous waste on site via site audits and record non-compliance	▪ Daily	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
			and incidents.		
		12.22.4. Ensure that all hazardous waste is removed from the site on a regular basis, and safely disposed at an appropriate, licenced hazardous waste disposal facility by an approved waste management Contractor.	▪ Ensure that a suitable Waste Management Contractor is appointed to remove and dispose the hazardous waste at an appropriate, licenced hazardous waste disposal facility. ▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	▪ Once-off prior to the construction phase. ▪ Weekly	▪ Project Developer (Scatec Solar)/ Contractor ▪ ECO
		12.22.5. Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. Littering must be prevented through effective site camp management.	▪ Monitor the condition of the site camp throughout the construction phase via visual site inspections. Record non-compliance and incidents. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Daily ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO and Contractor ▪ ECO
		12.22.6. Ensure that all hazardous waste emanating from the construction phase is removed from site prior to the commencement of the rehabilitation and operational phases.	▪ Undertake a final inspection at the end of the construction phase in order to verify and ensure that all general waste is removed from site and correctly disposed, prior to the commencement of the rehabilitation and operational phases.	▪ At the end of the construction phase.	▪ ECO and Contractor.
		12.22.7. All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.	▪ Waste removal and disposal to be monitored throughout construction	▪ Weekly or bi-weekly	▪ ECO and Contractor
		12.22.8. Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.	▪ Waste removal and disposal to be monitored throughout construction	▪ Weekly or bi-weekly	▪ ECO and Contractor
		12.22.9. Waste water from construction and painting activities must be collected in a designated	▪ Waste removal and disposal to be monitored throughout construction	▪ Weekly or bi-weekly	▪ ECO and Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	**Frequency**	**Responsibility**
		container and disposed of at a suitable disposal point off site.			
		12.22.10. Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected.	▪ Control of waste management practices throughout construction phase	▪ Weekly or bi-weekly	▪ ECO and Contractor
C. OPERATIONAL PHASE					
C.1. HERITAGE IMPACTS (ARCHAEOLOGY AND CULTURAL LANDSCAPE)					
12.23. Maintenance vehicles and activities could result in damage to or destruction of archaeological sites and/or graves.	Minimise the chances of significant archaeological sites and/or graves being disturbed.	12.23.1. Ensure that no activity takes place outside of the authorized operational footprint.	▪ Carry out visual inspections to ensure strict control over the behaviour of operational staff in order to restrict activities to within demarcated areas.	▪ Weekly	▪ Environmental Manager
C.2. SOILS AND AGRICULTURAL POTENTIAL IMPACTS					
12.24. Soil erosion due to alteration of the land surface characteristics	To reduce erosion on site and downstream of the site as a result of run-off from the site, or due to wind erosion.	12.24.1. Implement an effective system of 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.	▪ Include periodic site inspection in environmental performance reporting that inspects the effectiveness and integrity of the run-off control system and specifically records the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	▪ Quarterly during the Operational Phase.	▪ Environmental Manager
C.3. SOCIAL IMPACTS					
12.25. Influx of job seekers into the Kenhardt area.	Control influx of job seekers into the Kenhardt area with the aim of protecting local social structures.	12.25.1. Implement the Workforce Recruitment Plan 12.25.2. Ensure employment is reserved, where practical, for local residents 12.25.3. Actively use the database of PAP and their relevant skills and experience to guide local employment	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		12.25.4. Implement the Stakeholder Engagement Plan	▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.		
12.26. Outsiders moves into the Kenhardt area	Limit incidences of in social deviance in the Kenhardt area.	12.26.1. Implement the Workforce Recruitment Plan 12.26.2. Ensure employment is reserved, where practical, for local residents 12.26.3. Actively use the database of PAP and their relevant skills and experience to guide local employment 12.26.4. Implement the Stakeholder Engagement Plan	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database. ▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer
12.27. Expectations created regarding possible employment	Prevent frustration resulting from miscommunication of employment opportunities and project-related benefits in the local community.	12.27.1. Implement the Stakeholder Engagement Plan	▪ Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer
12.28. Local spending	Ensure the generation of socio-economic benefits as a result of the multiplier effect.	12.28.1. Procure goods and services, where practical, within the study area 12.28.2. Obtain regularly required goods and services from as large a selection of local service providers as possible	▪ Verify purchase of local goods and services through proof of purchase.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer
12.29. Local employment	Ensure optimum employment creation while taking cognizance of the local levels of experience and education.	12.29.1. Implement the Workforce Recruitment Plan	▪ Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer
12.30. Economic Development Plan	Ensure contribution to local employment, local spending and human capacity development is being made.	12.30.1. Implement the Economic Development Plan	▪ Verify that the Economic development Plan is being implemented.	▪ Once a year during the operational phase.	▪ Environmental Manager/ Officer

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
D. DECOMMISSIONING PHASE					
D.1. VISUAL IMPACTS					
12.31. Potential visual intrusion of decommissioning activities on existing views of sensitive visual receptors.	Prevent unnecessary visual clutter and focusing attention of surrounding visual receptors on the proposed development.	12.31.1. Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast with the existing landscapes. 12.31.2. Edges of re-vegetated areas should be feathered to reduce form and line contrasts with surrounding undisturbed landscape.	▪ Conduct visual inspections to ensure that landscaping is following the rehabilitation plan.	▪ Weekly	▪ ECO
		12.31.3. Stockpiled topsoil should be reapplied to disturbed areas and these areas should be re-vegetated using a mix of indigenous species in such a way that the areas will form as little contrast in form, line, colour and texture with the surrounding undisturbed landscape.	▪ Site visits to ensure that stockpiled topsoil (or appropriate soil for vegetation when stockpiled topsoil is exhausted) is used.	▪ Weekly	▪ ECO
		12.31.4. Night lighting of decommissioning sites should be minimised within requirements of safety and efficiency.	▪ Complaints about night lights should be investigated and documented in a register.	▪ Weekly or bi-weekly	▪ Contractor and ECO
		12.31.5. Working at night should be avoided where possible.	▪ Operation times for decommissioning activities to be monitored and managed (as well as included in the tender contract).	▪ Weekly	▪ ECO
	Reduce the visual impact of decommissioning activities project wide.	12.31.6. Maintain good housekeeping on site to avoid litter and minimize waste. 12.31.7. Monitor sites for strict adherence to demarcated boundaries. 12.31.8. Monitor adherence to lighting plan. 12.31.9. Monitor adherence to rehabilitation plan. 12.31.10. Monitor adherence to erosion control plan. 12.31.11. Monitor adherence to dust and fire control plans.	▪ Carry out site visits and inspections of the sites and ensure good housekeeping is maintained. Record and report any non-compliance. ▪ Carry out site visits and record and report any non-compliance. ▪ Complaints about night lights should be investigated and documented in a register. Investigate any complaints about night lights and document it in a register. ▪ Visit sites requiring rehabilitation.	▪ Daily ▪ Daily ▪ Daily and as complaints arise. ▪ Daily ▪ Daily ▪ Daily	▪ Construction Manager and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			▪ Carry out site visits and record and report any non-compliance. ▪ Carry out site visits and record and report any non-compliance.		
D.2. HERITAGE IMPACTS (ARCHAEOLOGY AND CULTURAL LANDSCAPE)					
12.32. Construction vehicles and activities could result in damage to or destruction of archaeological sites and/or graves.	Minimise the chances of significant archaeological sites and/or graves being disturbed.	12.32.1. Ensure that no activity takes place outside of the authorized construction footprint (and construction vehicles should remain within the construction corridor).	▪ Carry out visual inspections to ensure strict control over the behaviour of construction staff in order to restrict activities to within demarcated areas.	▪ Weekly	▪ ECO
12.33. Scarring of the landscape once infrastructure has been removed.	Ensure that the landscape within the development footprint has a similar appearance to that around it.	12.33.1. Ensure removal of all foundations, construction materials and foreign matter. 12.33.2. Ensure rehabilitation of the site in accordance with environmental guidelines.	▪ Follow the relevant environmental guidelines.	▪ Throughout the decommissioning phase.	▪ ECO
D.3. SOILS AND AGRICULTURAL POTENTIAL IMPACTS					
12.34. Degradation of veld vegetation beyond the direct footprint of the proposed transmission due to decommissioning disturbance and potential trampling by vehicles	To conserve the surrounding natural veld vegetation.	12.34.1. Minimize footprint of disturbance during the decommissioning phase and ensure that work is undertaken within the demarcated area only. 12.34.2. Confine vehicle access on roads only 12.34.3. Control dust generation during decommissioning activities by implementing standard construction site dust control measures (dampening with water) where required. Because of water scarcity, this should only be done where and when dust generation is a significant problem.	▪ Monitor the decommissioning activities via site audits to ensure that they are undertaken within the demarcated decommissioning area, and record non-compliance and incidents. ▪ Include periodic site inspection in environmental performance reporting that specifically records occurrence or not of off-road vehicle tracks surrounding the site. Monitor via site audits and record non-compliance and incidents. ▪ Monitor dust suppression mechanisms via visual inspections and record non-compliances. Maintain an incidents/ complaints register. The date, time, nature of complaint, name of complainant	▪ Daily ▪ Monthly during the decommissioning phase ▪ Monthly and during complaints/incidents	▪ Contractor and ECO ▪ ECO ▪ Contractor and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			and corrective actions must be logged for all complaints. Complaints must be investigated and, if appropriate, acted upon.		
12.35. Loss of topsoil due to poor topsoil management	Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.	12.35.1. Strip and stockpile topsoil from all areas where soil (below surface) will be disturbed. 12.35.2. After cessation of disturbance, re-spread topsoil over the surface. 12.35.3. Dispose of any sub-surface spoils from excavations where they will not impact on land that supports vegetation, or where they can be effectively covered with topsoil.	▪ Establish an effective record keeping system for each area where soil is disturbed for decommissioning purposes. These records should be included in environmental performance reports, and should include all the records below: o Record the GPS coordinates of each area. o Record the date of topsoil stripping. o Record the GPS coordinates of where the topsoil is stockpiled. o Record the date of cessation of decommissioning activities at the particular site. o Photograph the area on cessation of decommissioning activities. o Record date and depth of re-spreading of topsoil. o Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.	▪ As needed, dependent on the specifics of decommissioning activities.	▪ ECO
12.36. Soil erosion due to alteration of the land surface characteristics	To reduce erosion on site and downstream of the site as a result of run-off from the site, or due to wind erosion.	12.36.1. Implement an effective system of 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.	▪ Include periodic site inspection in environmental performance reporting that inspects the effectiveness and integrity of the run-off control system and specifically records the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off	▪ Monthly during the decommissioning phase.	▪ ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			control system in the event of any erosion occurring.		
D.4. SOCIAL IMPACTS					
12.37. Decommissioning of the proposed development	Minimize job losses	12.37.1. The proponent should comply with relevant South African labour legislation when retrenching employees. 12.37.2. Scatec Solar must implement appropriate succession training of locally employed staff earmarked for retrenchment during decommissioning. 12.37.3. All project infrastructures should be decommissioned appropriately and thoroughly to avoid misuse.	▪ Verify that retrenchment practices are compliant with south African labour legislation ▪ Verify that Scatec implemented succession training of locally employed staff before the plant is decommissioned ▪ Verify that decommissioned infrastructure does not pose any significant risk to the environment or the people living in the environment.	▪ Once-off during the decommissioning phase (for mitigation measures (12.37.1) and (12.37.2) and once-off after decommissioning is completed (for mitigation measure (12.37.3)).	▪ Contractor and ECO
D.5. GEOHYDROLOGY IMPACTS					
12.38. Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages.	To reduce the potential of groundwater pollution.	12.38.1. Avoid using old or damaged equipment and vehicles and ensure that they are well maintained and regularly serviced in order to ensure no leakages and that they do not spill oil. 12.38.2. Any engines that stand in one place must have drip trays, fuel storage tanks should be above ground on an impermeable surface (within a bunded area) and vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the site camp for refuelling activities and drip trays or similar impervious materials must be used during these procedures. If liquid product is being transported it must be ensured this does not spill during transit. 12.38.3. If spillages occur during refuelling, they should be contained and removed as rapidly as possible, with correct disposal of the spilled material. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes. During the operational phase,	▪ Vehicles need to be monitored throughout the decommissioning phase. Monitor via site audits and record non-compliance and incidents. ▪ Monitor the placement and designation of the area for refuelling at the site camp via visual inspections. Monitor the usage of spill containment measures and record and report non-compliance. ▪ Monitor the refuelling/ servicing process and record the occurrence of any spillages.	▪ Four times per annum for the decommissioning period, i.e. at 3 months, 6 months, 9 months and 12 months. ▪ Weekly ▪ Weekly	▪ Project Developer and ECO. ▪ Project Developer (Scatec Solar) and ECO ▪ Project Developer (Scatec Solar) and ECO

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring: Methodology	Monitoring: Frequency	Monitoring: Responsibility
		the same principles should be adhered to. Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.			
D.6. WASTE MANAGEMENT					
12.39. Generation of waste due to disassembly of the transmission line and associated structures.	Avoid substantial negative impacts at the decommissioning phase due to insufficient planning.	12.39.1. Suitable receptacles must be provided for the temporary storage of various waste types such as scrap metal and concrete, until it is removed to the nearest licensed landfill.	▪ Audit the implementation of mitigation measures recommended for the decommissioning phase.	▪ During the decommissioning phase	▪ ECO
		12.39.2. Waste separation is encouraged and therefore receptacles should be labelled to reflect the different waste types.	▪ Audit the implementation of mitigation measures recommended for the decommissioning phase.	▪ During the decommissioning phase	▪ ECO
		12.39.3. Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is contained and transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. No waste water must be discharged to the natural environment. 12.39.4. As part of the Environmental Awareness Training, all construction personnel should be made aware of the sewage management practises.	▪ Monitor the placement of sanitation facilities via visual site inspections. Record non-compliance and incidents. ▪ Ensure that a suitable Contractor is appointed to remove and dispose the sewage at an appropriate, licenced facility. ▪ Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents. ▪ Carry out Environmental Awareness Training. ▪ Conduct audits of the signed attendance registers.	▪ Weekly ▪ During decommissioning ▪ Weekly ▪ Once-off training and ensure that all new staff are inducted. ▪ Monthly	▪ ECO and Contractor ▪ ECO ▪ ECO ▪ ECO and Contractor ▪ ECO
		12.39.5. Ensure that the construction mitigation and management measures are adhered to during the decommissioning phase.	▪ Audit the implementation of mitigation measures recommended for the decommissioning phase.	▪ During the decommissioning phase	▪ ECO

13 Independent Management Plan for the Electrical Infrastructure

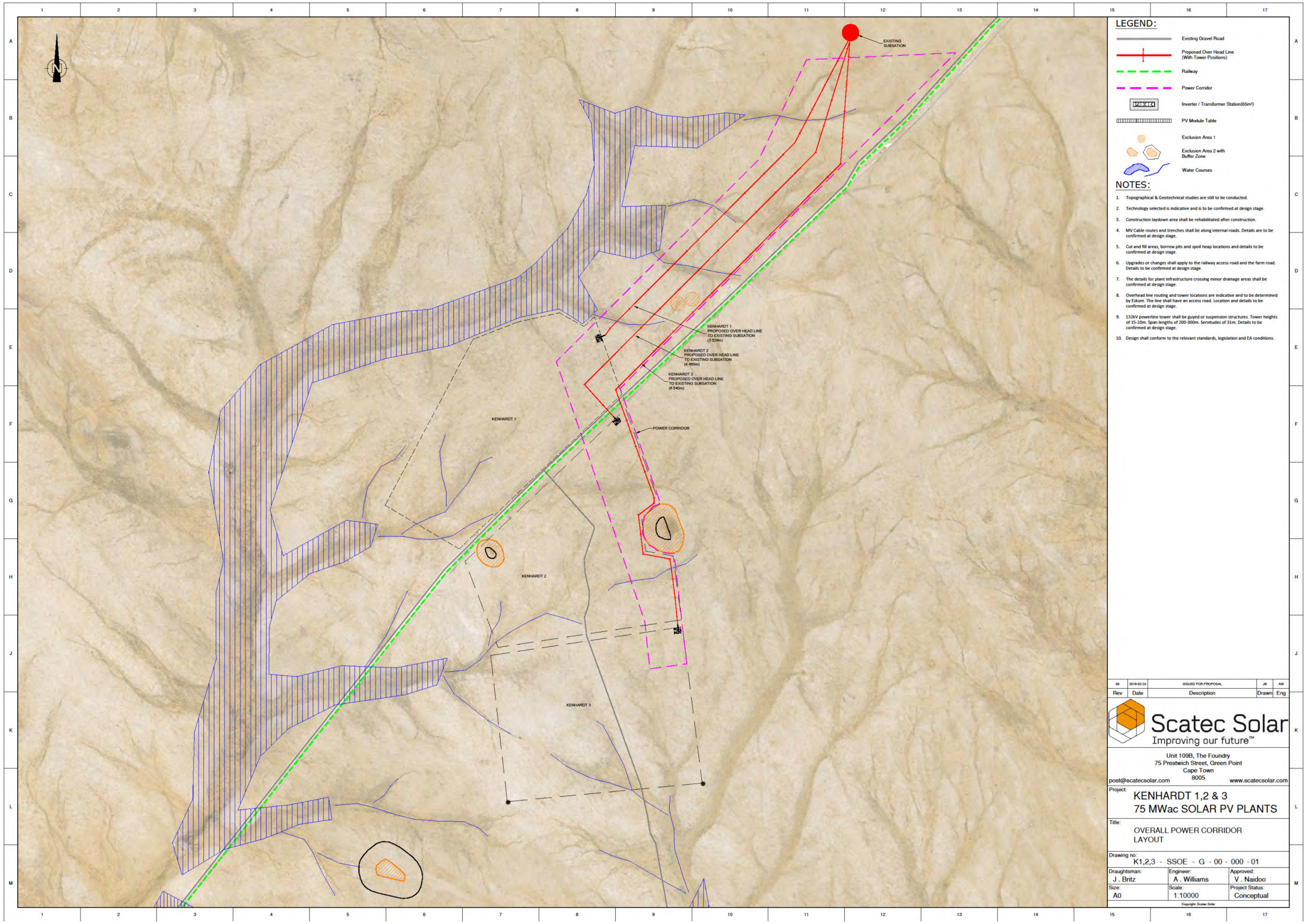
In the event that the ownership of the associated electrical infrastructure connecting the Kenhardt PV 2 project to the Eskom Nieuwehoop Solar Substation is transferred to Eskom SOC Ltd following the construction phase, this section of the EMPr will be transferred to the responsibility of Eskom. Eskom will be responsible for ensuring that the goal and associated objectives, actions, responsibilities, monitoring requirements and targets of the section pertaining to the newly constructed associated electrical infrastructure are implemented. Since the associated electrical infrastructure will be constructed already, this section specifically addresses the operational and decommissioning impacts on the electrical infrastructure.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
A. OPERATIONAL PHASE					
13.1. Risk of bird collisions with electrical infrastructure	Minimise the chance that the associated electrical infrastructure, specifically the transmission line, cause avifaunal collisions	13.1.1. Pigtails and/or flappers should be installed on the overhead cables where known flight paths occur.	▪ During construction, flappers will be installed at known flight paths. The effectivity of this should be monitored, and adjusted, if required.	▪ As needed	▪ Eskom
		13.1.2. The impact on birds must be monitored by environmental staff member during the first six months of the operational phases for each of the projects and in conjunction with any efforts made by Eskom through management measures included in their OEMP in minimising bird collisions.	▪ Record any evidence of bird collisions, injury or other bird-related incidents (with GPS coordinates). ▪ Where necessary, a bird specialist should oversee the recording and reporting of incidents, help with species identification, assess the significance of any impacts, and if required, suggest mitigation.	▪ Weekly for the first month, thereafter, monthly	▪ Eskom
		13.1.3. Annual monitoring by an avifaunal specialist. This should be based on a minimum of 3-5 days observations.	▪ Monitor the flight paths of birds occurring on site, noting which birds are seen	▪ Annually	▪ Eskom
		13.1.4. Any avian mortality or injury at the facility should be duly recorded and reported.	▪ Record any bird fatalities and undertake the necessary reporting to EWT or relevant authority	▪ When required	▪ Eskom
13.2. Loss of species of special concern and their habitats	Control loss of natural vegetation during the operational phase. Prevent impacts on natural	13.2.1. Unnecessary impacts on surrounding natural vegetation must be avoided. All operational and maintenance vehicles to remain on the roads and no driving off road allowed.	▪ Strict control over the behaviour of operational workers, restricting activities to within demarcated areas	▪ On-going when maintenance work is being undertaken	▪ Eskom

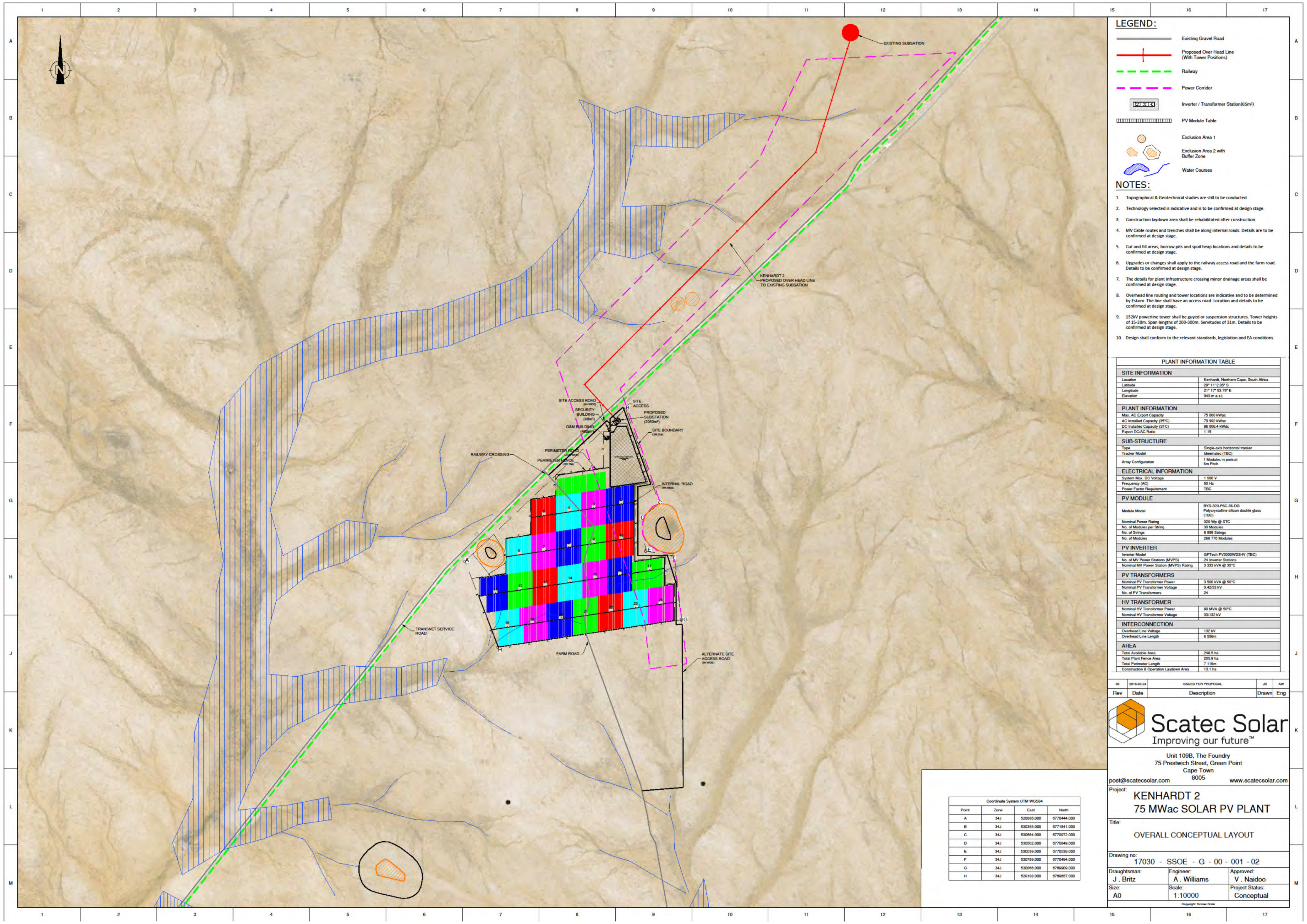
Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
	vegetation in sensitive habitats and species of special concern.				
13.3. Impact of traffic causing dust and deterioration in road surface condition	Manage dust generation and reduce the deterioration of the condition of specifically the Transnet Service Road	13.3.1. Vehicle drivers shall drive at moderate speed on site access roads to minimise or eliminate dust generation.	▪ Ensure generation of dust to an adequate level during operational activities.	▪ On-going	▪ Eskom
13.4. Visual impacts due to the intrusion of electrical infrastructure in a rural area	Manage the visual impact that the electrical infrastructure may have	13.4.1. Painted features should be maintained and repainted when colour fades or paint flakes.	▪ Ensure that all electrical infrastructure are well maintained	▪ When required	▪ Eskom
B. DECOMMISSIONING PHASE					
13.5. Generation of waste during the decommissioning of the electrical infrastructure	Minimise the production of waste Ensure compliance with waste management legislation	13.5.1. Ensure that waste generated during this phase is taken to an appropriate registered landfill.	▪ Control of waste management practices throughout decommissioning phase	▪ On-going	▪ Eskom
		13.5.2. Burning of waste material such as vegetation and old cleaning materials resulting from decommissioning activities at a site is strictly prohibited	▪ Control of waste management practices throughout decommissioning phase	▪ On-going	▪ Eskom
		13.5.3. No waste materials or sediments from the electrical infrastructure are to be left in the watercourse or on site after decommissioning.	▪ Control of waste management practices throughout decommissioning phase	▪ On-going	▪ Eskom
13.6. Impact of traffic causing dust and deterioration in road surface condition	Manage dust generation and reduce the deterioration of the condition of specifically the Transnet Service Road	13.6.1. Vehicle drivers shall drive at moderate speed on site access roads to minimise or eliminate dust generation.	▪ Ensure generation of dust to an adequate level during operational activities	▪ On-going	▪ Eskom
13.7. Visual impacts due following the decommissioning	Minimise the residual impact on structures that were constructed on site	13.7.1. Disturbed and transformed areas should be contoured to avoid lines and forms that will contrast with the existing landscapes.	▪ Final external audit of area to confirm that area is rehabilitated to an acceptable level	▪ Once off	▪ Eskom

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
phase		13.7.2. Working at night should be avoided.	▪ Monitoring of adherence to requirement	▪ On-going	▪ Eskom
		13.7.3. Night lighting of reclamation sites should be minimised within requirements of safety and efficiency.	▪ Monitoring of adherence to requirement	▪ On-going	▪ Eskom

14 APPENDIX A – SITE LAYOUT MAP



Layout Map for the Kenhardt PV 1 - Transmission Line, Kenhardt PV 2 - Transmission Line and Kenhardt PV 3 - Transmission Line BA Projects

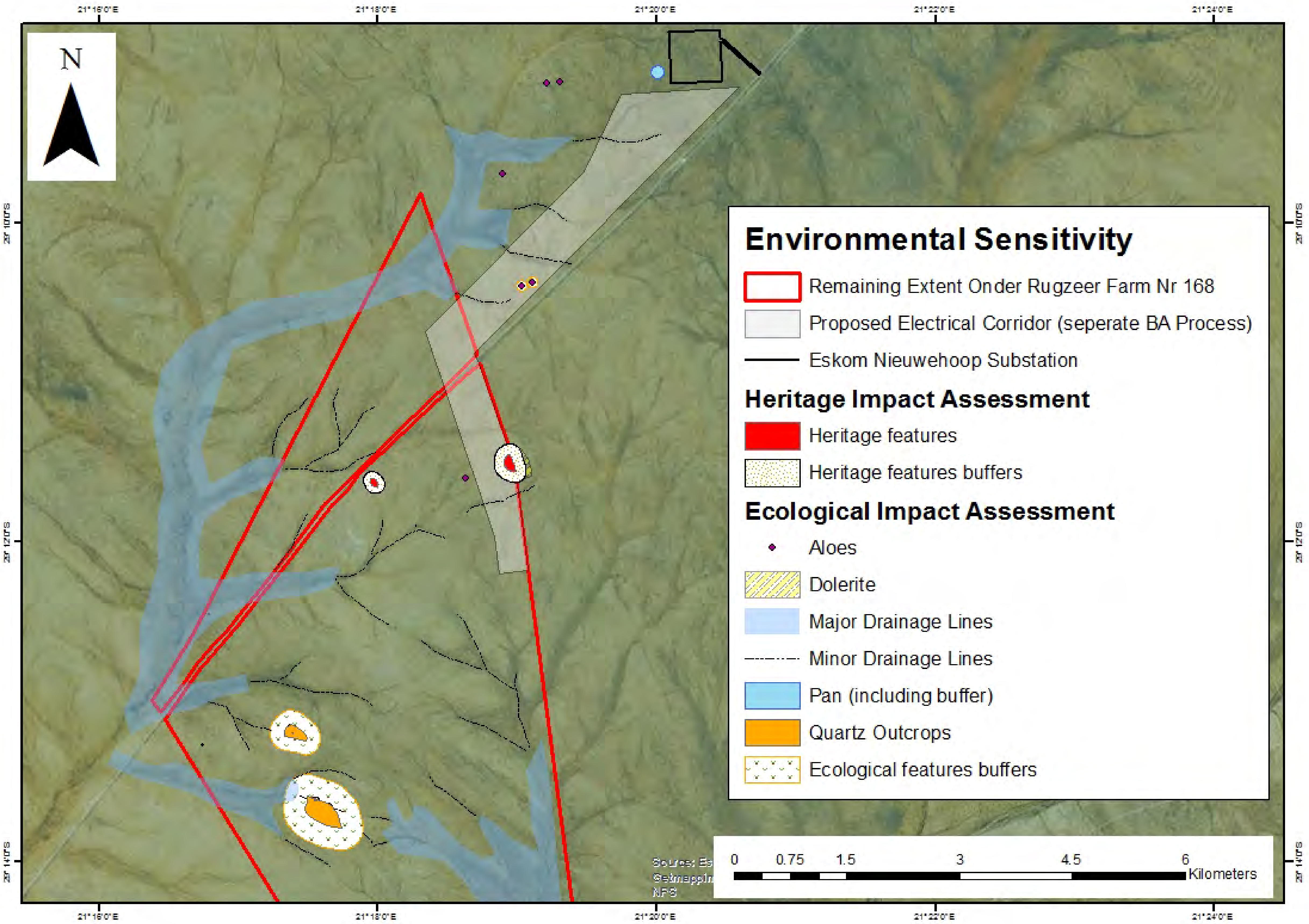


PLANT INFORMATION TABLE	
SITE INFORMATION	
Location	Kenhardt, Northern Cape, South Africa
Latitude	29° 11' 2.05" S
Longitude	21° 17' 53.79" E
Elevation	943 m a.s.l.
PLANT INFORMATION	
Max. AC Export Capacity	75 000 kWac
AC Installed Capacity (35°C)	79 992 kWac
DC Installed Capacity (STC)	86 006.4 kWdc
Export DC/AC Ratio	1.15
SUB-STRUCTURE	
Type	Single-axis horizontal tracker
Tracker Model	Ideematec (TBC)
Array Configuration	1 Modules in portrait 6m Pitch
ELECTRICAL INFORMATION	
System Max. DC Voltage	1 500 V
Frequency (AC)	50 Hz
Power Factor Requirement	TBC
PV MODULE	
Module Model	BYD-320-P6C-36-DG Polycrystalline silicon double glass (TBC)
Nominal Power Rating	320 Wp @ STC
No. of Modules per String	30 Modules
No. of Strings	8 959 Strings
No. of Modules	268 770 Modules
PV INVERTER	
Inverter Model	GPTech PV3000WD3HV (TBC)
No. of MV Power Stations (MVPS)	24 Inverter Stations
Nominal MV Power Station (MVPS) Rating	3 333 kVA @ 35°C
PV TRANSFORMERS	
Nominal PV Transformer Power	3 500 kVA @ 50°C
Nominal PV Transformer Voltage	0.42/33 kV
No. of PV Transformers	24
HV TRANSFORMER	
Nominal HV Transformer Power	80 MVA @ 50°C
Nominal HV Transformer Voltage	33/132 kV
INTERCONNECTION	
Overhead Line Voltage	132 kV
Overhead Line Length	6 556m
AREA	
Total Available Area	248.5 ha
Total Plant Fence Area	205.9 ha
Total Perimeter Length	7 116m
Construction & Operation Laydown Area	13.1 ha

Coordinate System UTM WGS84			
Point	Zone	East	North
A	34J	528886.000	6770444.000
B	34J	530355.000	6771841.000
C	34J	530664.000	6770972.000
D	34J	530502.000	6770849.000
E	34J	530539.000	6770539.000
F	34J	530789.000	6770494.000
G	34J	530866.000	6769909.000
H	34J	529188.000	6769657.000

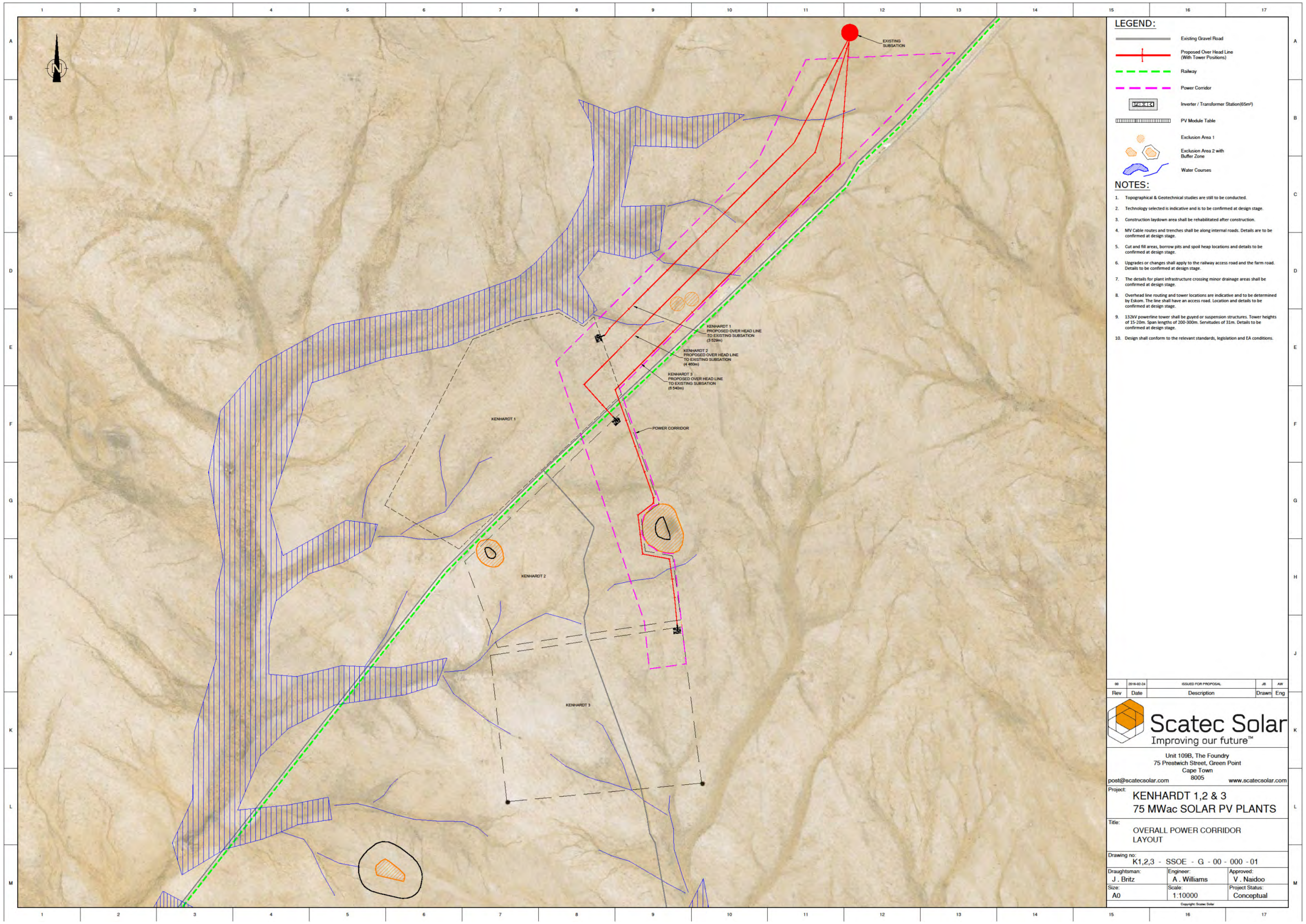
Layout Map for the associated Transmission Line and Electrical Infrastructure Corridor (including the Kenhardt PV 2 EIA Project)

15 APPENDIX B – ENVIRONMENTAL SENSITIVITY MAP



Combined Sensitivity Layout Map for the Electrical Infrastructure Corridor and the Kenhardt PV 1, 2 and 3 EIA Projects

16 APPENDIX C – COMBINED LAYOUT AND SENSITIVITY MAP



EXISTING SUBSATION
KENHARDT 1 PROPOSED OVER HEAD LINE TO EXISTING SUBSATION (3 529m)
KENHARDT 2 PROPOSED OVER HEAD LINE TO EXISTING SUBSATION (4 460m)
KENHARDT 3 PROPOSED OVER HEAD LINE TO EXISTING SUBSATION (6 540m)
POWER CORRIDOR
KENHARDT 1
KENHARDT 2
KENHARDT 3
LEGEND:
Existing Gravel Road
Proposed Over Head Line (With Tower Positions)
Railway
Power Corridor
Inverter / Transformer Station(65m²)
PV Module Table
Exclusion Area 1
Exclusion Area 2 with Buffer Zone
Water Courses
NOTES:
1. Topographical & Geotechnical studies are still to be conducted.
2. Technology selected is indicative and is to be confirmed at design stage.
3. Construction laydown area shall be rehabilitated after construction.
4. MV Cable routes and trenches shall be along internal roads. Details are to be confirmed at design stage.
5. Cut and fill areas, borrow pits and spoil heap locations and details to be confirmed at design stage.
6. Upgrades or changes shall apply to the railway access road and the farm road. Details to be confirmed at design stage.
7. The details for plant infrastructure crossing minor drainage areas shall be confirmed at design stage.
8. Overhead line routing and tower locations are indicative and to be determined by Eskom. The line shall have an access road. Location and details to be confirmed at design stage.
9. 132kV powerline tower shall be guyed or suspension structures. Tower heights of 15-20m. Span lengths of 200-300m. Servitudes of 31m. Details to be confirmed at design stage.
10. Design shall conform to the relevant standards, legislation and EA conditions.
00 | 2016-02-24 | ISSUED FOR PROPOSAL | JB | AW
Rev | Date | Description | Drawn | Eng
Scatec Solar
Improving our future™
Unit 109B, The Foundry
75 Prestwich Street, Green Point
Cape Town
8005
post@scatecsolar.com
www.scatecsolar.com
Project: KENHARDT 1,2 & 3
75 MWac SOLAR PV PLANTS
Title: OVERALL POWER CORRIDOR LAYOUT
Drawing no: K1,2,3 - SSOE - G - 00 - 000 - 01
Draughtsman: J . Britz
Engineer: A . Williams
Approved: V . Naidoo
Size: A0
Scale: 1:10000
Project Status: Conceptual
Copyright: Scatec Solar

BASIC ASSESSMENT REPORT

APPENDIX H: DETAILS OF EAP AND EXPERTISE

contents

Appendix H.1 Curriculum Vitae of EAP – Surina Laurie

Name of firm	CSIR
Name of staff	Surina Laurie
Profession	Environmental Assessment Practitioner
Position in firm	Project Manager
Years' experience	5 years
Nationality	South African

Biographical sketch

Surina has more than 5 years' experience as an Environmental Assessment Practitioner (EAP). She completed both her BSc in Conservation Ecology and MPhil in Environmental Management (part-time) at the University of Stellenbosch. With her honours project, she worked closely with the Endangered Wildlife Trust Riverine Rabbit Working Group and was responsible for determining the conservation opportunity for the Riverine Rabbit in the Karoo. With this project, she gained valuable experience in how to interact and manage stakeholders in such a way that a project's objectives and conservation goals are met without the stakeholders not being included in the decision-making process. The management of stakeholders and the ability to incorporate their needs into the objectives of a project is seen as an essential component of an Environmental Impact Assessment (EIA) process.

With her Masters' thesis she researched and addressed why there is a need to undertake a Cost Benefit Analysis (CBA) as part of any EIA. The need for a CBA stems from the fact that losing environmental services will have an economic impact on a regional/national level in the long term but this is usually not considered during an EIA process. A CBA will look at both the economic benefits (profit) from a project and the economic losses because of loss of ecosystem services or rehabilitation costs. By including a CBA in an EIA, both the economic and environmental financial implications (not just the environmental significance of an impact) of a project will be considered by the decision making authority prior to the issuing of Environmental Authorisations or permits.

She has experience in undertaking Basic Assessments and Scoping and Environmental Impact Assessments for various sectors, including renewable energy, industry and tourism. She also has experience in undertaking environmental audits, due diligence assessments and the compilation of Environmental Management Programmes.

Registered Professional Natural Scientist (Pr. Sci. Nat.) in Environmental Science (Reg. No: 400033/15) with the South African Council of Natural Scientific Professions.

Education

2015 (current)	Certificate in Environmental Economics, University of London (SOAS)
2013	Project Management Course, University of Cape Town Graduate School of Business
2011-2012 (Part-time)	MPhil Environmental Management, University of Stellenbosch
2007-2010	BSc Conservation Ecology, University of Stellenbosch

Employment Record

Feb 2014 to present	CSIR, Project Manager, EAP
Sept 2011 to Jan 2014	WSP Environmental (Pty) Ltd, Environmental Consultant
Nov 2010 to Aug 2011	EnviroAfrica, Junior Environmental Consultant

Experience record *Abridged experience in Environmental Impact and Basic Assessment processes:*

Date	Project Description	Role	Client
2014 - present	Integrated Scoping and EIA process for the construction of three Photovoltaic (PV) or Concentrated Photovoltaic (CPV) Solar Facilities with a generating capacity of 75 MW each on the farms remaining extent of Portion 3 of the Farm Gemsbok Bult 120 and Boven Rugzeer remaining extent of 169, located 30 km north-east of Kenhardt. Two of the projects will be located on the farm remaining extent of Portion 3 of the Farm Gemsbok Bult 120 and one on Boven Rugzeer remaining extent 169.	Project Manager	Mulilo Renewable Project Development (Pty) Ltd
2014 - present	Integrated Scoping and EIA process for the development of twelve (12) Photovoltaic (PV) or Concentrated Photovoltaic (CPV) Solar Facilities with a generating capacity of 75 MW/100MW each, near Dealesville, Free State.	Project Manager	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2013-2014	Basic Assessment for the construction of three additional petroleum storage tanks at the Cape Town Harbour.	Environmental Consultant	FFS Refiners (Pty) Ltd
2013-2014	Scoping and EIA for the construction of a Sewage Package Plant on Robben Island.	Environmental Consultant	Department of Public Works
2013	Development of an EMPr for the undertaking of maintenance work on the Stilbaai Fishing Harbour's Slipway located in Stilbaai, Western Cape, South Africa. In order to be compliant to the requirements of the National Environmental Management Act (Act 107 of 1998) and Environmental Impact Assessment (EIA) Regulations, a Maintenance Management Plan (MMP) needed to be developed to manage the environmental impacts associated with maintenance work that is scheduled to be undertaken on the Stilbaai Fishing Harbour's Slipway as well as any future on-going maintenance requirements.	Environmental Consultant	Department of Public Works
2012-2014	Waste Management License for the proposed storage of Ferrous HMS 1+2, Shredded Ferrous and Bales located at the K/L Berth at Duncan Road, Port of Cape Town	Environmental Consultant	The New Reclamation Group (Pty) Ltd
2012-2014	Scoping and EIA for the construction a biodiesel refinery in the Coega Industrial Development Zone (IDZ). The proposed project entails the import of used vegetable oil from the USA and converting it through various processes to biodiesel which will be exported to Europe. The proposed project requires an Air Emissions License, a Waste Management License and Environmental Authorisation.	Environmental Consultant	FIS Biofuels (Ltd)
2013-2013	Basic Assessment for the proposed redevelopment of Berths B, C and D in Duncan Dock at the Port of Cape Town.	Assistant Environmental Consultant	FPT (Pty) Ltd
2011- 2012	Development of an EMPr for the Eerstelingsfontein Opencast Project (EOP).	Assistant Environmental Consultant	Exxaro Resources Limited
2011-2014	Basic Assessment for the proposed reinstatement of the Blue Stone Quarry located on Robben Island.	Assistant Environmental Consultant	Department of Public Works
2011	Scoping and EIA for the proposed upgrade to the Struisbaai WWTW.	Assistant Environmental Consultant	Cape Agulhas Municipality
2011	Basic Assessment for the construction of a cellular mast.	Environmental Consultant	MTN (Pty) Ltd
2010-2011	Basic Assessment for the construction of a Heritage Centre.	Environmental Consultant	Waenhuiskrans Arniston Community Development Trust
2010-2011	Scoping and EIA for the rezoning of the area from open space to residential, the construction of six residential units and the upgrading of the existing Waste Water Treatment Plant.	Environmental Consultant	Private developer

Abridged experience in undertaking the role of an Environmental Control Officer and compliance auditing:

Date	Project Description	Role	Client
2013- 2014	The proposed extension project involved the installation of five new above ground storage tanks. The two largest tanks have a tank capacity of 2,500m^3 each and a height of 18m. The three smaller tanks have a tank capacity of 2,300m3, 1,350m3 and 212m^3 and heights of 18m, 10.8m and 10.8m respectively, giving an additional 8862m^3 storage capacity to the current FFS operation	ECO	FFS Refiners (Pty) Ltd
2012- 2014	Compliance auditing of drum re-conditioners for the used oil industry in the Western Cape.	Assistant Environmental Consultant	The Rose Foundation
2012	Environmental legal compliance auditing of various Much Asphalt sites. The audit entailed review of national, provincial legislation and municipal by-laws and a site visit in order to determine whether the sites were compliant to the relevant environmental legislation.	Environmental Consultant	Much Asphalt
2011- 2013	Construction of a new De-Ashing Plant for FFS Vissershok Construction of a De-Ashing Plant. This project involved the monthly independent audits and reports of all the environmental and social aspects of the construction phase the new De-Ashing Plant at Vissershok.	ECO	FFS Refiners (Pty) Ltd
2011- 2012	Construction of the new 1200m^3 Tank at FFS Cape Town Harbour Site. This project involved two site audits per month to ensure compliance to the Environmental Authorisation and Environmental Management Plan for the proposed project.	ECO	FFS Refiners (Pty) Ltd

Language capabilities

	Speaking	*Reading*	*Writing*
Afrikaans	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

Appendix H.2 EAP Declaration of Interest

I, ______________Surina Laurie______________________, declare that:

- I act as the independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- I will provide the competent authority any information that is provided by the EAP to interested and affected parties and any responses; by the EAP to comments or inputs made by interested or affected parties;
- I affirm that the information provided in this report includes input and recommendations from specialist reports where relevant;
- the information provided in this report has been sourced from relevant literature, legislation, previous studies and specialist input and is therefore believed to be correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signed at Stellenbosch on the 29th of February 2016	**Environmental Assessment Practitioner**

Appendix H.3 Curriculum Vitae of Project Manager – Rohaida Abed

Name of firm	CSIR
Name of staff	Rohaida Abed
Profession	Environmental Assessment Practitioner
Position in firm	Junior Environmental Assessment Practitioner
Years' experience	5 years
Nationality	South African

Biographical Sketch

Rohaida is a Junior Environmental Assessment Practitioner in the CSIR Environmental Management Services team based in Durban. She has five years of experience in the Environmental Management field, and has been involved in various transport infrastructure related projects as an Environmental Control Officer, which included monitoring compliance with Environmental Authorizations and Environmental Management Plans. She has also been conducting Scoping and Environmental Impact Assessments for projects within the Coega Industrial Development Zone.

Registered Professional Natural Scientist (Pr. Sci. Nat.) in Environmental Science (Reg. No: 400247/14) with the South African Council of Natural Scientific Professions.

Education

2005	Bachelor of Science (Environmental Science)
2006	Bachelor of Science Honours (Environmental Science)
2010	Master of Science (Environmental Science)

Employment Record

2006 – 2008	University of KwaZulu-Natal (Academic Demonstrator)
March 2010 – April 2010	EnAq Consulting (Environmental Officer)
May 2010 – September 2011	Henwood & Nxumalo Consulting Engineers (Environmental Scientist)
October 2011 – to present	CSIR (Junior Environmental Assessment Practitioner)

Short Courses

May 2009	Management of Estuaries in South Africa (Marine and Estuarine Research, FET Water, and Water Research Commission)
October 2010	Environmental Impact Assessment: A Practical Approach (North West University (Potchefstroom Campus), Centre for Environmental Management)

Experience record

Date	Project Description	Role	Client
2010 – 2011	The Repair and Rehabilitation of the Umzinto River Bridge Number 823 on the South Coast of KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of the Kwahlongwa Bridge Number 3257 over the Kwa-Malukaka River on D297 near Umzumbe, South Coast of KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of a bridge and approach roads across the Indaka River at Eludimbi, within the Msinga Local Municipality, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Extension of the Lion Park Pipeline along the P566 and D2173 in the Manyavu area, KwaZulu-Natal	Environmental Control Officer	Umgeni Water
2010 – 2011	The Construction of a bridge and approach roads across the Tugela River at Thulwane, within the Nkandla Local Municipality, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of a bridge and approach roads across the Mona River at Nqolotshe, within the	Environmental Control Officer	KwaZulu-Natal Department of Transport

Date	Project Description	Role	Client
	Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal		
2010 – 2011	The Construction of the Mdloti River Bridge (Northbound) on the R102, within the eThekwini Municipality, KwaZulu-Natal.	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Upgrade of the R102 from the Duffs Road Interchange to King Shaka International Airport, within the eThekwini Municipality, KwaZulu-Natal.	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of the P701 Provincial Road from Ulundi to Empangeni, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010	Environmental Impact Assessment for the construction of a bridge and approach roads across the Mona River at Nqolotshe, within the Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal	Project Assistant	KwaZulu-Natal Department of Transport
2011 - 2014	Environmental Impact Assessment for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura	Project Consultant	Oiltanking Grindrod Calulo (PTY) Ltd
2012 - 2014	Environmental Impact Assessment for the proposed Manganese Export Terminal in Zones 8, 9 and 11 of the Coega IDZ, including the Port of Ngqura, and surrounding area	Project Assistant	Hatch Africa (PTY) Ltd c/o Transnet
2012 - 2014	Basic Assessment for the Provision of Landside Structures and Infrastructure to the Bulk Liquid Storage and Handling Facility in the Port of Ngqura	Project Manager	Eastern Cape Infrastructure Joint Venture c/o Transnet Capital Projects
2013 – 2014	Environmental Impact Assessment for the Provision of Marine Infrastructure, including a General Cargo Berth and Liquid Bulk Berths at the Port of Ngqura	Project Manager	Transnet Capital Projects
2013 – ongoing	Basic Assessment for the decommissioning of unused infrastructure at the Port of Ngqura	Project Manager	Transnet Capital Projects
2014 – ongoing	Basic Assessment for the Proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal	Project Manager	Oiltanking Grindrod Calulo Terminals (PTY) Ltd
2015 – ongoing	Environmental Management Plan for the Proposed Construction of a Bulk Liquid Storage and Handling Facility in the Port of Cape Town, Western Cape	Project Manager	Oiltanking Grindrod Calulo Terminals (PTY) Ltd

Language capabilities

	Speaking	*Reading*	*Writing*
English	Excellent	Excellent	Excellent

BASIC ASSESSMENT REPORT

APPENDIX I: SPECIALIST'S DECLARATION OF INTEREST

contents

Declarations of Interest	
1. Ecology Specialist	Simon Bundy
2. Visual Specialist	Henry Holland
3. Heritage Specialist	Dr. Jayson Orton
4. Palaeontological Specialist	Dr. John Almond
5. Geohydrological Specialist	Julian Conrad
6. Soils Specialist	Johann Lanz
7. Social Specialist	Rudolph du Toit

Declaration of Interest: Simon Bundy

I, Simon C Bundy, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: ______________ ______________

Name of Specialist: Simon C Bundy

Date: 8 February 2016

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Proposed development of a 132 kV/33 kV Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.

Specialist:	SDP Ecological and Environmental Services		
Contact person:	Simon C Bundy		
Postal address:	Box 1016, Ballito		
Postal code:	4420	Cell:	082 446 4847
Telephone:	032-9460685	Fax:	032-9460784
E-mail:	simon@ecocoast.co.zaz		
Professional affiliation(s) (if any)	SACNASP 400093/06 – Ecology		

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Simon C Bundy, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

SDP Ecological and Environmental Services

Name of company (if applicable):

27 February 2016

Date:

Declaration of Interest: Henry Holland

I, Henry Holland, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: H. Holland.

Name of Specialist: Henry Holland

Date: 15 February 2016

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Proposed development of a 132 kV/33 kV Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.

Specialist:	Visual Specialist		
Contact person:	Henry Holland		
Postal address:	8 Cathcart Street		
Postal code:	6139	Cell:	082 2266689
Telephone:	046 6228735	Fax:	
E-mail:	hholland@gmail.com		
Professional affiliation(s) (if any)			

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Henry Holland , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

H. Holland

Signature of the specialist:

Name of company (if applicable):

08 February 2016
Date:

Declaration of Interest: Dr. Jayson Orton

I, Jayson Orton, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: ______________________________

Name of Specialist: __JAYSON ORTON__________________

Date: ___________01 FEBRUARY 2016____________________

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

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PROJECT TITLE

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Specialist:	ASHA Consulting (Pty) Ltd		
Contact person:	Dr Jayson Orton		
Postal address:	6A Scarborough Road, Muizenberg		
Postal code:	7945	Cell:	083 272 3225
Telephone:	021 788 8425	Fax:	n/a
E-mail:	jayson@asha-consulting.co.za		
Professional affiliation(s) (if any)	ASAPA CRM Section member #233 APHP accredited professional heritage practitioner		

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, JAYSON ORTON, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

ASHA CONSULTING (PTY) LTD

Name of company (if applicable):

27-01-2016

Date:

Declaration of Interest: Dr. John Almond

I, Dr John Edward Almond, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realize that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: John E. Almond

Name of Specialist: Dr John Edward Almond

Date: 29 January 2016

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-
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Specialist:	Dr John E. Almond		
Contact person:	As above		
Postal address:	PO Box 12410 Mill Street, CAPE TOWN, RSA		
Postal code:	8010	Cell:	n/a
Telephone:	0211 462 3622		n/a
E-mail:	almond@universe.co.za		
Professional affiliation(s) (if any)	Palaeontological Society of Southern Africa, Association of Professional Heritage Practitioners (WCape)		

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I,Dr John Edward Almond, declare that -- General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:
John E. Almond

Name of company (if applicable):
Natura viva cc

Date:
8 FEBRUARY 2016

Declaration of Interest: Julian Conrad

I, **Julian Conrad**, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Conrad

Signature of the specialist

Name of company: GEOSS - Geohydrological & Spatial Solutions International (Pty) Ltd.

Professional Registration (including number): SACNASP - 400159/05

Date: 21 February 2016.

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Proposed development of a 132 kV/33 kV Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.

Specialist:	Geohydrological and Spatial Solutions International (Pty) Ltd		
Contact person:	Julian Conrad		
Postal address:	P O Box 12412, Die Boord, Stellenbosch		
Postal code:	7613		
Telephone:	021 880 1079		
E-mail:	jconrad@geoss.co.za	Cell:	082 871 5772
Professional affiliation(s) (if any)		Fax:	021 880 1164

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Julian Conrad, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Geohydrological and Spatial Solutions International (Pty) Ltd
Name of company (if applicable):

4 February 2016
Date:

Declaration of Interest: Johann Lanz

I, Johann Lanz, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:	
Name of specialist:	Johann Lanz
Professional Registration (including number):	SACNASP Registration Number: 400268/12
Date:	05 February 2016

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-
(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and
(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and
Government Notice 921, 2013

PROJECT TITLE

Proposed development of 132 kV Transmission Lines to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.

Specialist:	Private Soil Science Consultant	
Contact person:	Johann Lanz	
Postal address:	P.O. Box 6209, UNIEDAL	
Postal code:	7612	Cell: 082 927 9018
Telephone:	021 866 1518	Fax:
E-mail	johann@johannlanz.co.za	
Professional affiliation(s) (if any)	South African Council for Natural Scientific Professions; Soil Science Society of SA	

Project Consultant:	Council for Scientific and Industrial Research (CSIR)	
Contact person:	Surina Laurie	
Postal address:	PO Box 320, Stellenbosch	
Postal code:	7599	Cell: 082 468 0962
Telephone:	021 888 2490	Fax: 021 888 2693
E-mail	Slaurie@csir.co.za	

4.2 The specialist appointed in terms of the Regulations

I, **Johann Lanz**, declare that

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Johann Lanz – Soil Scientist (sole proprietor)
Name of company (if applicable):

09 February 2016
Date:

Declaration of Interest: Rudolph du Toit

I, **Rudolph du Toit**, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Name of Specialist: **Rudolph du Toit**

Date: **28 January 2016**

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Proposed development of a 132 kV/33 kV Transmission Line to connect to the proposed 75 MW Solar PV Facility (Kenhardt PV 2) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.

Specialist:	Rudolph du Toit		
Contact person:	Rudolph du Toit		
Postal address:	Po Box 320, Stellenbosch		
Postal code:	7599	Cell:	
Telephone:	021 888 2538	Fax:	021 888 2693
E-mail:	rdutoit@csir.co.za		
Professional affiliation(s) (if any)	n/a		

Project Consultant:	Council for Scientific and Industrial Research (CSIR)		
Contact person:	Surina Laurie		
Postal address:	PO Box 320, Stellenbosch		
Postal code:	7599	Cell:	082 468 0962
Telephone:	021 888 2490 or 021 888 2661	Fax:	021 888 2693
E-mail:	SLaurie@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Rudolph du Toit, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

CSIR
Name of company (if applicable):

26 January 2016
Date:

BASIC ASSESSMENT REPORT

APPENDIX J: ADDITIONAL INFORMATION

contents

Appendix J.1: References used in the BA Report

Agricultural Research Council. Undated. AGIS Agricultural Geo-Referenced Information System available at http://www.agis.agric.za/.

Almond, J. E. (2014a). Proposed Gemsbok Solar PV1 Solar Energy Facility near Kenhardt, Northern Cape Province. Desktop study, 21 pp. Natura Viva cc, Cape Town.

Almond, J. E. (2014b). Proposed Boven Solar PV1 Solar Energy Facility near Kenhardt, Northern Cape Province. Desktop study, 21 pp. Natura Viva cc, Cape Town.

Almond, J. (2015). Scatec Kenhardt PV1 Solar Photovoltaic Facility, Farm Onder Rugzeer 168 near Kenhardt, Northern Cape: Fossil Heritage. Natura Viva, Cape Town.

Almond, J. E. and Pether, J. (2008). Palaeontological heritage of the Northern Cape. Interim SAHRA technical report, 124 pp. Natura Viva cc., Cape Town.

ASHA Consulting PTY) Ltd (2015). Scoping Inputs for the Proposed Scatec Solar Facilities near Kenhardt. Asha Consulting, Muizenburg.

Beaumont, P.B., Smith, A.B. & Vogel, J.C. (1995). Before the Einiqua: the archaeology of the frontier zone. In: Smith, A.B. (ed.) Einiqualand: studies of the Orange River frontier: 236-264. Cape Town: University of Cape Town Press.

Colloty, B. (2014). Aquatic Assessment Scoping Statement for the proposed Mulilo Nieuwehoop PV Facility. Scherman Colloty and Associates, Port Elizabeth.

Cornell, D. H., Thomas, R. J., Moen, H. F. G., Reid, D. L., Moore, J. M. and Gibson, R. L. (2006). The Namaqua-Natal Province. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) The geology of South Africa, pp. 461-499. Geological Society of South Africa, Marshalltown.

CSIR 2015. Scoping and Environmental Impact Assessment for the Proposed Development of a 75 MW Solar Photovoltaic Facility (KENHARDT PV 1) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape Province: Scoping Report. CSIR Report Number: CSIR/CAS/EMS/ER/2015/0007/B

Department of Co-operative Governance, Human Settlements and Traditional Affairs (2012). Northern Cape Provincial Spatial Development Framework. Department of Co-operative Governance, Human Settlements and Traditional Affairs. Accessed: http://northerncapepsdf.co.za/wp-content/uploads/Northern_Cape_PSDF_22_August_2012.pdf, Accessed: August 2014.

Department of Energy (DOE). (2011). TENDER NO: DOE/001/2011/2012, PART C: EVALUATION CRITERIA, Section 1.4.

Department of Environmental Affairs and Development Planning (DEADP) (2010) Guideline on Need and Desirability, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs and Development Planning.

Department of Water Affairs and Forestry (DWAF) (2002). 1:500 000 Hydrogeological map series of the republic of South Africa. Cape Town, 3318.

Department of Water Affairs and Forestry (DWAF) (2005). Groundwater Resource Assessment – Phase II (GRAII). Department of Water Affairs and Forestry. Pretoria.

Du Toit, R. (2015). Scoping Report input regarding prospective Social Impacts potentially resulting from the proposed developments. CSIR, Stellenbosch.

Envirolution Consulting (2013). Eskom Nieuwehoop Substation Construction and Operational Environmental Management Programme. On-line: mp2mas17.eskom.co.za/tenderbulletin/File_Show.asp?ID=89791

Fey, M. (2010). Soils of South Africa. Cambridge University Press, Cape Town.

GEOSS (2014). Geohydrological assessment and borehole siting: Solar PV Power Generation Projects - Northern Cape. GEOSS Report Number: 2014/11-06. GEOSS - Geohydrological & Spatial Solutions International (Pty) Ltd. Stellenbosch, South Africa.

GEOSS (2015) Geohydrological Assessment - Scoping Report: Solar PV Power Generation Project, PV1 - Northern Cape. GEOSS Report Number: 2015/08-12. GEOSS - Geohydrological & Spatial Solutions International (Pty) Ltd. Stellenbosch, South Africa.

GLVIA. 2002. Guidelines for Landscape and Visual Impact Assessment. 2nd ed. United Kingdom: Spon Press.

Grobler, J.E.H. (2004). The War Reporter. Jeppestown: Jonathan Ball Publishers.

Holland, H. (2015). Visual Specialist input for draft Scoping Report – Solar Energy Facilities, Kenhardt. Henry Holland, Grahamstown.

IUCN Red List of Threatened Species 2013. www.iucnredlist.org

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge: Cambridge University Press.

Johnson, M. R., C. R. Anhaeusser, and R. J. Thomas, eds. 2006. The Geology of South Africa. Geological Society of South Africa, Johannesburg/Council of Geoscience, Pretoria.

Kai !Garib Local Municipality (2014). Draft Integrated Development Plan. Kai !Garib Local Municipality.

!Kheis Local Municipality (2012). Draft Integrated Development Plan. !Kheis Local Municipality.

!Kheis Local Municipality (2014). Draft Integrated Development Plan. !Kheis Local Municipality.

Lanz, J. (2015). Scoping Phase input for Agricultural and Soils Impact Assessment for proposed Scatec Solar PV Energy Facilities near Kenhardt, Northern Cape Province. Johann Lanz, Stellenbosch.

Morris (2009) has even commented that a search along the banks of the Hartebeest River close to Kenhardt, where he expected elevated frequencies of archaeological material, revealed virtually nothing.

Mucina, L. and Rutherford, M. (2006). "The Vegetation of South Africa, Swaziland and Lesotho". Strelitzia.

National Water Act (1998). The National Water Act, No 36.Department of Water Affair and Forestry. Pretoria.

Nel, J. L., Murray, K. M., Maherry, A. M., Petersen, C. P., Roux, D. J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E. R., Smith-Adao, L. B., Mbona, N., Downsborough, L. and Nienaber, S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.

Oberholzer, B. (2005). Guideline for Involving Visual & Aesthetic Specialists in EIA Processes. Guidelines ENV-S-C 2005 053 F. Cape Town: CSIR, Provincial Government of the Western Cape, Department of Environmental Affairs & Development. http://www.capegateway.gov.za/Text/2005/10/5_deadp_visual_guideline_june05.pdf.

Orton, J. (2014a). Heritage impact assessment for the proposed Boven Solar PV1 Facility, Kenhardt Magisterial District, Northern Cape. Unpublished report prepared for the CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.

Orton, J. (2014b). Heritage impact assessment for the proposed Gemsbok Solar PV1 Facility, Kenhardt Magisterial District, Northern Cape. Unpublished report prepared for the CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.

Orton, J. (2014c). Heritage impact assessment for the proposed Gemsbok Solar PV2 Facility, Kenhardt Magisterial District, Northern Cape. Unpublished report prepared for the CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.

Orton, J. (2016c). Heritage impact assessment for a proposed 132 KV Powerline (Kenhardt PV 1 – Transmission Line on Farms 168/REM, 169/REM and 120/3, Kenhardt Magisterial District, Northern Cape. Unpublished report prepared for the CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.

SANBI. Species Status Database. Retrieved February 2014, http://www.speciesstatus.sanbi.org/reports/Conservation.aspx?SPID=195

SANBI BGIS Database. Retrieved March 2015, www.sanbi.co.za

Schulze R.E., Maharaj M., Warburton M.L., Gers C.J., Horan M.J.C., Kunz R.P., and Clark D.J. (2008). South African Atlas of climatology and agrohydrology. Water Research Commission 1489/1/08.

Siyanda District Municipality (2013). Integrated Development Plan 2013-2014. Siyanda DM.

SKA South Africa (2014). South Africa's MeerKAT Radio Telescope – Technical Fact Sheet. SKA South Africa, Accessed: http://ska.ac.za/download/fact_sheet_meerkat_2014.pdf, Accessed: August 2014.

Slabbert M. J., Moen H. F. G. and Boelema R., (1999). The Geology of the Kenhardt area. Geological Survey. Pretoria.

Slabbert M. J., Moen H. F. G. and Boelema R., (1999). Die geologie van die gebied Kenhardt. Explanation to 1: 250 000 geology Sheet 2920 Kenhardt, 123 pp. Council for Geoscience, Pretoria.

Statistics South Africa (2011). Census 2011 Municipal Report, Northern Cape, Report 03-01-51. Statistics South Africa, Pretoria.

Statistics South Africa (2015). !Kheis Local Municipality [on-line], http://www.statssa.gov.za/, Accessed: August 2015.

Sustainable Development Projects (SDP) (2015). Ecological Desktop Review of the Proposed Kenhardt PV Solar Facility and 132 kV Transmission Lines Near Upington, Northern Cape. SDP, Ballito.

Vermaak, H. J. (2014). Techno-economic analysis of solar tracking systems in South Africa. The 6th International Conference on Applied Energy – ICAE2014. Energy Procedia 61 (2014) 2435 – 2438.

Water Research Commission (2012). A Groundwater Planning Toolkit for the Main Karoo Basin: Identifying and quantifying groundwater development options incorporating the concept of wellfield yields and aquifer firm yields. Water Research Commission Report No. 1763/1/11, Pretoria, South Africa.

Water Research Commission. Undated. South African Rain Atlas available at http://134.76.173.220/rainfall/index.html.

ZF Mgcawu District Municipality (2014). Integrated Development Plan 2015-2017. ZF Mgcawu DM.

Appendix J.2: Pre-Application Meeting with the DEA (17 September 2015)

Agenda of the Pre-Application Meeting with DEA on 17 September 2015

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AGENDA

PRE-APPLICATION MEETING FOR THE PROPOSED MULILO AND SCATECH SOLAR PHOTOVOLTAIC (PV) PROJECTS NEAR KENHARDT IN THE NORTHERN CAPE
DEA offices: Environment House, 473 Steve Biko, Arcadia, Pretoria
17 September 2015
11H00-13H00

Purpose of meeting:

This meeting constitutes the Pre-Application Meeting with DEA to discuss the Environmental Impact Assessments (EIAs) for the proposed Mulilo and Scatech Solar PV projects that are currently being undertaken by CSIR. The meeting is to confirm the proposed EIA processes, i.e. the Applications for Environmental Authorisation, Approaches to the Public Participation Process-, Scoping- and EIA Process, EIA Schedules and the Requirements of the Scoping and EIA processes.

Topic	Responsibility	Time
1. Welcome and Introductions	DEA (Mr Muhammad Essop/ Mr Coenrad Agenbach)	11:00 – 11:10
2. Overview of the Mulilo and Scatech PV solar projects near Kenhardt: • Background and location • Proposed EIA Approaches • Proposed Schedules • Current status of the projects	CSIR (Ms Surina Laurie and Ms Minnelise Levendal)	11:10 – 11:30
3. Questions and Discussion regarding Point 2. • Confirmation of EIA Approaches • Confirmation of Schedules	All	11:30 – 12:00
4. Questions and Discussion regarding the requirements of the Scoping and EIA processes, e.g: - • Application • Scoping requirements • EIA requirements • Alternatives • Public Participation Process	All	12:00 – 12:45
5. Way forward and Closure	DEA (Mr Muhammad Essop/ Mr Coenrad Agenbach)	12:45 – 13:00

Notes of the Pre-Application Meeting with DEA on 17 September 2015

MINUTES

MEETING NOTES FROM PRE-APPLICATION MEETING WITH DEA TO DISCUSS THE PROPOSED MULILO AND SCATEC SOLAR PHOTOVOLTAIC PROJECTS NEAR KENHARDT IN THE NORTHERN CAPE

17 September 2015, 11H00-13H00, DEA Office, Environment House, Pretoria

Attendance:

Name	Organisation
Herman Alberts (HA)	DEA
Mmamohale Kabasa (MK)	DEA
Minnelise Levendal (ML)	CSIR
Surina Laurie (SL)	CSIR

Apologies: Muhammad Essop (ME) (DEA) and Coenrad Agenbach (CA) (DEA) could not attend the meeting as they had to attend an internal strategy workshop.

Purpose of the meeting:

Pre-Application Meeting with DEA was requested to discuss the Environmental Impact Assessments (EIAs) for the proposed Mulilo and Scatec Solar Photovoltaic (PV projects), near Kenhardt in the Northern Cape, that are currently being undertaken by CSIR. The main aims are to discuss the EIA processes, i.e. the Applications for Environmental Authorisation, Approaches to the Public Participation Process, Scoping and EIA Processes, EIA Schedules and the Requirements of the Scoping and EIA processes under the 2014 NEMA EIA Regulations.

1. **Welcome and introductions**

   HA welcomed all participants to the meeting. The participants introduced themselves.

2. **Overview of the Scatec and Mulilo Solar Photovoltaic Projects**

   SL and ML presented an overview of the proposed projects (see Appendix 1 for the full presentation):

   - **Scatec Solar Photovoltaic (PV) Facilities near Kenhardt in the Northern Cape:**
     - Three Solar PV facilities of 75 MW each are proposed and three alternative sites.

  - Proposed Scoping and EIA Approach - Three separate Applications, three separate Scoping Reports and three separate EIA Reports will be prepared and submitted to DEA for decision-making. In addition to this, 3 separate Basic Assessment (BA) Reports for the electrical infrastructure will be prepared and submitted to DEA for decision-making.
  - One Integrated Public Participation Process (PPP) will be followed.

- **Mulilo Solar PV Facilities near Kenhardt in the Northern Cape**
  - Seven Solar PV facilities of 75 MW each are proposed and seven alternative sites.
  - Proposed Scoping and EIA Approach – Seven separate Applications, One Integrated Scoping Report and seven separate EIA Reports will be prepared and submitted to DEA for decision-making.
  - One Integrated Public Participation Process (PPP) will be followed.
  - The Mulio projects will be located within the same geographical area and the sites have the same environmental conditions or attributes. It is therefore proposed that one integrated Scoping Report be prepared and submitted to DEA for all seven projects. A similar approach was followed by CSIR for the Kentani Solar PV Project near Dealesville in the Free State which comprised 12 projects. Twelve Applications for Environmental Authorisation (EA) were submitted, one integrated Scoping Report was prepared and submitted and 12 different EIA reports were submitted to DEA for decision-making. This approach was accepted by DEA. A similar approach is therefore proposed for the seven Mulilo Solar PV Facilities near Kenhardt in the Northern Cape.

Background on the proposed Mulilo project:

- Mulilo is also undertaking another solar energy project, i.e. the Mulilo Nieuwehoop Solar Development ("Phase 1") comprising three projects. The Final EIA Reports have been submitted to the DEA in March 2015 for decision-making. These reports are currently being reviewed by the DEA and the outcomes of the applications are pending.
- The project under discussion for this meeting is the Mulilo "Phase 2" Nieuwehoop Solar Development which will occur directly adjacent to the Scatec project and on the same properties as the Mulilo Phase 1 project.

It should be noted that both projects (i.e. the Scatec and Mulilo Phase 2 Solar PV Projects) aim to have an Environmental Decision on the EA Applications by August/September 2016 to qualify for the Integrated Power Producer Procurement bidding window in 2016.

3. **Key Questions and Discussion**

CSIR question	DEA response	Action
Is the Scatec proposal to produce 3 separate Applications, 3 separate Scoping-, 3 separate EIA and 3 separate BA Reports but undertaking an integrated PPP acceptable? This would mean that there are still ultimately 6 EA decisions that would be issued by DEA.	Proposal for Scatec process/approach (i.e. to undertake separate processes for all the applications) is acceptable	CSIR to proceed with the proposed approach to submit 6 separate Applications, 3 separate BA Reports, 3 separate Scoping- and 3 separate EIA Reports, but to undertake one integrated PPP.
Is the Mulilo proposal to produce 7 separate EA Applications, an integrated Scoping Report, 7 separate EIA reports but undertaking an integrated PPP acceptable? This would mean that there are still ultimately 7 EA Decisions that would be issued by DEA.	HA indicated that it will be easier to review separate Scoping Reports for administrative reasons. HA further indicated that the 7 Applications may be assigned to more than one case officer. Recommendation from CSIR: Can we produce and submit one integrated Scoping Report, but provide DEA with multiple copies of the report for reviewing purposes? HA and MK propose to clarify this issue with ME and CA. They advised CSIR to email this query to DEA.	CSIR to send email to DEA (HA) requesting confirmation on the question. HA to discuss this question with ME and CA and provide feedback to CSIR. Feedback from ME and CA following the Pre-Application Meeting on the recommendation from CSIR to prepare one Integrated Scoping Report, but provide multiple copies of the report to DEA for reviewing purposes: No. Seven separate applications must be submitted. This must be followed by 7 separate Scoping Reports and 7 separate EIA Reports. Specialist studies must be included in the Scoping Report and this must be site specific. Note that the Scoping Report is either accepted or the Application for EA is refused. This has implications for all 7 applications if 1 scoping report is submitted.

CSIR question	DEA response	Action
Is it acceptable to release Scoping Report for comment (30 days) prior to submitting the Application for EA to DEA? Can the Application for EA and Scoping Report be submitted simultaneously to DEA after commenting period?	This approach is acceptable. -30 day PPP can be done prior to submitting the Application for EA to DEA. -It is advisable to do most of the work upfront to meet the strict timeframes. -DEA will comment on the Draft Scoping Report within the prescribed timeframe. Provided that an application has been submitted to the DEA. -Once the EA Application is submitted, the EAP has 44 days to submit the draft Scoping Report that has been subjected to Public Participation for at least 30 days. Within that timeframe there is a 30-day period for DEA to review and comment on the Draft Scoping Report, leaving 14 days for EAP to submit Final Scoping Report incorporating/addressing comments from DEA. - It is however important to note that EAP should not submit Scoping Report to DEA without an Application Form, otherwise it will not be processed.	
What level of detail is required in the site assessment matrix and the assessment of alternatives that need to be included in the Scoping Report under the new 20104 NEMA EIA Regulations? How do we screen	EAP can list advantages and disadvantages of the alternatives to identify the most feasible or preferred alternative/s in the Scoping Phase. EAP can assess alternatives in Scoping Report and motivate for the most preferred alternative/s to be taken forward into	Feedback from ME and CA following the Pre-Application Meeting: Specialist studies to be included with the Scoping Report.

CSIR question	DEA response	Action
alternatives in the Scoping Phase as it was normally assessed by the specialists in the EIA Phase under the 2010 EIA Regulations.	the EIA phase. The specialists to undertake assessments of the preferred alternative/s in EIA phase of the project. Ideally the EAP needs to scope out all possible alternatives during the Scoping Phase and only take forward preferred alternatives in the EIA phase. DEA may authorise any of the alternative/s assessed in the EIA, therefore it is imperative that only reasonable and feasible alternatives be taken forward into the EIA Phase.	
If Scoping Report is refused, do you re-start the whole Application Process (i.e. paying the application fee, undertaking the PPP again?)	The Scoping Report is either accepted or the Application for EA is refused. Upon receipt of the Scoping Report DEA will acknowledge receipt and will comment on the Scoping Report (e.g. request any outstanding information). Should the Application for EA be refused, the Applicant will need to wait for the appeals process to conclude and can than re-apply including payment, undertake the PPP again. An amended Scoping Report must be submitted to DEA addressing all initial issues.	
Scatec proposes to make use of borrow pits, thus they require a mining permit. Is the Department of Mineral Resources (DMR) the Competent Authority to approve this activity or can this listed activity be approved by DEA as	HA and MK propose to clarify this issue with ME and CA. They advised CSIR to email this query to DEA.	CSIR to send email to DEA (HA) requesting confirmation on the question. HA to discuss this question with ME and CA and provide feedback to CSIR.

Page 5 of 8

CSIR question	DEA response	Action
part of the EIA process?		Feedback from DEA following the Pre-Application Meeting: Please note that the DMR is the CA to approve the activity relating to the borrow pits.
Can one Application for EA be split into separate Environmental Authorisations? The CSIR is of the opinion that Regulation 25 (2) of the NEMA EIA Regulations makes provision for the Competent Authority to issue a single or multiple Environmental Authorisations in terms of an Application. The CSIR would like to understand under what scenarios can this provision in the Regulations be implemented.	DEA to confirm whether this interpretation is correct, and if not provide the correct interpretation to clarify how this regulation can be applied. HA and MK propose to clarify this issue with ME and CA. They advised CSIR to email this query to DEA.	CSIR to send email to DEA (HA) requesting confirmation on the question. HA to discuss this question with ME and CA and provide feedback to CSIR. Feedback from ME and CA following the Pre-Application Meeting: This applies to projects previously approved.
Regulation 21 (1) states that if a S&EIR must be applied to an application, the applicant must, within 44 days of receipt of the application by the CA, submit to the CA a Scoping Report which has been subjected to a PPP of at least 30 days and which reflects the incorporation of comments received, including any comments from the CA. What is the best way to reflect the comments received in the Scoping Report that will be submitted to the DEA? If there are no substantial comments requiring amendments to the report, then can a separate appendix be	This approach is acceptable. It must be noted that all questions and issues raised during the PPP must be addressed and included in the Report prior to submission of the Report to DEA.	

Page 6 of 8

CSIR question	DEA response	Action
compiled, noting all the comments received during the 30-day review of the Consultation Scoping Report and appropriate responses from the EAP. The appendix will also note the PPP undertaken for the release of the Consultation Scoping Report. This separate appendix will then be submitted to the DEA with the Scoping Report for decision-making. It is planned to only provide copies of this appendix and Scoping Report to the DEA (and not to I&APs via courier or library).		

- **Recommendations from DEA on the EIA process following queries from CSIR:**
  - CSIR to submit separate EA Applications for each project.
  - Make sure that you have all the information before starting with the EIA process.
  - If timeframes under the 2014 NEMA EIA Regulations are not met, the Application will lapse and a new Application for EA would need to be submitted.
  - Letters should be distributed to Interested and Affected Parties (I&APs) via registered mail.
  - The commenting period starts on the date that the Application or Report is received by DEA. CSIR does not have to wait for a letter of acknowledgement of receipt. DEA will try to email the letter of acknowledgement to the EAP and Applicant on the same day of receipt or the following day, but delays may occur.
  - 2010 NEMA EIA Regulations allowed possibility of downgrading of EIA to BA with motivation. There is no provision for this under the 2014 NEMA EIA Regulations.
  - Environmental Authorisation issued under the 2010 NEMA Regulations will follow Appeal Process prescribed under the 2010 NEMA Regulations.
  - Background Information of project desirability should be project specific and avoid generalising to South Africa.
  - DEA advises that the necessary specialist studies be undertaken (e.g. Radio Frequency Interference (RFI) as the projects are located in close proximity to the Square Kilometre Array (SKA) Project.
  - DEA encourages that most of the work should be done upfront to adhere to timeframes.
  - Pre-Application Meetings are useful and assist undertaking efficient Application process.
  - CSIR to send Scoping and EIA Reports to DEA Biodiversity Directorate for comment.
  - DEA will provide comments on the Scoping Report. CSIR to take these comments into consideration when preparing the final Scoping Report or EIA Report. CSIR can motivate if comments are not relevant to specific project.
  - Applicant to make sure that only reasonable and feasible project developments are presented in the EIA Report. DEA may approve any one of these options, and not necessarily the preferred alternative proposed by the EAP or Applicant.

4. Way forward and Closure

- ML to draft an email to HA and MK (and copy ME and CA) to seek clarity on issues that could not be finalised at the meeting. HA and MK will then discuss these issues further with ME and CA and provide feedback to CSIR.
- ML and SL to draft the meeting notes and send to DEA for approval and sign-off.
- HA re-iterated that CSIR should not hesitate to contact or request meetings with the DEA case officer/s if they have queries regarding the EIA processes.
- The meeting notes must be included in the Scoping and EIA Reports.

ML and SL thanked DEA for the opportunity to meet with them and for providing feedback on the queries relating to the Scoping and EIA approaches and processes currently being undertaken by CSIR under the 2014 NEMA EIA Regulations for the proposed Mulilo and Scatec Solar PV Facilities near Kenhardt in the Northern Cape.

THE MEETING ADJOURNED AT 12H30.

CSIR Presentation given at the Pre-Application Meeting with DEA on 17 September 2015

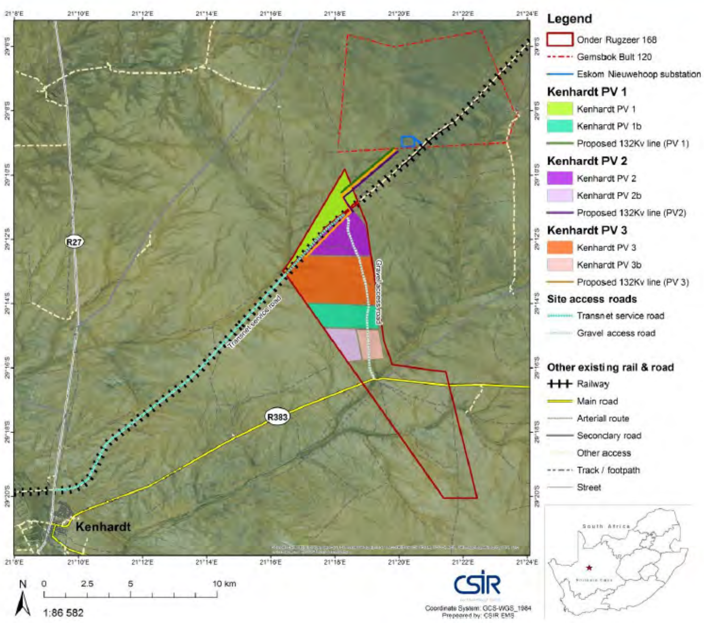
CELEBRATING 70 Years
Ideas that work

CSIR
our future through science

PRE-APPLICATION MEETING WITH DEA ON MULILO AND SCATEC SOLAR EIAs FOR SOLAR PV PROJECTS NEAR KENHARDT IN NORHTERN CAPE PROVINCE

17 September 2015

SCATEC SOLAR PV PROJECT & ALTERNATIVE SITES



2

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SCATEC SOLAR EIA PROCESSES

- Three (3) EIA Applications
- Three (3) BA Applications for the electrical infrastructure

Scoping and EIA Processes: Proposed 75 MW Solar PV Facilities	Basic Assessment Processes: Proposed 132 kV Transmission Lines
• Kenhardt PV 1 • Kenhardt PV 2 • Kenhardt PV 3	• Kenhardt PV 1 – Transmission Line • Kenhardt PV 2 – Transmission Line • Kenhardt PV 3 – Transmission Line

- Three separate Scoping Reports
- Three separate EIA Reports
- Three separate BA Reports
- Six separate Environmental Decisions

3

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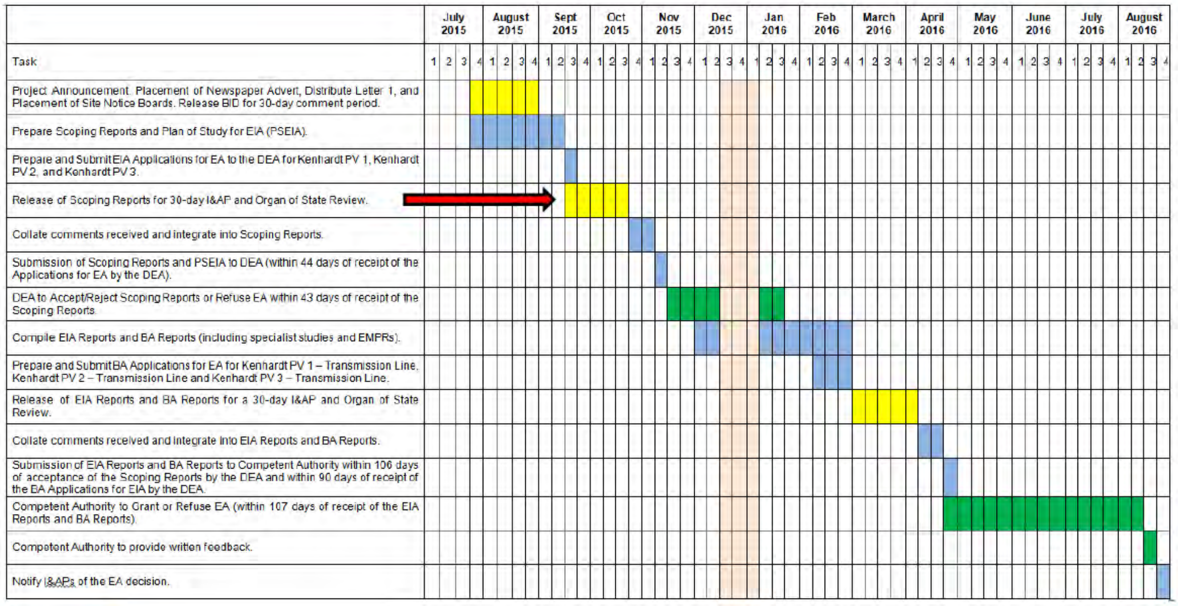
SCATEC PROJECT SCHEDULE



4

Key Questions

- Confirmation of Scatec Solar and Mulilo EIA Processes/Approaches
- Can PPP for Scoping Report (30 days) be undertaken before submission of Applications for EA?
- Should alternatives be screened out during Scoping Phase? What about specialist studies and assessments that are only done in EIA Phase?
- Regulation 25 of the Regulations – multiple authorisations

5

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FURTHER QUESTIONS AND DISCUSSION

THANK YOU!

Minnelise Levendal (mlevendal@csir.co.za)
Surina Laurie (slaurie@csir.co.za)

our future through science

Appendix J.3: Title Deeds

Remaining Extent of Portion 3 of Gemsbok Bult Farm 120

Property Enquiry Details

Property enquiry results for "KENHARDT, 120" in the Deeds Registry at "CAPE TOWN"

Property detail:

Deeds registry	CAPE TOWN
Property type	FARM
Farm name	GEMSBOK BULT
Farm number	120
Portion	3 (REMAINING EXTENT)
Province	NORTHERN CAPE
Registration division/Administrative district	KENHARDT RD
Local authority	KENHARDT DC
Previous description	ROOIDAM (*10112M579R)
Diagram deed number	T8053/1896
Extent	5011.4384 H
LPI Code	C03600000000012000003

Title Deeds detail:

Document	Registration date	Purchase date	Amount	Image Scanned reference	Document copy?
T102836/1999	19991222	19990930	R1120127.00	20130315 09:37:39	Yes

Owners detail:

Document	Full name	Identity Number	Share	Person Enquiry?
T102836/1999	KAMKUIP BOERDERY PTY LTD	197800257407	-	Yes

Endorsements / Encumbrances:

Endorsement / Encumbrance	Holder	Amount	Image Scanned reference	Document copy?
B15323/2009	LAND & LANDBOU ONTWIKKELINGSBANK VAN SUID AFRIKA	R5859000.00	20130315 09:37:59	Yes
B30278/2010	LAND & LANDBOU ONTWIKKELINGSBANK VAN SUID AFRIKA	R5000000.00	20130408 16:02:39	Yes

B58438/1999	LAND & LANDBOUBANK VAN SUID-AFRIKA	R500000.00	20130315 09:38:20	Yes
K127/2013S	-	-	20130408 16:04:12	Yes
K258/2009S	-	-	20090421 15:25:56	Yes
FARM KE 120/3	-	-	1985 0041 1235	Yes

History:

Document	Holder	Amount	Microfilm reference	Document copy?
B55372/1991	LANDBANK	-	2000 0049 3843	Yes
T11780/1965	ESTERHUIZEN JASPER JACOBUS	-	1991 0551 2025	Yes
T19001/1991	CONNAN DONALD	R672977.00	2000 0049 3813	Yes

Back to top of page

Requested by **18487** with user reference **EMM** on: Friday, 14 March 114 11:32

DeedsWeb Version 4.0.1

Remaining Extent of Onder Rugzeer Farm 168 and Remainder of Boven Rugzeer 169

```
DRQ001M2    PRODUCTION    DEEDS REGISTRATION SYSTEM   MODE: PC
APR 23,2015                   GENERAL ENQUIRY                  DRQ001MA
*OFFICE: 08  CAPE TOWN                                          11:36 AM
                                                           USER: DRS08192
--------------------------------------------------------------------------
 FIRM NUMBER..: AKTEKANTOOR KAAPSTAD
 FIRM FILE NO.: PREP                                          999
 DOCUMENT.....: T1519/1996
                                          LATEST MICRO: 1996 0052 3096
                     SCREEN START INDEX...: 1
YEAR ROLL BLIP  YEAR ROLL BLIP  YEAR ROLL BLIP  YEAR ROLL BLIP  YEAR ROLL BLIP
---- ---- ----  ---- ---- ----  ---- ---- ----  ---- ---- ----  ---- ---- ----
1996 0052 3096

* DIRECT COMMAND: ______________________________________________
ENTR=CONFM,F1=HELP,F2=RETRN,F3=QUIT,F7=BKWRD,F8=FRWRD,F12=MAIN
```

151
MARAIS MÜLLER

Opgestel deur my:

TRANSPORTBESORGER
HOFMEYR M T S

SEËLREG DUTY R.........
FOOI FEE R 100,00

VERBIND - MORTGAGED
VIR FOR R 450 000,00
B 1475/96
10 01 96
REGISTRATEUR/REGISTRAR

T 1519/96

TRANSPORTAKTE

HIERBY WORD BEKENDGEMAAK:

DAT ~~JOHANNES HENDRIK VAN DER VYVER~~ KRISTO STOFBERG
voor my, Registrateur van Aktes
verskyn het te **KAAPSTAD**
hy, die genoemde komparant synde behoorlik daartoe gemagtig deur 'n volmag aan hom verleen deur

THERESA VAN NIEKERK
Identiteitsnommer 401106 0045 00 5
Getroud buite gemeenskap van goed

gedateer die 31ste dag van OKTOBER 1995, en geteken te STELLENBOSCH

151

En genoemde Komparant het verklaar dat Sy voorsegde Prinsipaal werklik en wettiglik verkoop het op 31 Mei 1995

en dat hy in sy voornoemde hoedanigheid hierby in volkome en vrye eiendom sedeer en transporteer aan en ten gunste van

Die Trustees indertyd van die VAN NIEKERK GESINSTRUST
Nr. T. 4311/94

Of diese regverkrygendes

1. DIE RESTANT van die Plaas **ONDER RUGZEER NR. 168** in die Afdeling van Kenhardt, Provinsie van die Noord-Kaap;

   GROOT: 5677,5041 (Vyf Duisend Ses Honderd Sewe en Sewentig Komma Vyf Nul Vier Een) hektaar;

   OORSPRONKLIK OORGEDRA kragtens Grondbrief gedateer 8 Maart 1890 (Carnarvon Erfpagte Boekdeel 3 Nr. 18) met Kaart wat daarop betrekking het en gehou kragtens Transportakte Nr. T.46901/92. (para 1)

   A. **ONDERHEWIG** aan die voorwaardes waarna verwys word in Grondbrief gedateer 8 Maart 1890 (Carnarvon Erfpagte Boekdeel 3 Nr. 18), waarvan paragraaf V. soos volg lees:

   "V. That all rights to gold, silver and precious stones found or discovered at any time on or in the said land, shall be reserved to the State, together with a right of ingress to and egress from any mines or works undertaken for mining or prospecting purposes by any person or persons authorised by the Commissioner; but subject always to the provisions of the Act No. 44 of 1887 or any other Act to be hereafter passed with regard to prospecting and mining for precious stones or minerals."

   B. **ONDERHEWIG VERDER** aan die bepalings van 'n endossement gedateer 21 Maart 1980 aangebring op Verdelingstransportakte Nr. T.2938/1952, welke endossement soos volg lees:

"Endossement ingevolge Artikel 2A.(2) van die Spoorweg & Hawe Aankoopwet 1977 (Wet 47/1977) soos gewysig deur Wet 80/1979

Aangesien Die Republiek van Suid Afrika (in sy Administrasie van Spoorweë & Hawens) die grond groot ongeveer 47,664 hektaar wat deur die Suid Afrikaanse Yster & Staal Industriële Korporasie Bpk. kragtens onteienings Kennisgewing No. 108(c) onteien is, van die genoemde Korporasie gekoop het, vestig die gemelde grond ingevolge die bepalings van Artikel 2A. (1) van die bovermelde Wet in die Republiek van Suid Afrika (in sy Administrasie van Spoorweë en Hawens) vanaf 21 Maart 1980.

(Onteienings-endossement/e gedateer 11 September 1974 hierop verwys / Onteienings-endossement vervat as voorwaarde op bladsy hierin verwys).

Aansoek weggelê as T.7080/1980."

2. DIE RESTANT van die Plaas **BOVEN RUGZEER NR. 169** in die Afdeling van Kenhardt, Provinsie van die Noord-Kaap;

GROOT: 7200,3699 (Sewe Duisend Twee Honderd Komma Drie Ses Nege Nege) hektaar;

OORSPRONKLIK OORGEDRA kragtens Grondbrief gedateer 13 Mei 1890 (Carnarvon Erfpagte Boekdeel 3 Nr. 25) met Kaart wat daarop betrekking het en gehou kragtens Transportakte Nr. T.46901/92. (para 2)

ONDERHEWIG aan die voorwaardes waarna verwys word in Transportakte Nr. T.14345/1944.

Weshalwe die Komparant afstand doen van al die regte en titel wat die genoemde TRANSPORTGEWER

voorheen op genoemde eiendom gehad het en gevolglik ook erken dat die genoemde TRANSPORTGEWER geheel en al van die besit daarvan onthef en nie meer daartoe geregtig is nie en dat, kragtens hierdie akte, bogenoemde TRANSPORTNEMER TRUSTEES

Of die se Regverkrygendes tans en voortaan daartoe geregtig is, ooreenkomstig plaaslike gebruik, behoudens die regte van die Staat en ten slotte erken dat die volle koopsom ten bedrae van **R550 428,00** behoorlik betaal en verseker is.

Ten bewyse waarvan ek, genoemde Registrateur van Aktes tesame met die Komparant hierdie Akte onderteken en dit met die ampseël bekragtig het.

Aldus gedoen en verly op die kantoor van die Registrateur van Aktes

te KAAPSTAD

op 10 Januarie 1996

In my teenwoordigheid,

Registrateur van Aktes.

q.q.

Portion 4 of Onder Rugzeer Farm 168

A10/01/ZB

T 15855 92

Opgestel deur my

....

K. S. SEAMAN
(Aangestel kragtens artikel 33 van Wet no. 9 van 1989 soos gewysig deur Wet 52 van 1991)

TRANSPORTAKTE

Kragtens artikel 31 van die Registrasie van Aktes Wet, 1937
(No. 47 van 1937)

HIERBY WORD BEKEND GEMAAK :

NADEMAAL die ondergenoemde grond deur die SUID-AFRIKAANSE YSTER EN STAAL INDUSTRIëLE KORPORASIE BEPERK onteien is kragtens die bevoegdhede verleen by artikel 3(1) van Wet 28 van 1973
EN NADEMAAL 'n gedeelte van die ondergenoemde grond in die REPUBLIEK VAN SUID-AFRIKA vir die Suid-Afrikaanse Vervoerdienste vestig kragtens die bepalings van die Spoorweg- en Haweaankoopwet, 1977 (Wet 47 van 1977), soos gewysig deur Wet 80 van 1979 welke grond in TRANSNET BEPERK, Registrasie no. 90/00900/06 vestig, kragtens artikel 3 van die Wet op die Regsopvolging van die Suid-Afrikaanse Vervoerdienste, 1989 (Wet no. 9 van 1989), welke grond tans geregistreer is in die Registrasiekantoor te KAAPSTAD

2

op naam van

SMARTENRYK JOHANNES HENDRIK CLAASSENS
(gebore op 28 Junie 1903)

kragtens Verdelingstransportakte T.2938/1952.

EN NADEMAAL 'n sertifikaat ingevolge artikel 31(4)(a) van Wet no. 47 van 1937, deur die Transportnemer aan my verstrek is ten effekte dat daar voldoen is aan die bepalings van enige wet in verband met die verandering van eiendomsreg op die grond ten gevolge van onteiening.

DERHALWE, kragtens die bevoegdheid aan my verleen by genoemde Wet, sedeer en transporteer ek, die Registrateur van Aktes te KAAPSTAD, in volle en vrye eiendom aan en ten gunste van

TRANSNET BEPERK
(Registrasie no. 90/00900/06)

die se regsopvolgers in titel of regverkrygendes :

GEDEELTE 4 van die plaas ONDER RUGZEER no. 168, in die administratiewe distrik Kenhardt,

GROOT vyf en twintig komma vyf nege nul agt (25,5908) hektaar soos aangedui op die aangehegte kaart L.G. no. 1987/1991, en

GEHOU kragtens Verdelingstransportakte T.2938/1952.

ONDERWORPE aan die voorwaardes genoem in voormelde Grondbrief gedateer 8 Maart 1890 (Carnarvon Erfpagte Boekdeel 3 no. 18) wat uitgereik was kragtens die bepalinge van Wet 18 van 1887, paragraaf 5 waarvan as volg lui :-

"V. That all rights to gold, silver and precious stones, found or discovered at any time on or in the said land, shall be reserved to the Crown, together with a right of ingress to and egress from any mines or works undertaken for mining or prospecting purposes by any person or persons authorise by the Commissioner; but subject always to the provisions of the Act No. 44 of 1887 or any other Act to be hereafter passed with regard to prospecting and mining for precious stones and minerals."

WESHALWE genoemde

SMARTENRYK JOHANNES HENDRIK CLAASSENS

geheel en al onthef is van die besit van genoemde grond en nie meer daartoe geregtig is nie, en dat, kragtens voormelde onteiening, genoemde

3

TRANSNET BEPERK
(Registrasie no. 90/00900/06)

die se regsopvolgers in titel of regverkrygendes, nou daarop geregtig is en voortaan sal wees ooreenkomstig plaaslike gebruik, maar behoudens die regte van die Staat.

TEN BEWYSE waarvan ek, genoemde Registrateur, hierdie Akte onderteken het en die ampseël daarop laat aanbring het.

ALDUS GEDOEN en verly in die kantoor van die Registrateur van Aktes te KAAPSTAD op hierdie 17de dag van Maart 1992.

REGISTRATEUR VAN AKTES

B