ARCHAEOLOGICAL IMPACT ASSESSMENT OF THE PROPOSED KLOOFSIG 3 SOLAR PV ENERGY FACILITY ON THE REMAINDER OF THE FARM KALK POORT 18, PETRUSVILLE AREA, RENOSTERBERG LOCAL MUNICIPALITY, NORTHERN CAPE

Prepared for:

SRK Consulting (South Africa) (Pty) Ltd

Att: Ms Nicola Rump, PO Box 21842, Port Elizabeth, 6000

E-mail: NRump@srk.co.za

Prepared by:
Madelon L. Tusenius
Natura Viva cc
PO Box 12410
Mill Street, Cape Town
8010
Phone: (021) 462 3622
E-mail: naturaviva@universe.co.za

24 OCTOBER 2016

EXECUTIVE SUMMARY

Natura Viva cc was appointed by SRK Consulting (South Africa) (Pty) Ltd to undertake an Archaeological Impact Assessment (AIA) for the proposed development of a 225 MW solar photovoltaic (PV) energy facility (consisting of three phases) on the farm Kloofsig (Kalk Poort 18) some 10km to the northwest of Petrusville, Renosterberg Local Municipality, Northern Cape. Petrusville lies to the west of the Vanderkloof Dam on the Orange River. Kloofsig 3 is the southern-most part of the proposed three phase development on privately owned agricultural land and includes a small on-site substation and a short connection line to a proposed Eskom switch substation. Another short connection line will enable connection to the existing 400 kV power line crossing the site. The total footprint of Kloofsig 3 is about 500 ha. Kloofsig 1 and 2 lie to the north of the third phase and are the subjects of two separate AIAs. The assessments were conducted under Section 38(8) of the National Heritage Resources Act (Act 25 of 1999).

The survey of the affected area was undertaken as part of the baseline study conducted on Kloofsig farm between 17 and 19 June 2015. The farm was covered by vehicle on existing tracks and short walked loops in the veld. Visibility of archaeological material on the ground was generally good.

Most of the farm features dispersed Stone Age archaeological material in the form of an ubiquitous background scatter of weathered and patinated, typologically mixed Middle Stone Age (MSA) / Later Stone Age (LSA) artefacts, with the former being more common. There is a possible Early Stone Age (ESA) element. The artefacts occur dispersed within the surface gravels, rather than as discrete concentrations, and are in a secondary, rather than a stratified, context in areas affected by sheet erosion. There is no preservation of organic remains. These archaeological heritages resources are therefore considered to be of relatively low archaeological sensitivity.

The proposed development of the Kloofsig 3 solar energy facility will result in the damage, destruction and permanent loss of archaeological heritage resources. However, the impact of this development on such resources is expected to be of low significance due to the low archaeological sensitivity of the dispersed material. In addition, there will be no impact on the sensitive archaeological resources identified on Kloofsig farm during the baseline study (Tusenius 2015). Therefore, no loss of unique archaeological heritage resources is anticipated. This assessment applies to the construction phase of the proposed development, since no further significant impacts on archaeological heritage resources are anticipated during the operational and decommissioning phases.

The cumulative impact of the proposed Kloofsig 3 development in the broader area is considered to be low as impact studies for several other projects in this area, as well as research publications, have revealed that comparable, low sensitivity Stone Age material is scattered over the surface throughout the wider region.

No further specialist archaeological work or mitigation is recommended for Kloofsig 3.

There are no objections on archaeological grounds to the authorisation of the proposed solar facility. However, if any human remains, graves or stone burial cairns are found during the construction of the proposed development, work in that area must cease and the Environmental Control Officer must immediately notify SAHRA.

TABLE OF CONTENTS

1. INTRODUCTION

Natura Viva cc was appointed by SRK Consulting (South Africa) (Pty) Ltd to undertake an Archaeological Impact Assessment (AIA) for the proposed development of a 225 MW solar photovoltaic (PV) energy facility (consisting of three phases) on the farm Kloofsig (Kalk Poort 18) some 10km to the northwest of Petrusville, Renosterberg Local Municipality, Northern Cape (Figure 1). Petrusville lies to the west of the Vanderkloof Dam on the Orange River. The site of the proposed development extends over privately owned agricultural land with an area of approximately 970 ha. This report deals with the first phase of the proposed project, namely Kloofsig 1. The three areas identified for Phases 1 to 3 were originally part of a proposed larger 6 phase development (Figures 1 and 2).

Kloofsig 3 is the southern-most part of the proposed three phase development (Figure 2) and includes a small on-site substation (with office, ablution and store room facilities) and a short connection line to a proposed Eskom switch substation, part of the proposed Phase 1 construction. Another short connection line will enable connection to the existing 400 kV power line crossing the site. The main components of the proposed three phase project include solar panels, underground cables and power lines, a laydown area and construction camp. Associated infrastructure includes access roads (the existing gravel road to the north-east of the site, as well as a proposed second access road to the south), internal roads, water supply via existing or new boreholes, wastewater treatment and solid waste management. The total footprint of Kloofsig 3 is about 500 ha. Kloofsig 1 and 2 lie to the north of the third phase (Figures 2 and 3) and are the subjects of two separate AIAs (Tusenius 2016a, b).

Figure 1: Google earth image showing the location of the proposed Kloofsig Solar PV Energy Facility (outline of the original larger project indicated in white, the present three phase project indicated in yellow) on the farm Kloofsig to the northwest of Petrusville and the

Vanderkloof Dam. The relevant 1:50 000 topographical maps are 2924DC Havengabrug and 3024BA Petrusville.

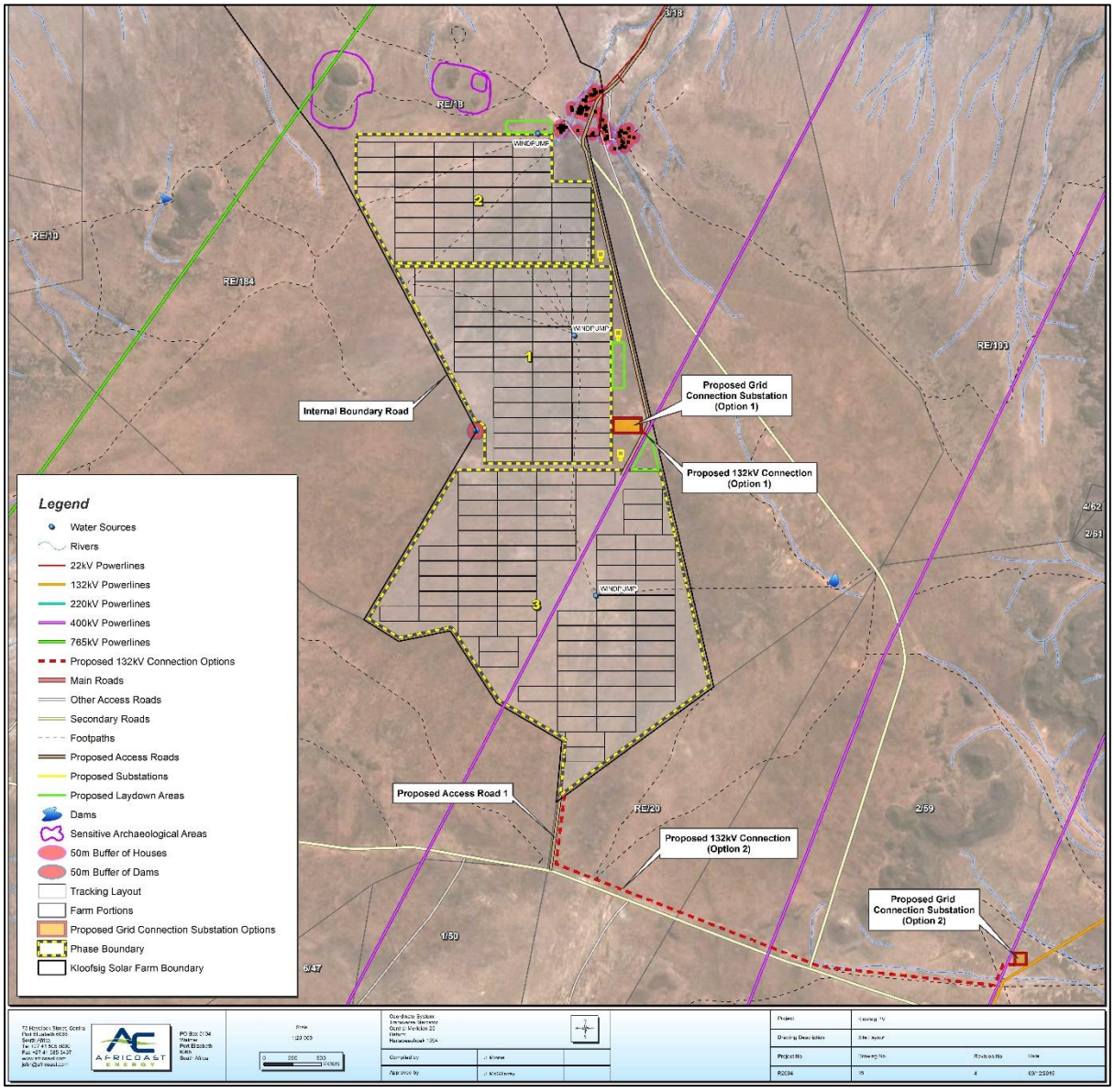

Figure 2: The layout of the proposed three phase Kloofsig Solar PV Energy Facility (Image courtesy of SRK Consulting). Archaeologically sensitive areas identified in the baseline report (Tusenius 2015) - dolerite 'koppies' with LSA remains and a cemetery - are outlined in purple to the north of the proposed development. Farm buildings, encircled by red, lie to the north-east of the affected area.

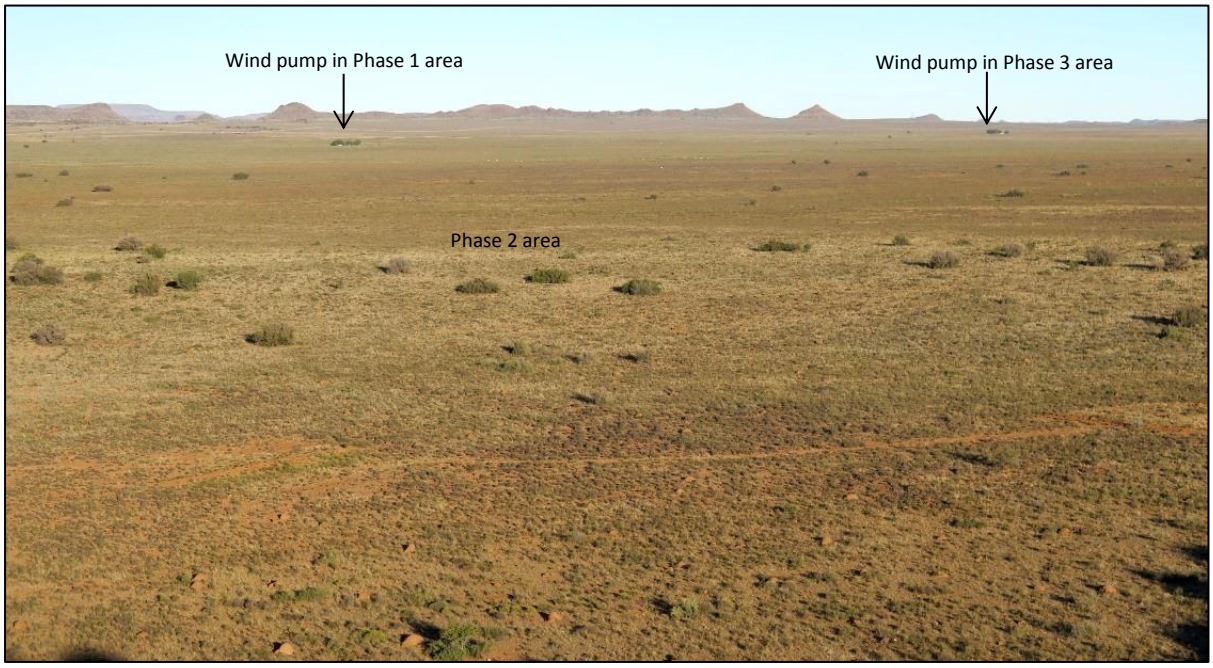

Figure 3: View towards the southeast from the dolerite hills to the north of the proposed Kloofsig Solar PV Energy Facility development. The position of wind pumps in Phases 1 and 3 is indicated.

2. LEGAL FRAMEWORK

In terms of the National Heritage Resources Act (Act 25 of 1999) protection is provided for heritage resources such as archaeological and palaeontological sites (Section 35 (4)), structures older than 60 years (Section 34) and graves older than 60 years (Section 36 (3)). Section 38 of the National Heritage Resources Act is triggered by certain types of development, including changes of character to an area exceeding 5 000m², and makes provision for compulsory Heritage Impact Assessments to assess the potential impacts of such proposed developments on heritage resources. Such heritage assessments are conducted under Section 38 (8) of the National Heritage Resources Act, and as part of the Environmental Impact Assessment (EIA) requirements of the National Environmental Management Act (No. 107 of 1998) (NEMA).

3. TERMS OF REFERENCE

The terms of reference for the study were to:

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint
- Assess the area of the proposed solar PV energy facility
- Describe and map any sensitive or no-go areas to inform the final layout
- Comment on potential impacts on these resources resulting from the development

- Make recommendations regarding the mitigation of any damage to archaeological resources identified, or that may be identified during the construction phase.

4. STUDY APPROACH

4.1 Methods

A field survey of Kloofsig farm was undertaken on 17 to 19 June 2015 as part of a baseline study (Tusenius 2015) for a proposed six phase solar development. This project has subsequently been reduced to the present proposed three phase development. During the baseline survey, the farm was covered by vehicle on existing tracks and short walked loops in the veld to gain a general impression of the layout of the farm and the archaeological potential of different areas. Members of the Havenga family (in particular Rensa, John and Jenny Havenga) were also consulted about features of archaeological and historical interest on the property. The farm has belonged to the family of Mrs Rensa Havenga for at least 3 generations.

Tracks and archaeological occurrences observed during the survey were recorded by a Garmin GPSMAP 62s set on the WGS84 datum. The general area and archaeological material were extensively photographed. The visibility of archaeological material on the ground was generally good due to relatively sparse vegetation cover, although some areas of denser bush do occur. The survey took place during winter, a dry season.

A summary of aspects of the literature review undertaken of known archaeological resources in the area is given in the archaeological background section below.

4.2 Limiting factors

During the survey for the baseline study (Tusenius 2015), the areas of the present three phase study were identified as being of low archaeological significance so less attention was paid to these than to the areas of medium to high significance described in the relevant report, and given in the archaeological background section below. However, the author feels confident that the conclusions reached about the study area are reasonable and in line with what was observed in other parts of the farm, as well as in accordance with what has been recorded in other AIA and academic studies in the area.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Archaeological background:

Within the broader region surrounding the study area, the most important reference sources for data on the archaeology are Garth Sampson's Orange River Scheme study (Sampson 1968, 1970, 1972) and his work in the Seacow Valley (Sampson 1985). The former study was conducted prior to the construction of the Gariep and Vanderkloof dams, formerly the H.F. Verwoerd and P.K. le Roux dams respectively, and consisted of a survey of the floodbasins of the two dams. The location of the two dams is indicated on Figure 1. The surface archaeology was mapped and 942 Stone Age occurrences, most of which were found along stream banks, were recorded (Sampson 1972). Twelve buried sites were

excavated. A sequence of six industries covering the Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA), including LSA with ceramics, was recognised. His second study (Sampson 1985) concerns the area surrounding the Seacow River, a minor tributary of the Orange River, which flows to the south of the Vanderkloof Dam (Figure 1). The same six successive industries, with an additional one, were recognised during the mapping of over 16 000 surface stone artefact concentrations. These concentrations reflect the residues of activities carried out by successive populations of Stone Age hunter-foragers, as well as a temporary incursion of stock-herders in the southwest corner of the survey area. San hunter- foragers in this area first came into contact with European Trek boers in the late 1700's.

Archaeological impact studies have been undertaken in the general area indicated in Figure 1 - Petrusville, the Vanderkloof Dam, Hopetown and De Aar, as well as the Hanover area some 120 km south of Kloofsig - and include those by Dreyer (2008a, b), Morris (1997, 2011a, b, c, 2012), Nel (2008), Tusenius (2015), Van Jaarsveld (2006), Van Ryneveld (2013), Van Schalkwyk (2015), Van Vollenhoven (2013) and Webley & Orton (2011). A variable density of stone artefacts, especially MSA material, has been observed over the surface of most of the areas surveyed, with fewer LSA occurrences and very rare ESA material. One Later Iron Age homestead and a shelter with rock paintings has been recorded close to the Vanderkloof Dam (Van Ryneveld 2013). Other archaeological material which has been noted is rock engravings on dolerite boulders (Nel 2008, Webley & Orton 2011), stone kraal complexes and historical farmsteads (Webley & Orton 2011), stone burial mounds (Morris 2012, Van Vollenhoven 2013), plus ration tins and the remains of a block house related to the Anglo-Boer War (Dreyer 2008b, Morris 2012). The last is a reminder that there was an Anglo-Boer War presence in the area which includes a battlefield and concentration camp in the Hopetown district (Dreyer 2008b).

The baseline report for the original, larger proposed Solar PV development (Tusenius 2015) is of direct relevance to the present three phase project – Kloofsig 1, 2 and 3. Besides the typical background scatter of stone artefacts on the entire farm, three areas of particular archaeological interest and sensitivity were recorded outside and to the north of the present study area. One is an area where *in situ* stone artefacts, mostly MSA, were seen eroding out of older calcretised, white, alluvium in the river banks in the vicinity of an old spring, as well as the nearby remains of a demolished old farmhouse ('ou opstal') with fragments of porcelain, glass, metal and animal bones in the vicinity. Clusters of dolerite 'koppies' were another area of interest - small patches cleared of stones, some of which formed low walls, were noted in association with small scatters of mainly LSA artefacts were noted. A cemetery with 13 definite graves and 1 possible grave of packed dolerite boulders, some dating to the last 20 years but others much older, was recorded.

5.2 Area of proposed Kloofsig 3:

Kloofsig 3, the third phase of the proposed three phase development, lies south of Phases 1 and 2 (Figure 2 and 3). An existing 400 kV powerline crosses through the centre of the affected area and the proposed line constructed during Phase 1 will run parallel to it, before following the fence line and proposed southern access road. (See the introduction for further information about the associated infrastructure, also indicated in Figures 2 and 4.) A wind pump is situated close to the centre of the area but to the east of the existing power line (Figures 5 and 6). The study area, currently used primarily for sheep farming, is underlain

by Ecca Group rocks and consists of flat-lying ‘vlaktes’ (plains) covered by calcrete hardpan and thin red soils with calcrete and hornfels gravels (Figures 5 to 8). The Nama Karoo vegetation is dominated by scattered small shrubs and bushes, most below 50cm high. Grass cover is limited.

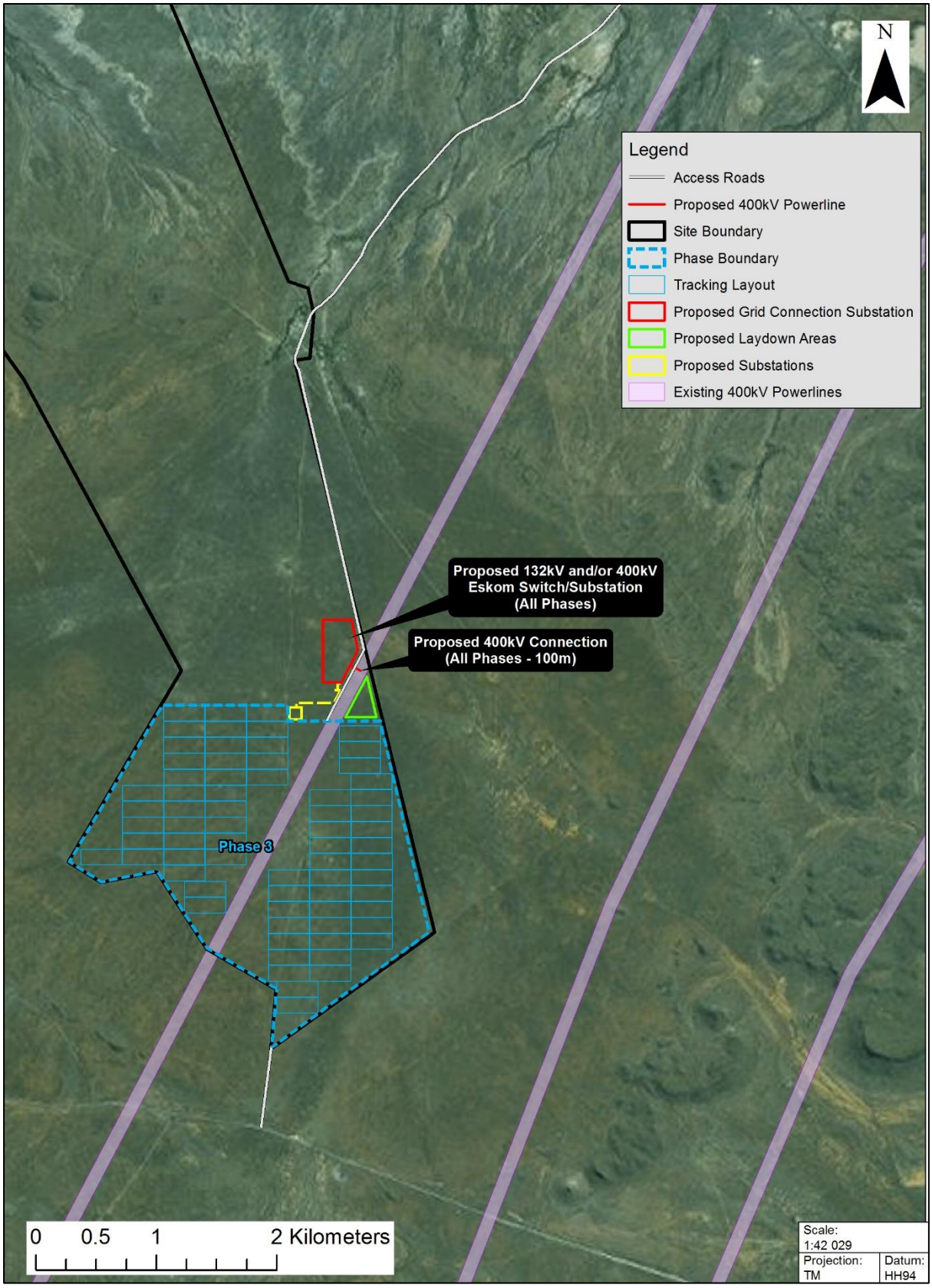

Figure 4: Layout of Phase 3 of the Kloofsig Solar PV Energy Facility. (Image courtesy of SRK Consulting)

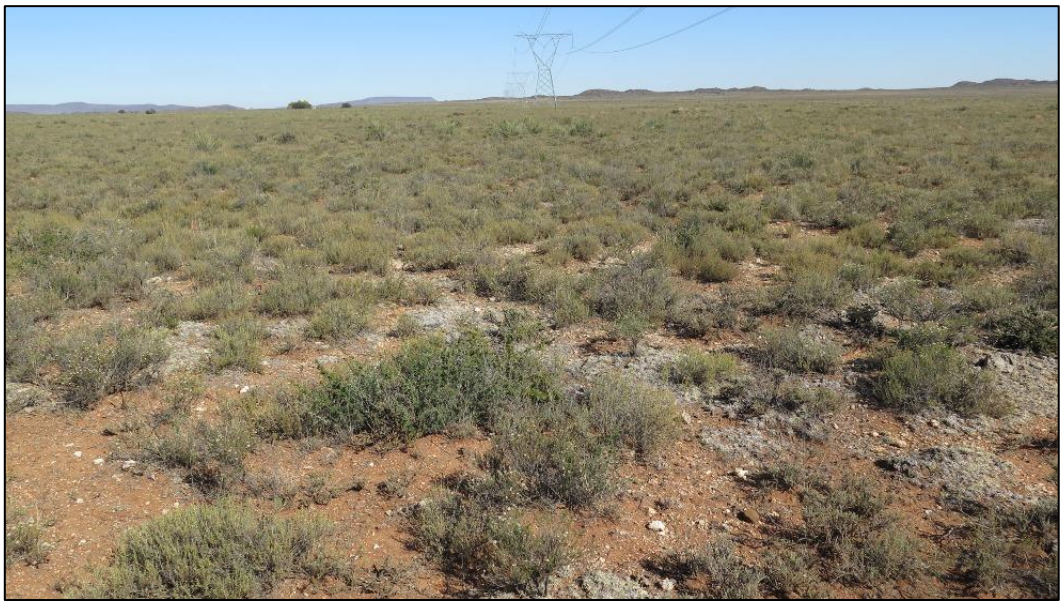

Figure 5: View towards the south showing surface gravels amongst scattered bushes, as well as the existing 400 kV line. The clump of trees to the left of the power line indicates the position of the wind pump.

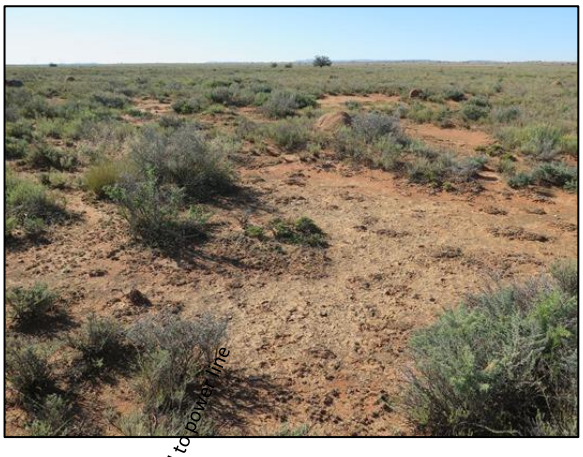

Figure 6: View towards the north from the southern-most area of Phase 3. The trees surrounding the wind pump and the power line are visible in the background. Figure 7: View towards the northeast showing a deflated area where surface gravels have been exposed.

6. RESULTS

Most of Kloofsig farm features dispersed Stone Age archaeological material in the form of an ubiquitous background scatter of stone artefacts within the surface gravels, rather than discrete concentrations of artefacts (Figures 9 to 13). The distribution of the material is patchy – sometimes there are several artefacts within a metre of each other, other times

there is a gap of many metres between them – but there appear to be no areas where they are completely absent. Visibility of this material is best where there are deflated areas as the artefacts probably originate from the soils, are then down-wasted onto the calcrete hardpan and concentrated amongst the gravels when the soils are removed by water erosion. (Figures 5 to 8). There are many signs of sheet wash throughout the study area so there has been transport of the material both horizontally and vertically. In other parts of Kloofsig farm, to the north of the dolerite 'koppie's, sub-surface gravels with *in situ* artefacts were seen in thick alluvial deposits (Tusenius 2015).

The surface background scatter consists mainly of very weathered and patinated flakes, blades, chunks, cores and scrapers which appear to be of mixed Middle Stone Age (MSA) and Later Stone Age (LSA) origin, with the former being more common. Diagnostic MSA artefacts include blades and points. Less patinated artefacts may indicate a younger age or less transport by alluvial and sheet wash processes. An Early Stone Age (ESA) element is possibly suggested by some extremely worn and rounded artefacts (Figure 11), as well as the appearance of the large artefact shown in Figures 12 and 13 which is reminiscent of ESA bifaces.

Hornfels of varying grain sizes was the preferred raw material used but some local dolerite and sandstone, as well as occasional cryptocrystalline silica (CCS) including chert, agate and banded ironstone (probably from the Orange River gravels) for LSA artefacts were also noted. Retouch is evident on some of the flakes, adzes and scrapers. No organic material such as ostrich eggshell or bone was observed in the background surface scatters of the study area. No rock engravings, cultural or structural remains of Anglo-Boer War or other historical significance were seen here either.

The only archaeological resources recorded in the study area are thus the dispersed, typologically mixed Stone Age artefacts. The fact that there appears to be no stratigraphic context and no organic remains are preserved would suggest that the proposed development area is of limited research value. The affected area is therefore considered to be of relatively low archaeological sensitivity.

Figure 8: Detail of a deflated area. Figure 9: Examples of the weathered and patinated hornfels artefacts, mostly MSA, as well as one piece of cryptocrystalline silica (second from

the left in the top row), probably from the Orange River gravels. The ruler is about 15cm in length.

Figure 10: Examples of weathered and patinated MSA and LSA stone artefacts in deflated areas amongst the calcrete and hornfels gravels. Figure 11: Examples of extremely rounded and worn artefacts, possibly ESA. The ruler is about 15cm in length.

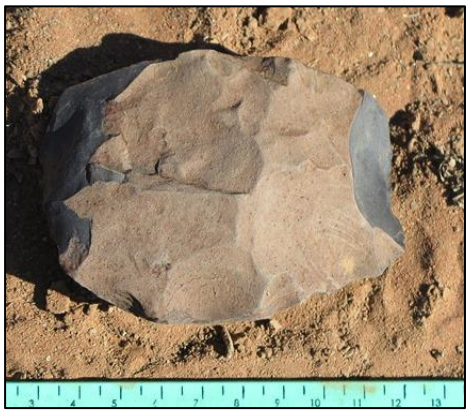

Figure 12: Examples of weathered and patinated hornfels artefacts, with one possible ESA artefact on the right. Figure 13: The flaked reverse of the artefact indicated in Figure 12. The scale is in cm.

7. ASSESSMENT OF IMPACT AND SIGNIFICANCE

Following the impact rating methodology used by SRK Consulting, the assessment of impact of the development, the significance rating of the impact on archaeological resources and recommendations regarding management (mitigation) are given in Table 1 and expanded upon below. The cumulative impact assessment, taking Kloofsig Phases 1 and 2 as well as other developments into account, is discussed towards the end of this section. This assessment applies to the construction phase of the proposed development, since no further significant impacts on archaeological heritage resources are anticipated during the operational and decommissioning phases.

Table 1: Significance rating of impact of the proposed Kloofsig 3 development on archaeological heritage resources during the construction phase and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence
Before Management	Local	Low	Long term	Low	Definite	Low	-	Medium
Management Measures								
• No mitigation is recommended in the case of the background scatter of stone artefacts. • If dense concentrations of stone artefacts are uncovered during construction, the ECO should notify SAHRA. • If any human remains, graves or stone burial cairns are found during construction, work in that area must cease and the ECO must immediately notify SAHRA.								
After Management	Local	Low	Long term	Low	Probable	Very low		Medium

The proposed development of the solar facility will result in the damage, destruction and long term (permanent) loss of archaeological heritage resources due to earthmoving, construction and installation activities. This is obviously a negative impact, although the impact of the proposed surface clearance will be localised in the areas where the solar panels, roads and associated infrastructure will be located in the three-phase development and will not affect the entire farm. The magnitude of the impact in relation to the sensitivity of the study area is regarded as being of low intensity.

The affected area is considered to be of relatively low archaeological significance due to the fact that most of the Stone Age artefacts occur within the ubiquitous background surface scatter of mixed MSA/LSA material, usually in a reworked context in areas affected by sheet erosion. The fact that there appears to be no stratigraphic context and no organic remains are preserved, would suggest that the proposed development area is of limited research value. Similar surface Stone Age material is found throughout the broader region and this suggests that the overall impact of the development will be low in terms of local archaeological heritage.

The degree of confidence in the rating is indicated as medium, given that it was not possible to determine if there is stratified sub-surface material. This would only become apparent once construction activities are under way. If dense concentrations of stone artefacts are uncovered, the Environmental Control Officer (ECO) should notify SAHRA to comment on possible mitigation.

If any human remains, graves or stone burial cairns are found during the development of the proposed solar facility, work in that area must cease and the ECO must immediately notify SAHRA (Telephone number 021 462 4502). Avoidance, rather than mitigation, would be the best option. The latter will involve exhumation by a suitably qualified professional archaeologist with appropriate accreditation from the Association of Southern African Professional Archaeologists (ASAPA), under a permit issued by SAHRA. Mitigation would be at the cost of the developer.

The cumulative impact of the three phases of the proposed Kloofsig development, as well as two other solar projects are considered. The latter projects consist of Swartwater Solar PV

Power Facility, close to Petrusville (Van Vollenhoven 2013), and Grootpoort PV Solar Energy Facility, near Luckhoff, Free State Grootpoort Photovoltaic Solar Energy Facility, near Luckhoff, Free State (Van Schalkwyk 2015). Information in the baseline study for Kloofsig (Tusenius 2015) has also been taken into account. Other developments close to the general Kloofsig area for which archaeological impact assessments have been done are the Hydra-Perseus and Beta-Perseus 765kv transmission power lines (Van Jaarsveld 2006) and the upgrade of the Transnet railway line between Hotazel and Coega (Nel 2008).

These studies, as well as those also mentioned in the background section of this report, have revealed that Stone Age material is scattered over the surface throughout the wider region. The cumulative impact of the proposed Kloofsig 3 development in the broader area is thus considered to be low.

8. CONCLUSIONS

Due to the relatively low archaeological significance of the study area no further work or mitigation is recommended as it is considered that a representative sample of the background scatter of material will be left after construction activities. There are therefore no objections, on archaeological grounds, to the authorisation of the proposed solar facility. However, if any human remains, graves or stone burial cairns are found during the development of the proposed, work in that area must cease and the ECO must immediately notify SAHRA.

9. REFERENCES

Dreyer, C. 2008a. First Phase Archaeological and Cultural Heritage Investigation of the Vanderkloof Dam – Petrusville Main Water Supply Scheme, Northern Cape. Unpublished report prepared for MDA Environmental Consultants. Private Archaeologist/Heritage Specialist, Bloemfontein.

Dreyer, C. 2008b. Archaeological and Cultural Heritage Assessment of the proposed MTN mast at the farm Elandsdraai 88, near Orange River Station, Hopetown District, Northern Cape. Unpublished report prepared for Enviroworks Environmental Consultants. Private Archaeologist/Heritage Specialist, Bloemfontein.

Morris, D. 1997. Archaeological Impact Assessment for Gypsum Industries in respect of proposed mining at Kraankuil on the farms Zeerust and Springbokspoor. Phase 1 survey: specialist input. Unpublished report prepared for Gypsum Industries. McGregor Museum, Kimberley.

Morris, D. 2011a. Archaeology Specialist Input on the site of the proposed Taaiboschfontein Photovoltaic Construction Site between De Aar and Hanover, Northern Cape. Unpublished report prepared for Jean Beater. McGregor Museum, Kimberley.

Morris, D. 2011b. Archaeology Specialist Input on the site of the proposed Vanderlindeskraal Photovoltaic Construction Site situated near Hanover, Northern Cape. Unpublished report prepared for Jean Beater. McGregor Museum, Kimberley.

Morris, D. 2011c. Archaeology Specialist Input on the site of the proposed Kalkbult Photovoltaic Construction Site north of De Aar, Northern Cape. Unpublished report prepared for Jean Beater. McGregor Museum, Kimberley.

Morris, D. 2012. Archaeology Specialist Input on the proposed access road for the Vanderlindeskraal Photovoltaic Site situated near Hanover, Northern Cape. Unpublished report prepared for Scatec Solar. McGregor Museum, Kimberley.

Nel, J. 2008. Final Report. Heritage Resources Scoping Survey & Preliminary Assessment. Transnet freight line EIA, Eastern Cape and Northern Cape. Unpublished report prepared for ERM Southern Africa. Archaic Heritage Project Management, University of Pretoria.

Sampson, C.G. 1968. The Middle Stone Age Industries of the Orange River Scheme. Memoir No. 4. National Museum, Bloemfontein.

Sampson, C.G. 1970. The Smithfield Industrial Complex: Further Field Results. Memoir No. 5. National Museum, Bloemfontein.

Sampson, C.G. 1972. The Stone Age Industries of the Orange River Scheme and South Africa. Memoir No. 6. National Museum, Bloemfontein.

Sampson, C.G. 1985. Atlas of Stone Age settlement in the Central and Upper Seacow Valley. Memoirs van die Nasionale Museum Bloemfontein No. 20: 1-116.

Tusenius, M.L. 2015. Baseline report of the proposed Solar Photovoltaic Energy Facility on Kloofsig (Kalkpoort 18), Petrusville area, Renosterberg Local Municipality, Northern Cape. Unpublished report prepared for SRK Consulting (South Africa) (Pty) Ltd. Natura Viva cc.

Tusenius, M.L. 2016a. Archaeological Impact Assessment of the proposed Kloofsig 1 Solar PV Energy Facility on the Remainder of the Farm Kalk Poort 18, Petrusville area, Renosterberg Local Municipality, Northern Cape. Unpublished report prepared for SRK Consulting (South Africa) (Pty) Ltd. Natura Viva cc.

Tusenius, M.L. 2016b. Archaeological Impact Assessment of the proposed Kloofsig 2 Solar PV Energy Facility on the Remainder of the Farm Kalk Poort 18, Petrusville area, Renosterberg Local Municipality, Northern Cape. Unpublished report prepared for SRK Consulting (South Africa) (Pty) Ltd. Natura Viva cc.

Van Jaarsveld, A. 2006. Hydra-Perseus and Beta-Perseus 765kv Transmission Power Lines Environmental Impact Assessment Impact on Cultural Heritage Resources. Unpublished report prepared for Arcus Gibb (Pty) Ltd. Heritage Resource Manager, Mtunzini.

Van Ryneveld, K. 2013. Archaeological Site Inspection. Laohu Valley Reserve, Northern Cape & Free State, South Africa. Unpublished report prepared for Laohu Valley Reserve. Archaeomaps.

Van Schalkwyk, J. 2015. Cultural Heritage Impact Assessment for the proposed Grootpoort Photovoltaic Solar Energy Facility, near Luckhoff, Free State Province Unpublished report prepared for Environamics. Heritage Consultant, Monument Park.

Van Vollenhoven, A. 2013. A report on a Cultural Heritage Impact Assessment for the proposed Swartwater Solar Pv Power Facility, close to Petrusville, Northern Cape Province. Unpublished report prepared for Usk Consulting. Archaetnos.

Webley, L. & Orton, J. 2011. Proposed De Aar Wind Energy Facility on the North and South Plateau, Northern Cape Province. Unpublished report prepared for Aurecon South Africa (Pty) Ltd. Archaeology Contracts Office.

10. ACKNOWLEDGEMENTS

Thanks are due to Ms Nicola Rump and Ms Karien Kilian, SRK Consulting (South Africa) (Pty) Ltd, who commissioned this study and provided some background information; the Havenga family of Kloofsig for information on various aspects of the farm and Dr John Almond, Natura Viva cc, for geological insights on the area and comments on the draft of this report.

11. SPECIALIST DECLARATION AND EXPERTISE

11.1 Declaration of Independence

I, Madelon Louise Tusenius, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.

M L Tusenius

M.L. Tusenius
Archaeologist, Natura Viva cc

11.2 Expertise of the specialist

Madelon Tusenius (MA in Archaeology, Stellenbosch) has been an accredited member of ASAPA (Association of Southern African Professional Archaeologists), formerly South African Association of Archaeologists, since 1983 and accredited as Field Director for the Stone Age with the Cultural Resources Management (CRM) Section of ASAPA since 2012. The author has been involved in a range of archaeological research projects and impact assessments, both as a freelance archaeologist and as a researcher based at the former Dept. of Archaeology, University of Stellenbosch, and at Iziko:South African Museum, Cape Town. Research project participations include Klasies River, Ysterfontein 1, Soutpansklipheuvel and a project in Southwest Ecuador. Particular research interests concern charcoal remains from Stone Age archaeological sites, as well as the expansion of comparative modern wood collections. She has mostly worked independently on Phase 1 Archaeological Impact Assessments in the Western and Northern Cape, and has assisted

ACO Associates with several Phase 2 projects. She has also been a field assistant for numerous Palaeontological Impact Assessments for developments and conservation areas in the Western, Eastern and Northern Cape undertaken by Dr JE Almond, Natura Viva cc.

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 KLOOFSIG 1 SOLAR PV ENERGY FACILITY ON THE REMAINDER OF FARM KALKPOORT 18, RENOSTERBERG LOCAL MUNICIPALITY NEAR PETRUSVILLE, NORTHERN CAPE

Specialist:	**Madelon L. Tusenius**		
Contact person:	**As above**		
Postal address:	**PO Box 12410 Mill Street, CAPE TOWN 8010, RSA**		
Postal code:	**8010**	Cell:	**N/A**
Telephone:	**021 462 3622**	Fax:	**N/A**
E-mail:	**madelontusenius@gmail.com**		
Professional affiliation(s) (if any)	**Association of Southern African Professional Archaeologists, including Cultural Resources Management (CRM) accreditation**		

Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

4.2 The specialist appointed in terms of the Regulations_

I, **Madelon Louise Tusenius** , 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: ML Tusenius

Name of company (if applicable):
NATURA VIVA CC

Date:
7 November 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 KLOOFSIG 2 SOLAR PV ENERGY FACILITY ON THE REMAINDER OF FARM KALKPOORT 18, RENOSTERBERG LOCAL MUNICIPALITY NEAR PETRUSVILLE, NORTHERN CAPE

Specialist:	**Madelon L. Tusenius**		
Contact person:	**As above**		
Postal address:	**PO Box 12410 Mill Street, CAPE TOWN 8010, RSA**		
Postal code:	**8010**	Cell:	**N/A**
Telephone:	**021 462 3622**	Fax:	**N/A**
E-mail:	**madelontusenius@gmail.com**		
Professional affiliation(s) (if any)	**Association of Southern African Professional Archaeologists, including Cultural Resources Management (CRM) accreditation**		

Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

4.2 The specialist appointed in terms of the Regulations_

I, **Madelon Louise Tusenius** , 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: ML Tusenius

Name of company (if applicable):
NATURA VIVA CC

Date:
7 November 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 KLOOFSIG 3 SOLAR PV ENERGY FACILITY ON THE REMAINDER OF FARM KALKPOORT 18, RENOSTERBERG LOCAL MUNICIPALITY NEAR PETRUSVILLE, NORTHERN CAPE

Specialist:	**Madelon L. Tusenius**		
Contact person:	**As above**		
Postal address:	**PO Box 12410 Mill Street, CAPE TOWN 8010, RSA**		
Postal code:	**8010**	Cell:	**N/A**
Telephone:	**021 462 3622**	Fax:	**N/A**
E-mail:	**madelontusenius@gmail.com**		
Professional affiliation(s) (if any)	**Association of Southern African Professional Archaeologists, including Cultural Resources Management (CRM) accreditation**		

Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

4.2 The specialist appointed in terms of the Regulations_

I, **Madelon Louise Tusenius** , 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: 

Name of company (if applicable):
NATURA VIVA CC

Date:
7 November 2016