Phase1a Archaeological Impact Assessment

Proposed development of the AMDA Foxtrot PV (Solar Energy Facility) on Remaining Extent Klondike No 670, and Overhead Power Line Grid Connection to the Mookodi MTS Sub-Station across Remainder of Erf 506 and Remainder of the Farm Rosendal 673, Vryburg, Registration Division, North West Province

(EIA Reference No: NAL433/03)

Prepared for

PERCEPTION Planning,Mr Stefan de Kock, P.O. Box 9995, George, 6530, Western Cape,Cell: 082 568 4719, E-mail: perceptionenvplg@gmail.com, **Applicant: AMDA Foxtrot (Pty) Ltd,** Co RegNo 2015/301568/07, Ms Jade Feinberg, PO Box 2681, Cape Town, 8000, jade@amdadevelopments.co.za

Prepared by

Dr Peter Nilssen, PO Box2635, Mossel Bay, 6500
044 6910051 | 0827835896 | peter@carm.co.za

2August 2016

1. Executive Summary

This report provides input to the archaeological component of the integrated Heritage Impact Assessment that forms part of the Environmental Impact Assessment process for the proposed development of the AMDA Foxtrot PV (Solar Energy Facility; hereafter AMDA Foxtrot SEF) to be situated about 8 km SW of Vryburg in the North West Province. The investigation reported here covers the 268 ha development lease and footprint area, the proposed overhead power line grid connection corridor, on site collector sub-stationas well as the access road options.

The proposed development will involve area and linear developments that could have a permanent negative impact on archaeological resources. Direct negative impacts on archaeological resources will occur during the construction and installation phase of the proposed development. Indirect and cumulative impacts will occur during the operational phase of the development and as a result of other potential future developments in the surrounding area.

Previous heritage related work in the surrounding environment shows that archaeological resources are most commonly clustered around rivers and river valleys, existing and ancient drainage lines, pans, and ridges with rocky outcrops, and that heritage resources are generally absent from flatlands that are some distance from existing or ancient water sources. The bulk of the archaeological record is of the Stone Age, and based on the receiving environment, it was expected that mainly Stone Age resources would be encountered with lesser potential for the occurrence of significant historic heritage resources.

A very low density background scatter of isolated stone artefacts of the different Stone Age periods was identified in the study area, sometimes in previously disturbed contexts. These finds are not associated with any organic, faunal or other cultural remains. As a result, these heritage resources are considered to be of low archaeological significance. Because they were adequately recorded during this study, it is suggested that no further investigation or work is needed before development commences. Due to their low significance, a permit for their disturbance or destruction is not required from the heritage authorities, and their destruction will not detract from the heritage value of the area.

Four pan sites with associated LSA and MSA stone artefacts are situated at waypoints 110, 111, 118 and at waypoints 87 & 89. Although these sites contain temporally mixed LSA and MSA materials and preserve no faunal, organic or other cultural materials, they are examples of human landscape use and the likely intermittent re-occupation of a water source over great expanses of time. These pan sites also represent specific prehistoric human activities associated with water sources. These localities are considered to be of medium significance. It is recommended that the areas around these sites should be conserved in perpetuity as part of the National Estate and for potential future research. This recommendation was accepted by the applicant and the revised development layout plans show that the sites will not be impacted by the proposed development.

Rocky outcrops and water sources are often archaeologically sensitive, and in the case of the LSA & MSA pan and quarry sites at waypoints 94 & 95 and waypoints 96, 98 & 99, both elements are present. Although these archaeological resources are temporally mixed and consist only of stone artefacts, their context and content provide an important example of landscape and resource use through deep time. Consequently, these sites are considered to be of medium significance and it is recommended that the areas around waypoints 94 & 95 as well as waypoints 96, 98 & 99 be conserved in perpetuity as part of the

National Estate and for potential future research. This recommendation was accepted by the applicant and the revised grid connection route will run through the gap between the two sites. Given that pylons for the overhead power line can be placed several hundred meters apart, the grid connection can straddle these sites without any negative impact.

The proposed development will involve construction and installation activities that will have a permanent negative impact on archaeological resources identified in this study. However, a representative sample of the archaeological resources will be conserved and the remainder are considered to be of low significance, and therefore, their destruction will not have a negative impact on the heritage value of the area.

From an archaeological perspective, provided that these recommendations are considered and/or implemented, there are no fatal flaws, and therefore, there are no objections to the authorization of the proposed development of the AMDA Foxtrot SEF and associated on-site collector sub-station, overhead power line grid connection and access road. The positive impact of the development is that it will allow for the conservation of archaeological resources that may otherwise have been overlooked or destroyed.

Recommended Mitigation Measures;

- *Six archaeological sites identified in the studied area were selected for protection and conservation in perpetuity as part of the National Estate and for potential future research. These include the four LSA & MSA pan sites at waypoints 110, 111, 118 and at waypoints 87 & 89; and the two LSA & MSA quarry and pan sites at waypoints 94 & 95 and waypoints 96, 98 & 99. Temporary fences should be erected around these sites in the presence of a suitably qualified and accredited archaeologist prior to the construction phase of development to ensure that they are not damaged or destroyed. The recommended placements of these fences are indicated with red polygons in Figures 6 and 7 and Plates 8, 10, 16 and 18, which already allow for a buffer between archaeological resources and the surrounding landscape. Pylon locations in the vicinity of the quarry and pan sites should also be selected in the presence of a suitably qualified and accredited archaeologist so as to avoid areas with known sub-surface archaeological materials. Protective and management measures for the four sites should be included in the Construction and Operational Environmental Management Plan for the development. The revised development layout plans show that the above six sites are already avoided and will not be directly impacted by the proposed development activities.*
- *Because the presence of sub-surface archaeological resources cannot be ruled out entirely, it is recommended that the Environmental Management Plan for the construction phase of development makes provision for archaeological training of the appointed Environmental Control Officer (ECO). This will allow for the ECO to recognise archaeological remains if they are exposed during construction, and to alert the authorities or a suitably accredited archaeologist, who should be called to site to assess the finds and to determine mitigation measures if necessary. Such work will be at the expense of the developer.*

Required Mitigation Measures;

- *In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately. Such resources must be handled in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer.*

- *In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer.*

2. Name, Biosketch and Declaration

I, Peter Nilssen (PhD in archaeology, University of Cape Town, 2000), herewith confirm that I am a Professional member - in good standing - of the Association of Southern African Professional Archaeologists (ASAPA), including the Cultural Resource Management section of the same association (ASAPA professional member # 097). I am an accredited Principal Investigator for archaeozoology (specialist analysis), coastal & shell midden archaeology and Stone Age archaeology; Field Director for Colonial Period; Field Supervisor for Iron Age and Rock Art, and am suitably qualified and experienced for the archaeological investigation conducted for this project.

As the appointed independent specialist (archaeologist) for this project hereby declare that I:

- act as an independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct;
- 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;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 982) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- am aware that a false declaration is an offence in terms of regulation 48 of GN No. R. 982.

Signature of the specialist:

Date:**2August 2016**

Table of Contents

3. Introduction

3.1. Backgroundto Development Proposal

The applicant, AMDA Foxtrot(Pty) Ltd, is proposing the establishment of a commercial solar photovoltaic energy facility (SEF) on the remaining extent of farm Klondike No 670, situated in the District of Vryburg, North West Province. The entire property is 1142.4853 ha in extent, while the proposed development footprint and lease area is268 ha in extent and is located about 8km SW of Vryburg in the North West Province (Figures 1 & 2).

The proposed photovoltaic (PV) SEF will have a net generating capacity of 75 MW (AC) with an installed capacity of 85 MW (DC). The proposed technology is Solar PV on fixed tilt structures or single axis tracking technology. The dimensions or extents of the development components are as follows: Solar PV field footprint = 185ha, project sub-station = 1ha, collector sub-station = 1ha, buildings = 1.5ha, roads = 22km long at 6m wide = 13.2ha, permanent lay down areas = 7ha and construction lay down areas = 12ha. The solar field tracker structure height is approximately 3.5m, while the perimeter fence will be a 2.4m high multi-strand electric security fence.

The proposed SEF project will connect to the Eskom Mookodi MTS sub-station south of Vryburg as indicated in Figure 2. The sub-station to connect the facility has a confirmed capacity of 485MW - Eskom letter for REIPPPP Bid window 4 accelerated programme & 907MW in GCCA 2022 June 2015. The project sub-station will connect to the collector sub-station via a single 132kV overhead line. The collector sub-station will connect to Mookodi MTS sub-station via a double 132kV overhead line. The overhead power line route will be approximately 5.88km in length and will run from the collector sub-station east of the Klondike 670 property, across a district road and over Remainder of Erf 506 and Remainder of the Farm Rosendal 673 to Eskom'sMookodi MTS sub-station. The power line will be 25m in height with a servitude width of 50m.

Additional infrastructure includes; water from Municipality or borehole, auxiliary electricity supply from Eskom, and sewerage by conservancy tank. An existing access road from the N14 may be used or a new access road may be developed off the Vryburg - Reivilo district road.

Detailed specifications and development layouts of the proposed solar facility and associated infrastructure was guided and determined by the Environmental Impact Assessment (EIA) process, and specifically, by the location and extents of archaeological resources identified during this investigation. The revised and preferred development layout plan is shown in Figures3 and 4.

Activities associated with the proposed development trigger the National Heritage Resources Act (NHRA, Act 25 of 1999), and therefore, this author was appointed to provide archaeological input for the broader integrated Heritage Impact Assessment (HIA) that is being undertaken by Mr Stefan de Kock of Perception Planning in terms of Section 38(8) of the NHRA. Mr Dale Holder of Cape Environmental Assessment Practitioners (CapeEAPrac) is facilitating the EIA process. Contact details for Perception Planning and the applicant are given on the title page of this report.

The first phase of archaeological input to the integrated HIA involved a Scoping Archaeological Impact Assessment (SAIA) which provided a summary on the findings made during previous archaeological and heritage related investigations in the surroundings of the current study area (Nilssen 2016). The current phase of the HIA process involves a Phase

1a Archaeological Impact Assessment (AIA), which presents a more detailed report on the findings made during an archaeological investigation for the proposed development of the AMDA Foxtrot PV solarfacility and its associated infrastructure. This report is a required component of the integrated HIA that is being compiled by Perception Planning.

3.2. Purpose and Scope of the Study

The overall purpose of the AIA is to assess the nature and sensitivity of archaeological resources in the affected area, to determine the potential impacts of development on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures. This AIA report forms part of the Integrated HIA and meets standards required by the South African Heritage Resources Agency (SAHRA) in terms of the National Heritage Resources Act, No. 25 of 1999.

The objectives of the Archaeological Impact Assessment are:

- To assess the nature and sensitivity of archaeological resources in the affected environment;
- To identify the impact of the proposed development on such resources as well as options for mitigation in order to minimize potential negative impacts and to make recommendations for mitigation where necessary; and
- To identify archaeological resources and issues that may require further investigation.

Terms of Reference (ToR):
a) Locate boundaries and extents of the study areas.
b) Conduct a detailed foot survey of the study areas to identify and record all archaeological resources.
c) Assess the impact of the proposed development on such resources according to assessment criteria provided by the environmental assessment practitioner (Cape EAPrac).
d) Recommend management and/or mitigation measures and additional studies where necessary.
e) Prepare and submit a report that meets standards required by Heritage Authorities in terms of the National Heritage Resources Act, No. 25 of 1999

3.3. Description of Property / Affected Environment

The proposed AMDA Foxtrotsolar photovoltaic energy facility (AMDA FoxtrotSEF) will be located on a portion of the remaining extent of farm Klondike No 670, situated some 8 km SW of Vryburg, North West Province(Figures 1 & 2). The entire property is about 1142ha in extent, while the development footprint and lease area is 268 ha in extent. The proposed overhead power line route for the grid connection to Eskom's Mookodi MTS sub-stationis nearly 6 km in length and runs across the Remainder of Erf 506 and Remainder of the Farm Rosendal 673, Vryburg, North West Province (see Figures 2 & 3). The Mookodi MTS sub-station is about 500 m west of the N18 (Figure 2). The AMDA Foxtrot study area is accessible by vehicle from the N14 as indicated by the "access road" point in Figure 2. The grid connection route is accessible by vehicle via the gravel road (D944) from the N14, or from the Mookodi MTS sub-station off the N18 (Figure 2). Coordinates for the proposed development activities are given below in Table 1.

The following description applies to the larger study area as indicated with a red polygon in Figure 2 as well as the on-site collector sub-station, access road and grid

connection route also indicated in Figure 2.The environmental setting (terrain, topography, geological sediments and vegetation) of the proposed PV area, access road as well as the grid connection route are very similar. Examples of the affected environment described below are shown in Plates 1 through 5.

Overall the topography of the surrounding landscape is flat to gently undulating and consists of plains, some pans (depressions), low hills / ridges as well as drainage lines and a few intermittent streams. The low ridges immediately west and NW of the Mookodi MTS sub-station are rocky outcrops of basalt (Maarten de Wit pers. comm.) and are also adjacent to pans in the east. The Leeuspruit River runs about 2 km east of the Mookodi MTS sub-station and the Korobela River is situated some 11 km to the south and SW of the larger study area. According to the Klondike farm manager, Mr Henk De Jager, the pans in the area contained water in historic times and that the water table was lowered as a result of agricultural activities and increased human habitation in the area. A pump at one of the pans in the larger study area still extracts water today from a depth of about 30 m. Archaeological materials are often associated with water sources and rocky outcrops.

The primary geological body is the Transvaal Supergroup, which includes the Vryburg Formation and contains volcanics (lavas, e.g. basalt), ironstones, chert, tillites, siliciclastics (sandstone) and carbonates (including calcrete) (Almond & Pether 2009). The only notable rocky outcrop seen in the studied area is the outcrop of basalt near the Mookodi MTS sub-station. Calcrete exposures in both bedded and nodular form are fairly common. Surface sediments are variable and include components of carbonates and of what appears to beanelementof Kalahari or Orange to Red Hutton Sands as well as rounded to sub-angular gravels of mainly quartzite with some quartz and calcrete nodules. Gravels are more common in the eastern part of the study area and decrease dramatically to the west where they are almost entirely absent from large parts of the AMDA Foxtrot study area.

The endemic vegetation of the area is described as Ghaap Plateau Vaalbosveld or Kalahari Plateau Bushveld which is typical of the Savannah Biome. The vegetation consists of grasses, trees and shrubs. The dominantindigenous tree is the protected Camel thorn tree (*Vachelliaerioloba*). Exotic Eucalyptus trees and other alien vegetation are commonly present in the immediate surroundings of farmsteads. As a result of cattle farming, however, most of the Camel thorn trees are removed when very young in order to stimulate the growth of grasses for increased grazing. Considerable expanses of the immediate and surrounding landscape have been altered by farming activities, but there is no clear evidence for clearing and ploughing in the Foxtrot study area. As a result of farming activities, the endemic vegetation regime has been dramatically changed in historic times. Overall, archaeological visibility of exposed ground surfaces is good and allowed for adequate observations for the purpose of this assessment.

The land use of the affected area is rural and agricultural, dominated by cattle farming. Relatively modern farmsteads, associatedoutbuildings and farming infrastructure occur in the larger study area and grid connection corridor. Relatively recent human related disturbances to the environment includeroads (surfaced and gravel), single vehicle gravel tracks, cattle and pedestrian tracks, clearing (large piles of calcrete) and ploughing, fencing, overhead power lines, minor earthmoving, bore holes, windmills, sub-surface pipelines, free-standing cement dams and plastic reservoirs, and the relatively new Mookodi MTS sub-station. Natural disturbances includeburrowing by large and small animals.

Table 1. Coordinate data for the larger study area, AMDA FoxtrotSEF footprint, grid connection (overhead power line), access road, on-site collector sub-station and Mookodi MTSsub-station sites(see Figures 2& 4).

Name	Description	Datum: WGS84 Lat/Lon decimal degrees	Datum: WGS84 Grid: SA National
A	boundary point of larger property (Figure 2)	S26.99541 E24.63442	25 Y0036287 X2987175
B	boundary point of larger property (Figure 2)	S26.97931 E24.69317	25 Y0030460 X2985375
C	boundary point of larger property (Figure 2)	S26.99368 E24.69488	25 Y0030287 X2986967
D	boundary point of larger property (Figure 2)	S27.01450 E24.64911	25 Y0034823 X2989286
FA = F6	main boundary point of AMDA Foxtrot (Figure 4)	S26.99744 E24.63876	25 Y0035856 X2987398
FB = F1	main boundary point of AMDA Foxtrot (Figure 4)	S26.99169 E24.65758	25 Y0033989 X2986756
FC = F9	main boundary point of AMDA Foxtrot (Figure 4)	S27.01026 E24.65719	25 Y0034023 X2988813
FD = F8	main boundary point of AMDA Foxtrot (Figure 4)	S27.01405 E24.64876	25 Y0034858 X2989236
GC1	point along Grid Connection (Figure 2)	S27.00153 E24.71060	25 Y0028725 X2987833
GC2	point along Grid Connection (Figure 2)	S27.00955 E24.73482	25 Y0026318 X2988716
GC3	point along Grid Connection (Figure 2)	S27.00741 E24.74187	25 Y0025619 X2988478
Mookodi MTS	Eskom's Mookodi MTS Sub-Station (Figure 2)	S27.00922 E24.74280	25 Y0025526 X2988678
Access Road	point of access road leaving the N14 (Figure 2)	S26.97567 E24.70253	25 Y0029531 X2984969
Collector SS	on-site Collector Sub-Station (Figure 2)	S26.98656 E24.69723	25 Y0030055 X2986177

3.4. Description of Methodology

The overall purpose of an AIA is to perform a survey of the affected areas in order to identify, record and rate the significance of archaeological resources, to assess the impact of the proposed area and linear developments on such resources and to recommend management and mitigation measures where necessary.This assessment was conducted with accepted best practice principles and in accordance with guidelines and minimum standards as set out by the Department of Environmental Affairs and Development Planning and the South African Heritage Resources Agency (DEA&DP 2005, SAHRA 2007).

Presented below in section (4.1) are the results of an archaeological desktop study and literature review that were conducted as part of this assessment. The desktop study was conducted prior to field work so as to gain an impression of the types of archaeological resources that may be found in the affected environment.

To assess the nature and significance of the archaeological record in the affected area, it was necessary to conduct a comprehensive foot survey. The latter focused on the provisional development layout plans including the approximately 800 ha portion of the larger property as well as the power line routeand access road options (see Figures 2& 5).

The potential for different landforms, sediments or landscape features to contain archaeological traces was assessed according to type, such as rocky surfaces, sandy surfaces, cultivated areas, previously developed or disturbed areas, rock shelters, and so on. Overall, the significance of archaeological occurrences or sites was assessed against results of previous archaeological studies in the region as well as their content and context. Attributes that were considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, aesthetic appeal, potential for future research, density of finds and the context in which archaeological traces occur.

On behalf of AMDA Foxtrot(Pty) Ltd., Mr Dale Holder of Cape EAPrac provided background information, terms of reference, locality maps, provisional development layout plans for the proposed activity and contact details for the property owners. Permission to access the property was obtained from Mr Lourens De Jager and the gates were opened

daily by Mr Henk De Jager, who also provided useful information about the farm and its recent history. The entire archaeological survey was conducted independently and on foot.

Sufficient expanses of exposed ground surfaces provided good archaeological visibility and allowed for a detailed understanding of the archaeological record in the area based on surface observations. Due to good visibility, and as it turned out, very sparse and predictable archaeological resources, survey walk tracks were spaced between about 60 and 100m apart.After gaining abetter understanding of the nature of the archaeological record in the study area, the survey transects were set further apart to an average of about 100m. Due to good visibility, any landscape features such as rocky outcrops or pans, or cultural resources such as ruins with a vertical aspect, would be easily detectible in the landscape. Areas with disturbed sediments such as animal burrows, erosion gullies and borrow pits or excavations were inspected for potential sub-surface archaeological traces.

Survey walk tracks were fixed with a hand held Garmin Etrex30x GPS to record the search area (Figures 5 through 7, gpx tracking file is available from author). The position of identified archaeological occurrences and sites, observations and photo localities were fixed by GPS and such data are available from the author on request. Due to the insignificant nature of identified and recorded isolated Stone Age occurrences, these are not indicated individually in Figures6 and 7, and a table with coordinate data for these is not provided.More substantial archaeological occurrences or sites are indicated with labelled red polygons in Figures 6 and 7, and their coordinates and summary descriptions are presented in Table 2. Examples of the receiving environment are shown in Plates 1 through 5 while Plates6 through 22show isolated archaeological occurrences and sites identifiedand recorded in the studied areas. Data imprints on photographs in Plates 1 and 2 show direction of view, meters above sea level and GPS coordinates. In one or two instances the direction of view is incorrect due to compass calibration settings. Digital audiovisualnotesand a comprehensive,high quality digital photographic record were also made with a Nikon Coolpix AW130 digital camera. A complete data set for all finds and observations are available from this author on request.

3.5. Assumptions, Limitations and Gaps in Knowledge

This assessment assumes that the proposed AMDA Foxtrot SEF will be contained within the 268ha study and development lease area and that the proposed overhead power line and access road alignments as indicated in Figures 2 and 3 will not be rerouted, except for the purposes of avoiding relevant archaeological sites. In the event that the impacted areas are moved or altered, then, depending on the nature of changes, a further archaeological investigation may be required. It is also assumed that all background information and revised development layout plans provided by Cape EAPrac are correct and current. The revised development layout plans shown in Figures 3 and 4 have taken into account the archaeological constraints resulting from this investigation and assessment, and are approved by this author.

This assessment is specifically for the footprint of the AMDA Foxtrot SEF, on-site collector sub-station and corridors of the proposed power line and access road routes and does not apply to, and may not be used for, any other future developments on the remainder of the affected property that was not covered by this investigation.

There were no limitations to the study since all relevant portions of the affected areas were accessible on foot and archaeological visibility was good, and therefore, it is considered that sufficient observations were made for the purpose of this assessment. Due to the fact

that parts of the archaeological record are covered by surface sediments, this study is limited to such resources exposed on the surface and in disturbed contexts. Archaeological sites with a known sub-surface component will be conserved. Nevertheless, it cannot be ruled out entirely that additional archaeological resources may be exposed in other areas during the construction phase of the development.

At present there are no gaps in knowledge regarding the proposed development.

4. Results

4.1. Archaeological Background - Desktop Study & Literature Review

A literature review of previous archaeological and heritage-related work in the surrounding area was conducted in part by using information from the Report Mapping Project of the SAHRA-APM Unit as well as SAHRIS. Most of the reports cited here were downloaded from the SAHRA web site (http://www.sahra.org.za/sahris/map/reports). Further pertinent information from related reports was obtained from references cited below.

Most of the information concerning the history and archaeology of the surroundings was obtained through heritage and archaeological studies associated with environmental impact assessments for a variety of development activities. More recently, the bulk of these assessments are associated with the development of alternative energy facilities in the North West and Northern Cape Provinces.

Rosendal 637 is one of three areas that underwent a Heritage Impact Assessment for the proposed development of a sub-station (now called Mookodi MTS) and loop-in lines near Vryburg (van Schalkwyk 2008, also see van Schalkwyk 2014). A portion of Rosendal 637, overlapping with the van Schalkwyk study area, was also investigated here for the proposed grid connection from the AMDA Foxtrot SEF to Eskom'sMookodi MTS sub-station. Apart from flakes and tools of possible MSA origin that were considered to be of low significance, no significant archaeological resources were identified (van Schalkwyk 2008). It is noted that significant Stone Age quarry and pan sites with sub-surface archaeological resources were identified in the same area during the investigation reported here. Further, numerous ESA and MSA stone artefacts occur in the immediate vicinity of the Mookodi MTS sub-station on Rosendal 637. Regrettably, numerous Stone Age materials were disturbed and damaged during the construction of the MookodiMTS sub-station, and these resources were never adequately recorded or sampled prior to destruction.

Apart from the above and to the best of my knowledge, no further archaeological or heritage related study was undertaken on the properties under consideration here.

The North West and Northern Cape Provinces have a rich and long archaeological record that spans the entire Stone Age, includes Iron Age sites, and more recent historic occupation of the region. Detailed accounts of the history, heritage resources and associated hominin and human behaviours have already been written and are not repeated here (see for e.g. Küsel and Küsel 2015, Birkholtz 2014, Hutten 2012, Kruger 2013 and van der Walt 2014). Of relevance here is the nature of the archaeological record in the surroundings of the present study area, which give an indication of the type of heritage resources that are expected to occur in the proposed development site.

The nearest and most significant heritage site is that of the Taung Skull World Heritage Site, which is situated approximately 60km to the south of the present study area. The site is famous for the late Professor Raymond Dart's identification of the skull of an infant gracile australopithecine, named *Australopithecus Africanus* that was unearthed from a limestone quarry in the mid 1920s. This was the first major hominin discovery in South Africa, and indeed one of the earliest worldwide.

The National Heritage Site of Wonderwerk Cave is situated roughly 100km south of the present study area, and archaeological investigations in the cave are ongoing. This is an important Stone Age site and one of the few which contains the full Stone Age sequence from Early Stone Age (ESA) through Middle Stone Age (MSA) to Later Stone Age (LSA). Rock paintings adorn the walls of the cave near its entrance.

Numerous archaeological resources were identified and recordedalong the Harts River some 60km south of the present study area in the late 1980s by the Harts River Valley Survey Project of the University of the Witwatersrand. These finds included Early Stone Age, pastoralist (Iron Age) and rock art sites (Birkholtz 2014).

In addition to these, heritage related finds made during heritage and archaeological impact assessments include the following (arranged by individual reports): isolated finds and low density Stone Age stone artefact scatters ranging in origin from ESA through LSA times; possible Iron Age collapsed circular stone structure with no associated cultural remains, possible historic farmstead, possible grave (Kruger 2014); heritage resources associated with canal building and agricultural development, German and Italian cemeteries, history of the Vaalharts Irrigation Scheme, also referred to in this report is van Ryneveld's (2005) discovery of a laterally extensive LSA site with an estimated 2.5m depth of deposit(Küsel 2015); extensive low density stone artefact scatters of MSA and LSA origin, discrete MSA and LSA quarry/knapping site (artefact types and raw materials are described in detail in the report) associated with a ridge sourced for its abundant cryptocrystalline silica (CCS), a possible grave, the latter two sites were protected by means of buffer zones, van der Walt notes that archaeological occurrences and sites are associated with drainage channels, pans and ridges and that they are rare to absent on the flatlands that are removed from water sources (van der Walt 2014 & 2015); high density and extensive scatter of MSA stone artefacts that is interpreted as a factory site where raw material was sourced from a local outcrop and then knapped into tools, leaving behind cores and flakes, this site has been protected and will be conserved in perpetuity (van Schalkwyk 2012); stone artefacts of ESA, MSA and LSA origin, Iron Age pottery and recent graves, all these finds were considered to be of low significance due to their lack of context (van Schalkwyk 1996); flakes and tools of possible MSA origin made in chert and hornfels scattered on the surface and are considered to be of low significance (van Schalkwyk 2008); finds include Stone Age sites, farmsteads, stock pens, windmills, historic structures and architecture, railway line and associated stations and other structures, local and private cemeteries, roadside memorials, and van Schalkwyk (2014) notes that the following are sensitive heritage areas and provides recommendations for their management and conservation; "All pans are sensitive as stone tools have been identified to occur on the rim of a number of them. A buffer of 20 metres from the outer edge of the rim of the pan should be created in order not to impact on the stone tools.The same hold true for all water courses.Some rock outcrops in the region show signs of having being quarried by Stone Age people in order to obtain material for producing stone tools. In addition, in some cases rock engraving occur on some of the outcrops. Therefore, all outcrops should be avoided as far as possible. All farmsteads, occupied or not, should be buffered with a no-go zone of at least 100 metres from the last visible feature associated with the farmstead/homestead. All cemeteries should have a buffer of at least 20 metres from the outer most graves. Fortunately, many cemeteries are fenced off, which can

then be used as a buffer. All other features such as bridges, station buildings, etc. should be buffered with a no-go zone of at least 20 metres." (van Schalkwyk 2014, executive summary).

Several heritage related impact assessments in the surroundings of the present study area reported the complete absence of heritage and archaeological resources within their studied areas (Birkholtz 2014, Dreyer 2008, Hutten 2012 & 2015, Kruger 2015 and van Schalkwyk 2011).

Overall, a pattern emerges showing that archaeological resources are most commonly clustered around rivers and river valleys, existing and ancient drainage lines, pans, and ridges with rocky outcrops, and that heritage resources are generally absent from flatlands that are some distance from existing or ancient water sources.

Since the bulk of the archaeological record in the immediate surroundings is that of the Stone Age period, a brief overview of the technology associated with the development of archaic and modern humans during this era is given below.

Early Stone Age (ESA) materials including Acheulian hand axes, cleavers and chopping tools that may date from as early as 2.7 million years ago and come to end about 300 000 years ago is the earliest evidence for the tool-making human ancestors occupying this area. Such artefacts are usually found among alluvial gravels. ESA artefacts are usually found in disturbed or derived contexts where they are mixed with artefacts of more recent Stone Age times. In most contexts, the ESA is represented by stone artefacts only.

The Middle Stone Age (MSA) starts about 300 000 years ago and the interface between the ESA and MSA is sometimes marked by a stone tool industry known as the Fauresmith, where small hand axes appear to indicate the transition from archaic humans to *Homo sapiens*. In the main, however, MSA stone artefacts are characterised by flake and blade industries where evidence for core preparation - also known as the Levallois technique - is seen on prepared or faceted platforms of flakes and blades. Convergent flakes or points are also one of the markers of the MSA period. Like the ESA specimens, though more numerous, stone artefacts of MSA origin also occur among alluvial and fluvial gravels and are commonly mixed with artefacts of both ESA and Later Stone Age origin. Unfortunately, no other cultural materials or faunal remains are associated with these artefacts when found in exposed contexts.

The Later Stone Age (LSA) starts about 40 000 years ago and is characterised by substantial technological improvements over the MSA industries. Advancements on previous technologies and new technologies as well as cultural developments include the widespread occurrence of rock art (cave paintings and rock engravings), decorative objects (ostrich egg shell beads, marine shell pendants and beads, ochre), human burials with grave goods including painted stones, an expanded stone tool kit, microlithic stone tool industries (often associated with composite tools such as bow and arrow hunting), bone tools, tortoise carapace bowls, ostrich egg shell containers, fire making sticks and so on. Due to the non-preservation of organic remains in exposed contexts such as the affected environment, the archaeological traces of the LSA occupants are limited to stone artefacts. LSA stone artefacts are sometimes mixed with ESA and MSA specimens and lack organic and cultural remains. As a result, these materials are generally of low scientific value.

The bulk of archaic human (ESA) and human (MSA to recent) occupation of this area involves the Stone Age era, and therefore, the most significant cultural layer in this area

involves the pre-colonial cultural landscape and its sense of place (see UNESCO 2008 for definitions, significance and preservation of cultural landscapes).

4.2. Archaeological Foot Survey: AMDA Foxtrot PV Footprint & Access Road

A comprehensive archaeological foot survey of the affected areas (AMDA Foxtrot SEF PV area, on-site collector sub-station, access road and grid connection routes) was conducted over 5 days on14, 15, 18, 19 and 20April 2016. A total distance of 70km was walked, covering an area of about 210ha in extent (Figures6 & 7). Archaeological visibility was good with open vegetation providing an average of about60% of exposed ground surfaces that were open for inspection and assessment.A summary of finds, significance and recommendations is given in Table 2 below.

Isolated Stone Age Occurrences

A total of 7 isolated Stone Age stone artefacts were identified in the AMDA Foxtrot SEF PV area and these are all shown in Plates 6 & 7. Isolated specimens were most commonly found atop of calcrete exposures and among sparse gravels.A few specimens were identified within previously disturbed areas.Stone artefacts are marginally dominated by those of LSA origin while the remainder are of MSA age.Specimens are in quartzite and hornfels and include flakes and blades, many of which are retouched into scrapers and adzes. No other faunal, organic or cultural remains were seen in association with isolated specimens.

Significance and Recommendation

A very low density background scatter of isolated stone artefacts of Later Stone Age and Middle Stone Age origin wasidentified in the study area. These finds are not associated with any organic, faunalor other cultural remains. As a result, they are considered to be of low archaeological significance and aredesignated a field rating of Generally Protected C. Because they were adequately recorded during this study, it is suggested that no further investigation or workis needed before development commences. It is also recommended that, due to their low significance, a permit for their disturbance or destruction is not required from the heritage authorities.

Stone Age Pan Sites

Three pan sites with LSA and MSA materials were recorded in the AMDA Foxtrot SEF study area at waypoints 110, 111 and 118 (Figure 6 and Plates 8 through 13). The approximate extents of the sites including the surrounding stone artefact scatters are as follows: waypoint 110 is 1.4 ha, waypoint 111 is 9600 m^2 and waypoint 118 is 3200m^2. While varying in size, their contexts are identical, and therefore, the following description applies to all three. The pan centres are grassed and the surrounding vegetation has been altered through farming activities by the removal of young Camel thorn trees to stimulate the growth of grass for cattle grazing. There is no obvious evidence for clearing or ploughing in this part of the larger property. The depressions / pans are surrounded by calcrete rims that are exposed in places and include variable but generally sparse sub-angular gravels with calcrete nodules as well as finer sediments. The pan centres include mainly fine to silty sediments with occasional gravel. Stone artefacts are absent from pan centres and are found on exposed calcrete and sediment surfaces, and among gravels along the raised rims that surround the pans.

Stone artefact densities are low at waypoints 110 and 111 with usually an artefact every few meters to a few artefacts per square meter. No clusters of artefacts were noted and they are randomly distributed around the pans. Artefact densities are very low at waypoint 118 with isolated pieces distributed randomly around the pan.

The archaeological contents associated with the pans at waypoints 110 and 111 are very similar and include a mix of LSA and MSA stone artefacts in quartzite and hornfels with only a few pieces in other fine grained raw material like chert. MSA pieces are commonly more weathered and patinated than those of the LSA. No definitively Early Stone Age pieces were seen, but their presence cannot be ruled out entirely. If they are present, then it is more likely that they are part of the ephemeral background scatter of Stone Age materials rather than directly associated with the pans. LSA and MSA specimens include cores, flaked pieces, flakes, blades, chunks and chips (Plates 9, 11 & 12). Although no hammer stones were seen, they are likely to occur in low numbers. Retouched pieces are common, but are limited to a variety of scrapers and adzes, with the former being dominant. No other formal tools were seen and no other organic, faunal or cultural materials are present.

All pan sites identified in the larger study area include a mix of LSA and MSA materials. Apart from being a much smaller site with notably fewer stone artefacts, the pan at waypoint 118 is unusual because only specimens of MSA origin were seen. While they may be present, no pieces of definitively LSA origin were identified. All the stone artefacts at waypoint 118 are weathered and patinated and are dominated by pieces in quartzite, with very few pieces made in other fine raw materials such as hornfels or chert. Specimens at waypoint 118 include flaked pieces and flakes that are commonly retouched into scrapers and notched pieces (Plate 13). No hammer stones were seen and chunks and chips are also absent, which suggests that stone tools were not manufactured at this locality. No organic, faunal or other cultural materials are preserved at this site.

The dominance of scrapers suggests that people were processing and possibly tanning hides here from MSA through LSA times. Adzes are usually associated with removing bark and working wood and may be related to the manufacture of digging sticks, spears, bows, arrow shafts and other implements. The presence of the complete core reduction sequence at waypoints 110 and 111 suggests that formal tools were made on site. The presence of LSA and MSA material indicates that thesepanswere frequented by humans over tens of thousands of years due to the presence of water, and possibly other life forms associated with water sources.

Significance and Recommendation

While thepan sitesat waypoints 110 and 111contain temporally mixed Stone Age materials, the site at waypoint 118 appears to be exclusively Middle Stone Age. Although these sites do not preserve faunal, organic or other cultural materials, they are examples of human landscape use, in this case water sources,over immense periods of time. Thesesitesare considered to be of medium significance and are given a field rating of Grade IIIc. It is recommended that the areas around waypoints 110, 111 and 118 should be conserved in perpetuityas part of the National Estate and for potential future research. Temporary fences should be erected at these localities under the supervision of a suitably qualified and accredited archaeologist before construction commences to avoid damage or disturbance (see red polygons in Figure 6 and Plates8 & 10). The red polygonsalready allow for a buffer between archaeological resources and the surrounding environment. Management measures for these sites should be included in the Construction and Operational Environmental Management Plan for the development. This recommendation was accepted by the applicant and Figure 4 shows that the sites will not be impacted by the proposed development activities.

4.3. Archaeological Foot Survey: Grid Connection

A comprehensive archaeological foot survey of the grid connection corridor was conducted on 14 and 15 April 2016 (Figure 7). Archaeological visibility was good with open vegetation providing about 70% of exposed ground surfaces that were open for inspection and assessment. Examples of the affected environment along the grid connection corridor are shown in Plates 3through5.Apart from recent human related development described in Section 3.3 above, buildings are limited to a corrugated iron and wood structure about 2 km west of the Mookodi MTS sub-station. A summary of finds, significance and recommendations are given in Table 2 below.

Isolated Stone Age Occurrences

About 25 isolated Stone Age stone artefacts, including those in a small and ephemeralscatter were identified in the grid connection corridor and were mostly found in association with gravels. Nearly all of these are shown in Plates 14&15. Specimens include a mix of LSA, MSA and ESA pieces. Two small bifacially worked hand axes are of Fauresmith type while the remaining artefacts include cores, flaked pieces, a variety of flakes, blades and only one piece has scraper and adze retouch.Most artefacts are in quartzite with only a few made in chert and basalt. No faunal, organic or other cultural remains are associated with the isolated stone artefact occurrences.

Significance and Recommendation

A background scatter of isolated pieces and a very small and ephemeral scatter of Stone Age materialsof different ages wereidentified along the overhead power line corridor. Due to their low densities or isolation, temporally mixed nature as well as the absence of organic, faunal or other cultural remains, these heritage resources are considered to be of low archaeological significance and are designated a field rating of Generally Protected C. It is suggested that, because they were adequately recorded during this study, no further investigation or workis needed prior to development. Due to their low significance, it is recommended that a permit for their disturbance or destruction is not required from the heritage authorities.

Stone Age Pan Site

Alarge pan site of about 4.5 ha in extent is located at waypoints 87 and 89 (Figure 7 and Plates 16&17). The western extent of the site runs into Portion 7 of Klondike 670. The site consists of a moderate sized pan flanked by a calcrete and gravel rim that contains a low to medium density scatter of temporally mixed Stone Age stone artefacts. Artefact densities range from as low as one artefact every few meters to about 15 pieces per square meter. No artefacts, apart from modern debris, were found in the centre of the pan.

Stone Age stone artefacts include a mix of LSA and MSA pieces and no pieces of convincingly ESA origin were seen. Specimens include cores, flaked pieces, a hammer stone, flakes, convergent flakes,blades, chunks and chips. Formal tools are fairly rare and are dominated by scrapers, but a few adzes or notched pieces were also identified. Stone artefacts are most commonly in quartzite, but artefacts in chert, hornfels, quartz and possibly banded ironstone are also present. No faunal, organic or other cultural materials are preserved in association with the stone artefacts. This locality has been frequented by humans for tens of thousands of years due to the presence of water and other life forms associated with water sources.

The dominance of scrapers suggests that people were processing and possibly tanning hides here from MSA through LSA times. Adzes are usually associated with removing bark and working wood and may be related to the manufacture of spears, bows and arrow shafts. The presence of the complete core reduction sequence suggests that stone tools were made on site.

Significance and Recommendation

Although this site contains temporally mixed Stone Age materials and preserves no faunal, organic or other cultural materials, it is an example of humans re-using a water source over a very long period of time.This locality is considered to be of medium significance and is given a field rating of Grade IIIc. It is recommended that the area around waypoints 87 and 89 be conserved in perpetuityas part of the National Estate and for potential future research. A temporary fence should be erected around this site under the supervision of a suitably qualified and accredited archaeologist before construction commences to avoid damage or disturbance (see red polygon in Plate 16). The red polygon in Plate 16 already allows for a buffer between archaeological resources and the surrounding landscape. Management measures for this site should be included in the Construction and Operational Environmental Management Plan for the development. This recommendation was accepted by the applicant and Figure 3 shows that the proposed grid connection route will run to the west of the site.

Stone Age Quarry Sites Associated with Rocky Outcrops and Pans

Two extensive Stone Age quarry and occupation sites are associated with low ridges of rocky outcrops, including basalt, immediately west and NW of the Mookodi MTS sub-station (Figure 7 and Plates 18 through 22). The ridges provide a good vantage point that looks down over the surrounding landscape. The ground surface consists of *in situ* rocky outcrops and dense gravels that are sub-angular to rounded. The Leeuspruit River is situated about 2 km to the east and a large pan is situated immediately west of the low ridges, meaning that water was available in this area at least intermittently. The two sites are near continuous and include **waypoints 94 & 95** with an extent of some 7.3 ha, and **waypoints 96, 98 & 99** with an extent of about 10 ha (Plate 18).

Stone artefact densities are low on the surrounding less rocky low lying areas including the pan to the west, and increase as one walks up the ridge slopes where artefact densities are highest atop the ridges. At its highest, densities of stone artefacts are estimated at 30 to 50 pieces per square meter (see Plate 19). The presence of sub-surface archaeological material is evident from stone artefacts associated with sediments unearthed by large mammal burrowing in soft sediments immediately west of the rocky outcrops (Plate 20).

While stone artefacts are dominated by those of LSA origin, MSA material is common, but no pieces of definitive ESA were identified. Although ESA pieces occur in the surroundings of the Mookodi MTS sub-station, they are found on the lower ground rather than on the rocky ridges. LSA and MSA pieces represent the full core reduction sequence and include hammer stones, flaked / quarried in situ outcrops of basalt (Maarten De Wit pers. comm.), cores, flaked pieces, flakes, convergent flakes, blades (some with prepared striking platforms), chunks and chips. Although formal tools are rare, they are dominated by a variety of scrapers with notably fewer adzes or notched pieces. Most artefacts are in basalt, but quartzite is also common with fewer pieces in quartz. Only a few artefacts in other fine grained raw material such as chert were identified. No faunal, organic or other cultural remains are associated with the stone artefacts.

Rocky outcrops and water sources are commonly archaeologically sensitive, and in the case of the above sites we have both elements. The availability of raw materials for the production of stone tools and the presence of water was clearly attractive to people from as early as the MSA through to LSA times as reflected by the presence of their tools. Apart from the obvious quarrying of raw material for the production of stone tools, the presence of some formal tools suggests that people occupied this locality due to the minimally intermittent presence of water. Water sources are also attractive to other animals and may have offered an opportunity to gain access to animal products. The presence of scrapers and adzes suggest that people were processing hides and working with wood for the production of tools or hunting equipment respectively.

Significance and Recommendation

Although these archaeological resources are temporally mixed and consist only of stone artefacts, their context and content provide an important example of landscape use through deep time. Consequently, these sites are considered to be of medium significance and given a field rating of Grade IIIc. It is recommended that the areas around waypoints 94 & 95 as well as waypoints 96, 98 & 99 be conserved in perpetuity as part of the National Estate and for potential future research. Temporary fences should be erected around these sites under the supervision of a suitably qualified and accredited archaeologist before construction commences to avoid damage or disturbance (see red polygons in Plate 18). The red polygons in Plate 18 already allow for a buffer between archaeological resource and the surrounding landscape.Protective and management measures for this site should be included in the Construction and Operational Environmental Management Plan for the development. This recommendation was accepted by the applicant and Figure 3 shows that the revised grid connection route will run through the gap between the two sites. Given that pylons for the overhead power line can be placed several hundred meters apart, the grid connection can straddle these sites without any negative impact. Due to the presence of sub-surface archaeological resources, it is recommended that the placement of pylons should be supervised by a suitably qualified and accredited archaeologist.

Table 2. Summary of archaeological occurrences and sites identified in the AMDA Foxtrot SEF PV area, Collector Sub-Station and corridors for the proposed Grid Connection and Access Road routes. (Wpnt = waypoint number, Signif= Significance, med = medium, C&OEMP = Construction & Operational Environmental Management Plan.)

Wpnt	Development Zone	Coordinates WGS 84 Decimal Degrees	Description	Signif	Management or Mitigation
none	AMDA Foxtrot, Access Road, Collector SS, Grid Connection	Occur throughout study area, but more common among exposed gravels	Very low density scatter of mostly isolated and temporally mixed Stone Age stone artefacts	low	none
87 & 89	Grid Connection	Centred on S26.99171° E24.70376°	Pan site with LSA & MSA of 4.6 ha in extent	med	Conserve, enclose with fence for construction, include in C&OEMP

Wpnt	Development Zone	Coordinates WGS 84 Decimal Degrees	Description	Signif	Management or Mitigation
94 & 95	Grid Connection	Centred on S27.00739° E24.73964°	Quarry and Pan site with LSA & MSA of 7.3 ha in extent	med	Conserve, enclose with fence for construction, include in C&OEMP
96, 98 & 99	Grid Connection	Centred on S27.01074° E24.73853°	Quarry and Pan site with LSA & MSA of 10 ha in extent	med	Conserve, enclose with fence for construction, include in C&OEMP
110	AMDA Foxtrot	Centred on S27.00895° E24.64824°	Pan site with LSA & MSA of 1.4 ha in extent	med	Conserve, enclose with fence for construction, include in C&OEMP
111	AMDA Foxtrot	Centred onS26.99907° E24.63803°	Pan site with LSA & MSA of 9600 m^2 in extent	med	Conserve, enclose with fence for construction, include in C&OEMP
118	AMDA Foxtrot	Centred onS27.00589° E24.65609°	Small pan site with MSA of 3200 m^2 in extent	med	Conserve, enclose with fence for construction, include in C&OEMP

5. Sources of Risk, Impact Identification and Assessment

Because archaeological resources are non-renewable and each archaeological occurrence is unique, it is important that areas affected by development are assessed for the presence and sensitivity of such resources prior to development. The proposed AMDA Foxtrot SEF and associated on-site collector sub-station,grid connection and access road will involve area and linear developments respectively and these could have a permanent negative impact on archaeological resources. This study has shown that archaeological resources do occur in the affected environment. The purpose of this AIA is to assess the sensitivity of archaeological resources in the affected areas, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts on sensitive resources through management and/or mitigation measures.

Direct negative impacts on archaeological resources will occur during the construction and installation phase of the proposed development. Indirect and cumulative impacts will occur during the operational phase of the development and as a result of other potential future developments in the surrounding area.

Isolated Stone Age Occurrences

While a very ephemeral background scatter of temporally mixed Stone Age stone artefacts were identified in the study areas, these are considered to be of low significance and require no further investigation or mitigation. Their disturbance or destruction will not have a negative impact on the heritage value of the area.Aside from the area near the Mookodi MTS sub-station, no archaeological resources were seen in animal burrows, so it is unlikely that significant archaeological sites are currently buried beneath surface sediments.

Stone Age Pan Sites

Although the LSA and MSA pan sites at waypoints 110, 111 & 118 and at waypoints 87 & 89 contain temporally mixed Stone Age materials and preserve no faunal, organic or other cultural materials, they are examples of human landscape use. In all cases, humans were re-using water sources over a very long period of time. It is recommended that the sites be conserved in perpetuityas part of the National Estate and for potential future research. Management measures for these sites should be included in the Construction and Operational Environmental Management Plan for the development. These sitesare avoided by the revised development layout plans.

Stone Age Quarry Sites Associated with Rocky Outcrops and Pans

Rocky outcrops and water sources are commonly archaeologically sensitive, and in the case of the sites at waypoints 94 & 95 and waypoints 96, 98 & 99, both elements are present. Although these archaeological resources are temporally mixed and consist only of stone artefacts, their context and content provide an important example of landscape use through deep time. Consequently, these sites are considered to be of medium significance and should be conserved in perpetuity as part of the National Estate and for potential future research. Management measures for these sites should be included in the Construction and Operational Environmental Management Plan for the development. Given that pylons for the overhead power line can be placed several hundred meters apart, the grid connection can straddle these sites without any negative impact. Due to the presence of sub-surface archaeological resources, it is recommended that the placement of pylons should be supervised by a suitably qualified and accredited archaeologist. These sites are avoided by the revised development layout plans.

The below criteria for assessment are drawn from the EIA Regulations that were published in April 1998 by the South African Department of Environmental Affairs and Tourism (DEA&T 2010). The format of impact tables presented below was provided by Cape EAPrac.

The following focuses on the impact of the AMDA Foxtrot SEF and associated infrastructure, overhead power line (grid connection) route and access road on identified archaeological resources that will not be conserved in perpetuity and that are not avoided by the revised development layout plans (see Table 3 below).

Nature of Impact

The construction and installation phase of the development as outlined in Section 3.1 above will involve considerable disturbance to surface sediments and modest disturbance to sub-surface sediments. Such activities will have a significant and permanent negative impact on archaeological resources identified in the study area. However, representative samples of the archaeological record in the study area will be protected and conserved. The operational phase, long term and cumulativedevelopments will have a negligible impact on archaeological resources.

Extent of Impact

The impact will be local, confined to the 268 ha development footprintand lease area, power line route and access road. Becausea representative sample of the archaeological record will be conserved, the impact will not change the heritage value of the immediate and surrounding environment (local, provincial or national).

Duration of Impact

Long term to permanent.

Intensity

High (only high for construction phase of PV area and access road - remainder will be low).

Probability of Occurrence

Definite

Legal Requirements

While archaeological resources identified during this assessment are protected by Section 35(4)(a) of the National Heritage Resources Act (Act 25 of 1999), which states that "No person may, without a permit issued by the responsible heritage resourcesauthoritydestroy, damage, excavate, alter, deface or otherwise disturb any archaeologicalor palaeontological site or any meteorite", it is suggested that, given the conservation of a representative sample of the archaeological record and due to the low significance of the remaining archaeological resources (and because they have been adequately documented during the study presented here), a permit for destruction is not required from the heritage authorities.

Status of the Impact

Positive for both archaeological resources and the development.

Accumulative Impact

Because a representative sample of the archaeological record in the study area will be conserved and the remainder is considered to be of low significance; and because it has been adequately recorded during this investigation, it is considered that the cumulative impact of the proposed development as well as potential future developments in the area will be negligible. This negative impact is graded as low.

Provided that the recommendations made in this report are accepted and implemented, the development of all three proposed solar facilities in the larger study area will have a low cumulative impact on the heritage resources of the region.

Degree of Confidence in Prediction

High

In the event of the **No-Go Option:**

Nature of Impact

In the absence of development, the continued farming activities (grazing of domestic stock) and natural erosion and disturbance by burrowing animals will have a slow negative impact on the archaeological record.

Extent of Impact
Local, existing and continued.

Duration of Impact
Continual.

Intensity
low.

Probability of Occurrence
medium.

Legal Requirements
none.

Status of the Impact
Neutral.

Accumulative Impact
Low, existing and continual.

Degree of Confidence in Prediction
Medium.

Table 3. Summary of impacts on archaeological resources associated with the AMDA Foxtrot SEF (AMDA Foxtrot), 132kV overhead power line (power lines), access road and the No-Go option (NO-GO) that will not be conserved and that are not avoided by the revised development layout plans.

Alternative	Nature of impact	Extent of impact	Duration of impact	Intensity	Probability of occurrence	Status of the impact	Accumulative Impact	Degree of confidence	Level of significance	Significance after mitigation
AMDA Foxtrot	Construction & Installation	Local	Long term to permanent	High	Definite	Positive for archaeological resources; positive for development	Low	High	Low	Low
AMDA Foxtrot	Operational	Local	Long term to permanent	Low	Low	Neutral	Low	High	Low	Low
Power lines	Construction & Installation	Local	Long term to permanent	Medium	Low to medium	Negligibly negative	Low	High	Low	Low
Power lines	Operational	Local	Long term to permanent	Low	Low	Neutral	Low	High	Low	Low
Access road	Construction	Local	Long term to permanent	High	Definite	Negligibly negative	Low	High	Low	Low
Access road	Operational	Local	Long term to permanent	Low	Low	Neutral	Low	High	Low	Low
NO-GO	Farming activities	Local	Long term to permanent	Low	Low to medium	Neutral	Low	Medium	Low	Low

6. Conclusions and Recommendations

The proposed AMDA Foxtrot SEF and associated on-site collector sub-station, grid connection and access road will involve area and linear developments respectively and these could have a permanent negative impact on archaeological resources. Direct negative impacts on archaeological resources will occur during the construction and installation phase of the proposed development. Indirect and cumulative impacts will occur during the operational phase of the development and as a result of other potential future developments in the surrounding area.

Previous heritage related work in the surrounding environment shows that archaeological resources are most commonly clustered around rivers and river valleys, existing and ancient drainage lines, pans, and ridges with rocky outcrops, and that heritage resources are generally absent from flatlands that are some distance from existing or ancient water sources. The bulk of the archaeological record is of the Stone Age, and based on the receiving environment, it was expected that mainly Stone Age resources would be encountered.

A very low density background scatter of isolated stone artefacts of the different Stone Age periods was identified in the study area, sometimes in previously disturbed contexts. These finds are not associated with any organic, faunal or other cultural remains. As a result, these heritage resources are considered to be of low archaeological significance. Because they were adequately recorded during this study, it is suggested that no further investigation or workis needed before development commences. Due to their low significance, a permit for their disturbance or destruction is not required from the heritage authorities, and their destruction will not detract from the heritage value of the area.

Four pan sites with associated LSA and MSA stone artefacts are situated at waypoints 110, 111, 118 and at waypoints 87 & 89. Although these sites contain temporally mixed LSA and MSA materials and preserve no faunal, organic or other cultural materials, they are examples of human landscape use and the likely intermittent re-occupation of a water source over great expanses of time. These pan sites also represent specific prehistoric human activities associated with water sources. These localities are considered to be of medium significance. It is recommended that the areas around these sites should be conserved in perpetuity as part of the National Estate and for potential future research. This recommendation was accepted by the applicant and the revised development layout plans show that the sites will not be impacted by the proposed development.

Rocky outcrops and water sources are often archaeologically sensitive, and in the case of the LSA & MSA pan and quarry sites at waypoints 94 & 95 and waypoints 96, 98 & 99, both elements are present. Although these archaeological resources are temporally mixed and consist only of stone artefacts, their context and content provide an important example of landscape and resource use through deep time. Consequently, these sites are considered to be of medium significance andit is recommended that the areas around waypoints 94 & 95 as well as waypoints 96, 98 & 99 be conserved in perpetuity as part of the National Estate and for potential future research. This recommendation was accepted by the applicant and the revised grid connection route will run through the gap between the two sites. Given that pylons for the overhead power line can be placed several hundred meters apart, the grid connection can straddle these sites without any negative impact.

The proposed development will involve construction and installation activities that will have a permanent negative impact on archaeological resources identified in this study. However, a representative sample of the archaeological resources will be conserved and the

remainder are considered to be of low significance, and therefore, their destruction will not have a negative impact on the heritage value of the area.

From an archaeological perspective, provided that these recommendations are considered and/or implemented, there are no fatal flaws, and therefore, there are no objections to the authorization of the proposed development of the AMDA Foxtrot SEF and associated on-site collector sub-station,overhead power line grid connection and access road. The positive impact of the development is that it will allow for the conservation of archaeological resources that may otherwise have been overlooked or destroyed.

Summary of Recommended Mitigation Measures;

- Six archaeological sites identified in the studied area were selected for protection and conservation in perpetuity as part of the National Estate and for potential future research. These include the fourLSA & MSA pan sites at waypoints 110, 111, 118 and at waypoints 87 & 89; and the two LSA & MSA quarry and pan sites at waypoints 94 & 95 and waypoints 96, 98 & 99. Temporary fences should be erected around these sites in the presence of a suitably qualified and accredited archaeologist prior to the construction phase of development to ensure that they are not damaged or destroyed. The recommended placements of these fences are indicated with red polygons in Figures 6 and 7 and Plates 8, 10, 16 and 18, which already allow for a buffer between archaeological resources and the surrounding landscape.Pylon locations in the vicinity of the quarry and pan sites should also be selected in the presence of a suitably qualified and accredited archaeologist so as to avoid areas with known sub-surface archaeological materials. Protective andmanagement measures for the four sites should be included in the Construction and Operational Environmental Management Plan for the development. The revised development layout plans show that the above six sites are already avoided and will not be directly impacted by the proposed development activities.
- Because the presence of sub-surface archaeological resources cannot be ruled out entirely, it is recommended that the Environmental Management Plan for the construction phase of development makes provision for archaeological training of the appointed Environmental Control Officer (ECO). This will allow for the ECO to recognise archaeological remains if they are exposed during construction, and to alert the authorities or a suitably accredited archaeologist, who should be called to site to assess the finds and to determine mitigation measures if necessary. Such work will be at the expense of the developer.

Required Mitigation Measures;

- In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately. Such resources must be handled in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer.
- In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer.

7.References

Almond, J. and Pether, J. 2009. SAHRA Palaeotechnical Report (March 2009): Palaeontological Heritage of the Northern Cape.

Birkholtz, P. 2014. Heritage Impact Assessment: Proposed Construction of a Photovoltaic Power Station and Associated Infrastructure on the Farm Brakfontein 879 HN between Taung and Reivilo in the North West Province.

DEA&DP, 2005. Guidelines for Involving Specialists in EIA Processes.

DEA&T. 2010. Government Gazette, 24 February 2010 No. 32970, General Notice 162 of 2010, Department of Environmental Affairs & Tourism, National Environmental Management Act, 1998 (Act No 107 of 1998) National Guidelines of Environmental Impact Assessments.

Dreyer, C. 2008. Archaeological and Culture Historical Investigation of the Proposed Upgrading of the Dithakwaneng (D3462) – N14 Road between Vryburg and Kuruman, Northern Cape.

Hutten, M. 2012. Heritage Impact Assessment for the Proposed Carocraft Solar Park East of Vryburg, North West Province.

Hutten, M. 2015. Heritage Impact Assessment for the Proposed Extended Carocraft Solar Park East of Vryburg, North West Province.

Heritage Western Cape Council, 2016. Guide for Minimum Standards for Archaeology and Palaeontology Reports Submitted to Heritage Western Cape.

Kruger, N. 2013. Archaeological Impact Assessment (AIA) of a Demarcated Surface Portion on the Farm Kangkatjes 919 HN for the Proposed Vidigenix Photovoltaic Power Plant and Power Line Development, Greater Taung Local Municipality, Northwest Province.

Kruger, N. 2014. Archaeological Impact Assessment (AIA) for the Proposed 88 kV or 132 kV Power Line for the Connection of the Carocraft Solar Park to the Eskom Bophirima Substation, Naledi Local Municipality, North West Province.

Küsel, U.S. 2015. Phase I Cultural Heritage Resources Impact Assessment for the Vaalharts Irrigation Project Canal Ganspan – Pampierstad – Jan Kempdorp – Hartswater and Taung North West Province and Northern Cape Province.

Küsel, U.S.and Küsel, U.S.2015. Phase II Cultural Heritage Resources Impact Assessment for the Vaalharts Irrigation Project Canal North West Province with Phase 2 Documentation for the North Canal.

Nilssen, P. 2016. Scoping Archaeological Impact Assessment: Proposed development of the AMDA FOXTROT PV (Solar Energy Facility) on Remaining Extent Klondike No 670, and Overhead Power Line Grid Connection to the Mookodi MTS Sub-Station across Remainder of Erf 506 and Remainder of the Farm Rosendal 673, Vryburg, Registration Division, North West Province

SAHRA APM, 2007. Guidelines: Minimum Standards for Archaeological & Palaeontological Components of Impact Assessment Reports.

UNESCO, 2008. Operational guidelines for the implementation of the World Heritage Convention, 2008.

van der Walt, J. 2014. Archaeological Impact Assessment for the Proposed Tiger Kloof Photovoltaic Solar Energy Facility near Vryburg, North West Province.

van der Walt, J. 2015. Archaeological Scoping Report for the Proposed Woodhouse Solar 1 and Woodhouse Solar 2 PV Facilities close to Vryburg, North West Province.

van Schalkwyk, J 1996. A survey of Cultural Resources in the Proposed Janetsi Dam Site, Letaba River.

van Schalkwyk, J 2008. Heritage Impact Survey Report for the Proposed 400/132 kV Vryburg Substation and Loop In Lines, North West Province.

van Schalkwyk, J. 2011. Heritage Impact Assessment for the Proposed Development of Photovoltaic Power Plants on Five Different Locations in North West and Northern Cape Provinces.

van Schalkwyk, J. 2012. Heritage Impact Assessment for the Proposed Development of Photovoltaic Power Plants on Four Different Locations in North West and Northern Cape Provinces.

van Schalkwyk, J 2014. Basic Heritage Assessment for the Proposed Mookodi 132 kV Phase 2 Power Lines Development, North West Province.

8. Figures and Plates (on following pages)

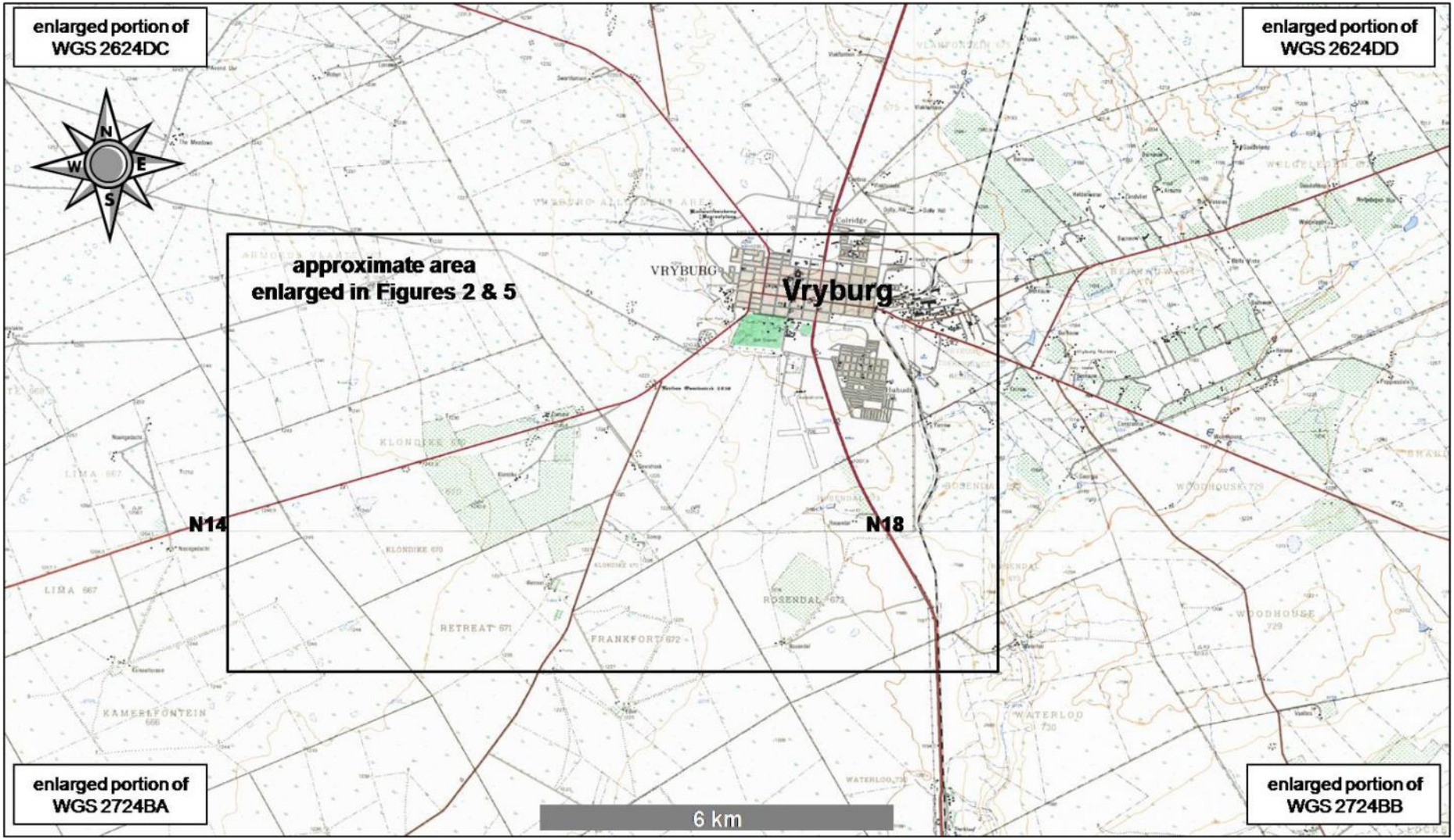

Figure 1. General location of study area relativetoVryburg, North West Province. Relevant 1:50 000 maps are 2624DC, 2624DD, 2724BA&2724BB(courtesy of Chief Directorate, Surveys & Mapping, Mowbray).

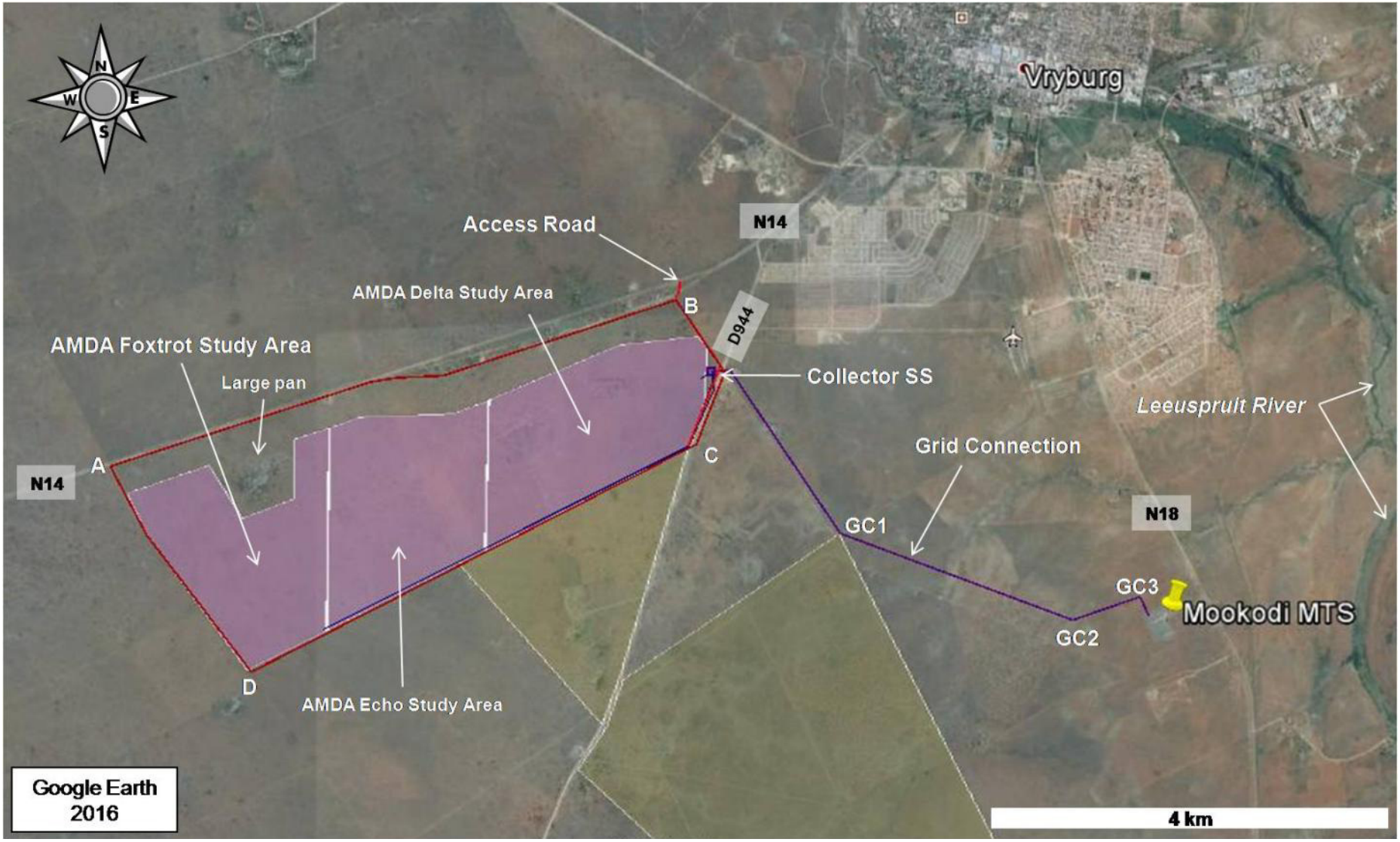

Figure 2. Provisional development layout showing development lease, footprint & study areas, access road and grid connection route. Coordinates for boundary points, access road, grid connection andsub-stations are given in Table 1.

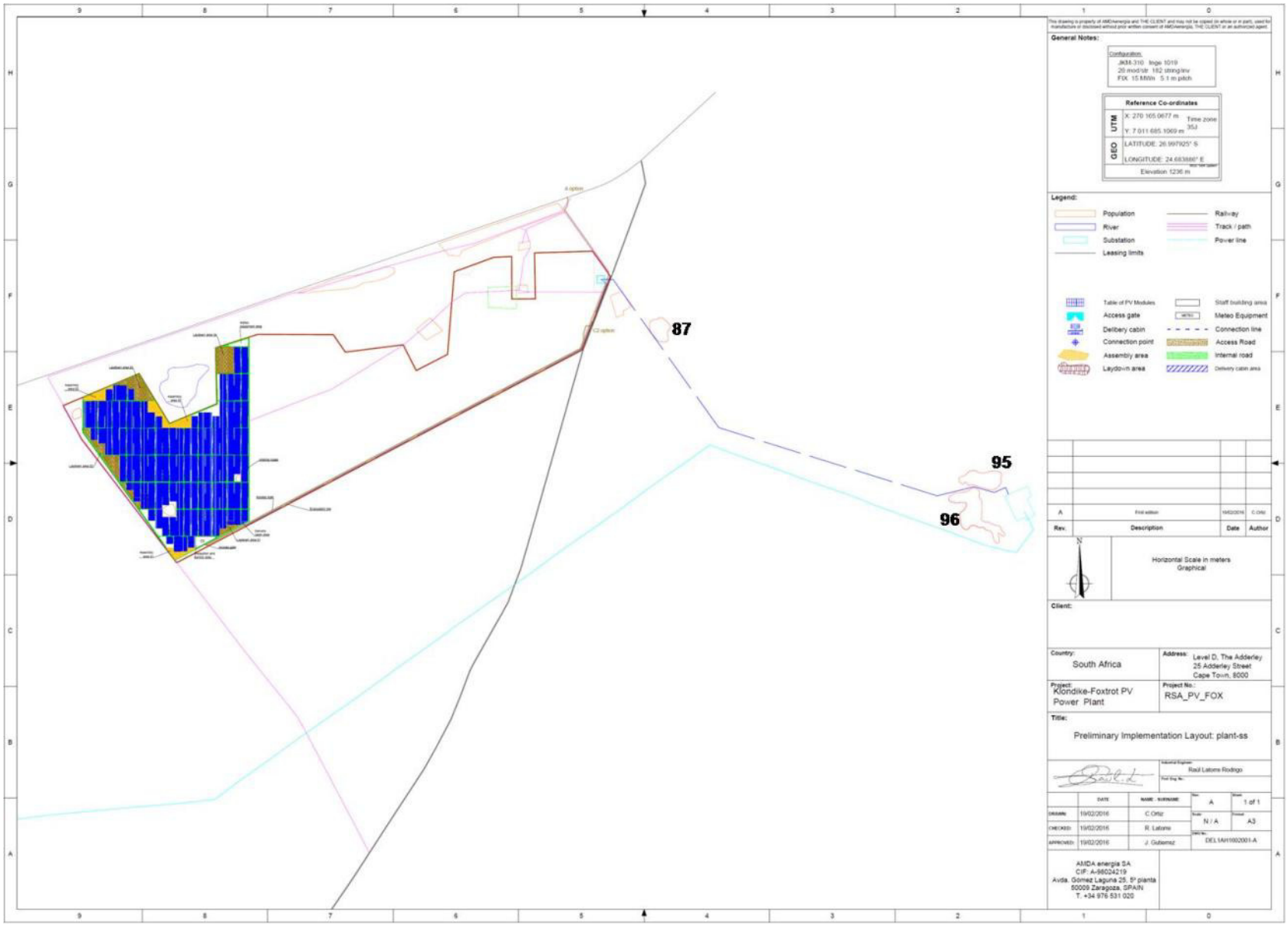

Figure 3. Revised development layout plan for AMDA Foxtrot SEF and Grid Connection (courtesy of the applicant). Note that sites selected for conservation are avoided.

Figure 4.Revised development layout plan for AMDA Foxtrot SEF (courtesy of the applicant). Coordinates for FA through FD are given in Table 1. Note that LSA & MSA pan sitesare avoided.

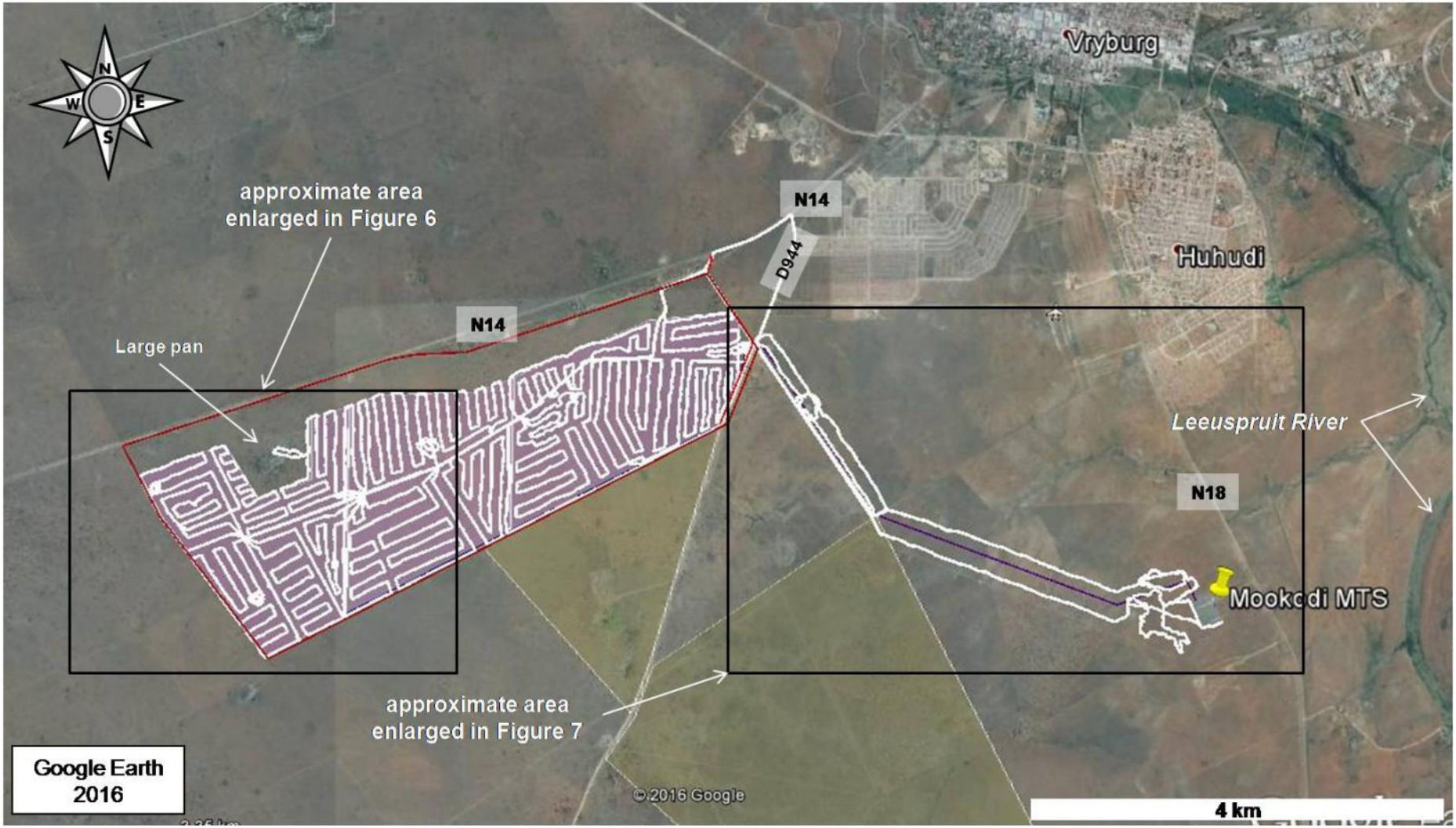

Figure 5. Provisional development layout showing development footprint & study areas and grid connection route (purple). Archaeological survey walk tracks are indicated with white lines.

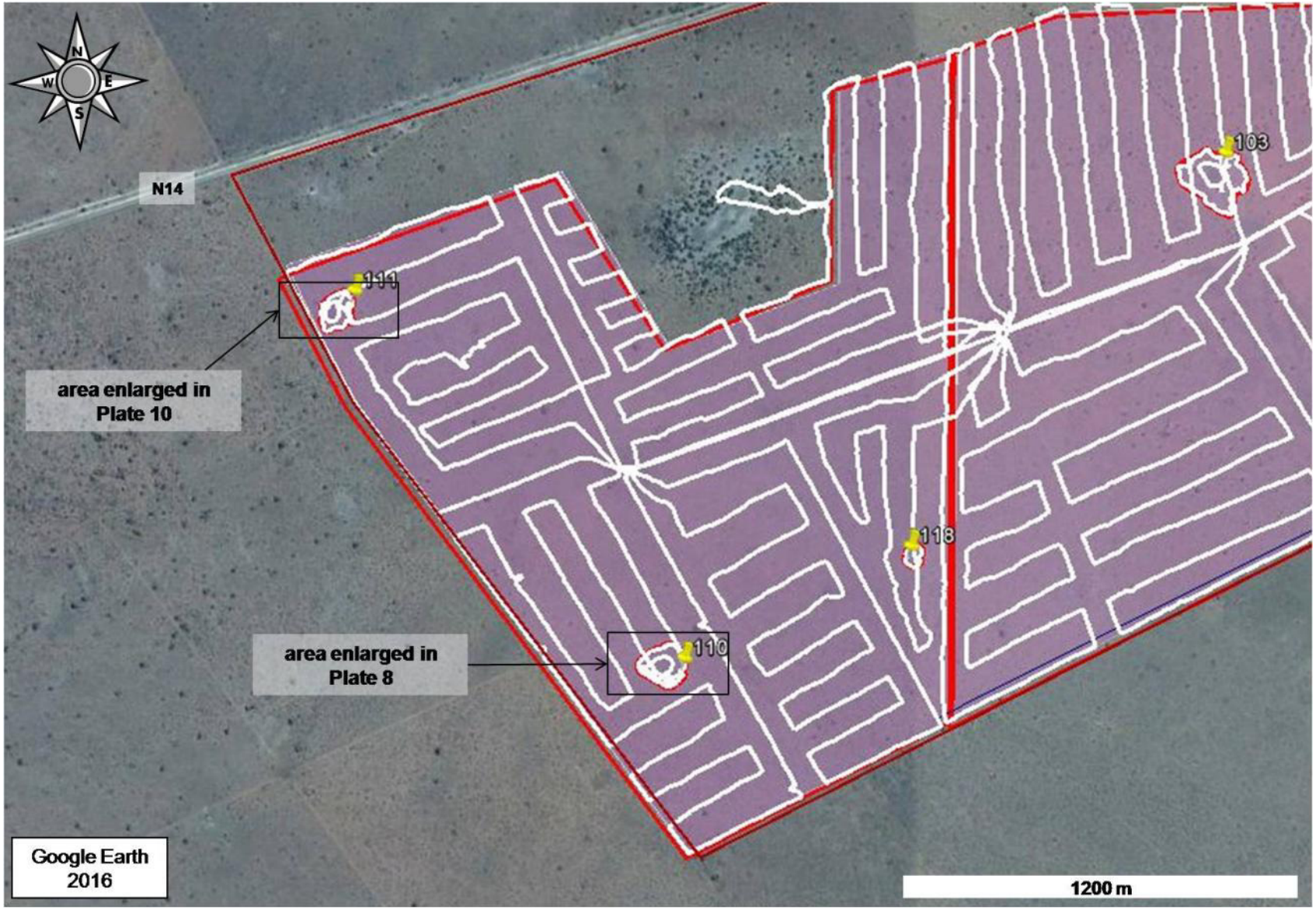

Figure 6. Area enlarged from Figure 5 showing archaeological survey walk tracks (white lines) and archaeological sites (labelled red polygons). Red polygonsat waypoints 110, 111 and 118 outline areas selected for conservation.

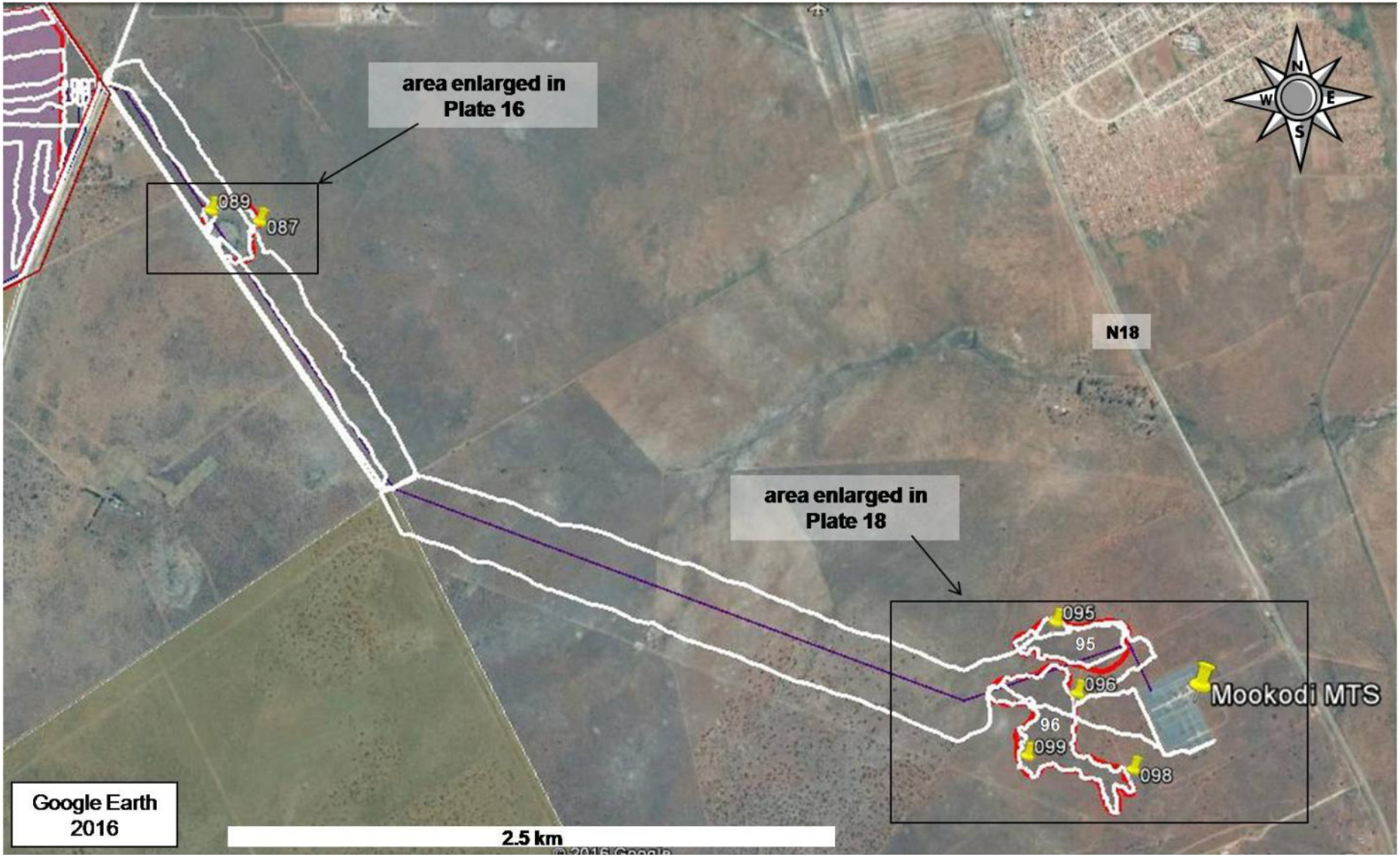

Figure 7. Area enlarged from Figure 5 showing archaeological survey walk tracks (white lines) and archaeological sites (labelled red polygons). Red polygons at waypoints 87&89, waypoint 95 and waypoints 96, 98 & 99 indicate areas selected for conservation.

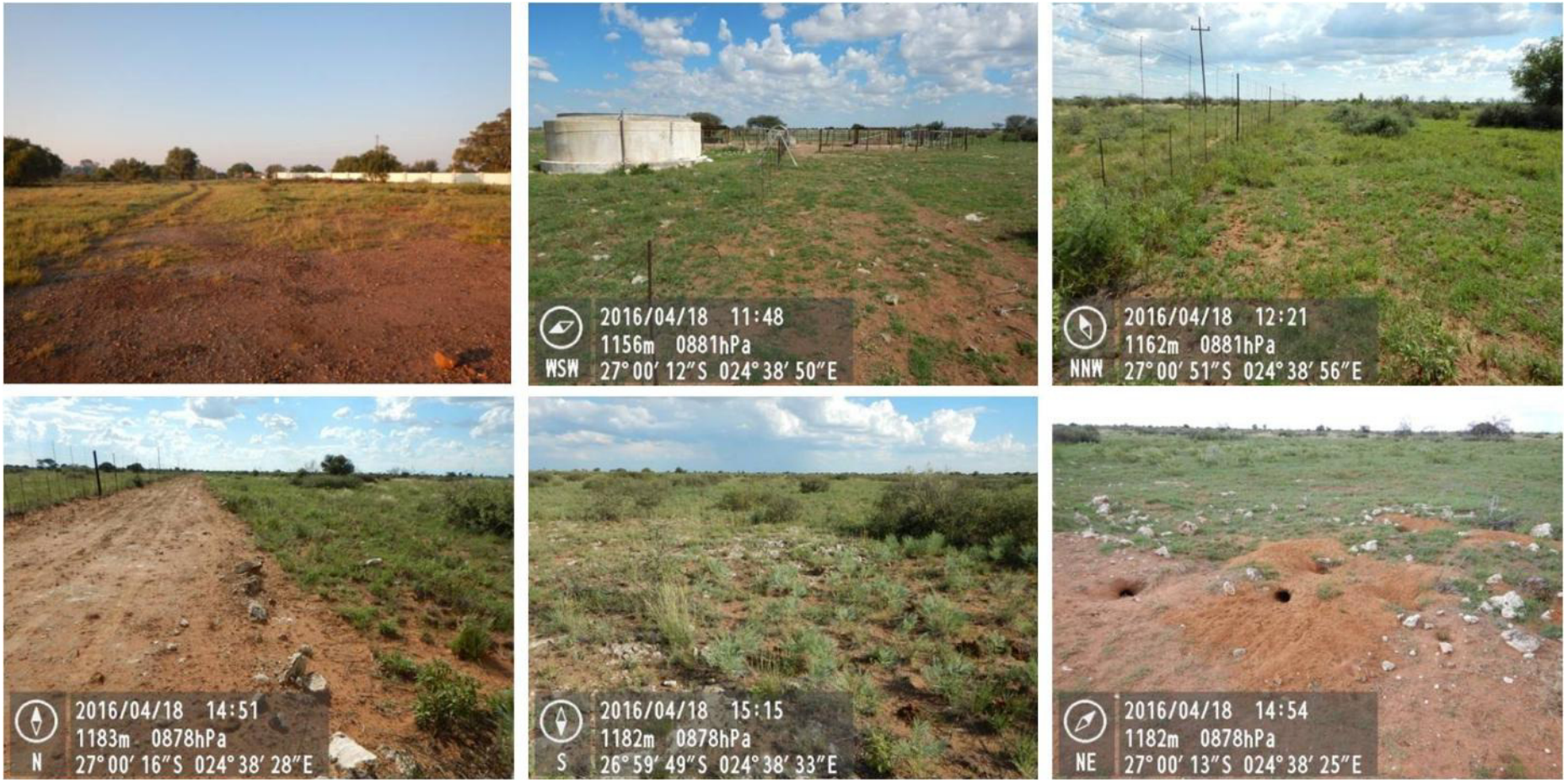

Plate 1. Examples of the affected environment of the AMDA Foxtrot SEF study areas showing area for access road (top left), flat terrain, low and generally open vegetation, cleared and exposed ground surfaces, gravels, farming activities (dams, fencing, vehicle tracks), calcrete exposures and animal burrows.

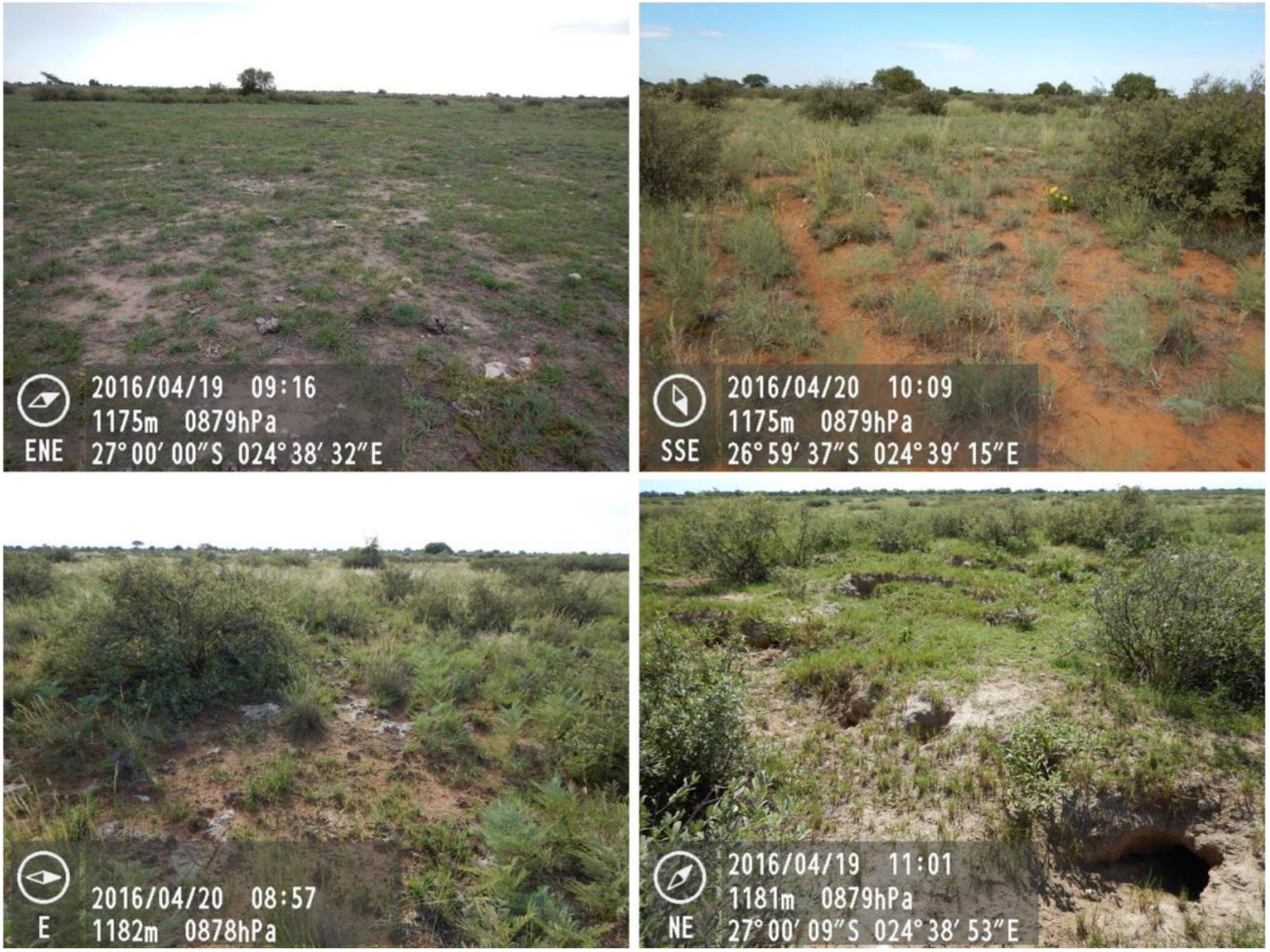

Plate 2. Examples of the affected environment of the AMDA Foxtrot SEF study area showing flat terrain, open vegetation due to clearing of Camel thorn trees,calcrete exposures, exposed ground surfaces and large mammal burrows.

Plate 3. Examples of the affected environment along the overhead power line grid connection route showing flat terrain, mainly low and open vegetation with occasional trees, exposed ground surfaces and gravels, recent earthmoving activities (top right), single vehicle gravel tracks, overhead power lines and fencing.

Plate 4. Examples of the affected environment along the overhead power line grid connection route showing flat terrain, mostly low and open vegetation, exposed gravels and bedded calcrete, fencing and roads, animal burrows, single vehicle gravel track and overhead power lines.

Plate 5. Examples of the affected environment along the overhead power line grid connection route showing flat terrain, single vehicle gravel track, corrugated iron and wood structure, exposed gravels and pan near Mookodi MTS sub-station (top right), rocky outcrop and exposed gravels (top right and bottom left) adjacent to the Mookodi MTS sub-station and the Mookodi MTS sub-station (bottom middle and right).

Plate 6. Examples of isolated Stone Age stone artefacts from the AMDA Foxtrot study area including weathered and patinatedflake in quartzite of minimally MSA age, but possibly ESA age (top left) and retouched pieces including scrapers and adzes in hornfels and chert.

Plate 7. Examples of isolated stone artefacts including a scraper in quartzite (top) and adze in weathered hornfels (bottom). Top specimen may be LSA or MSA while the lower piece is MSA with possible LSA retouch.

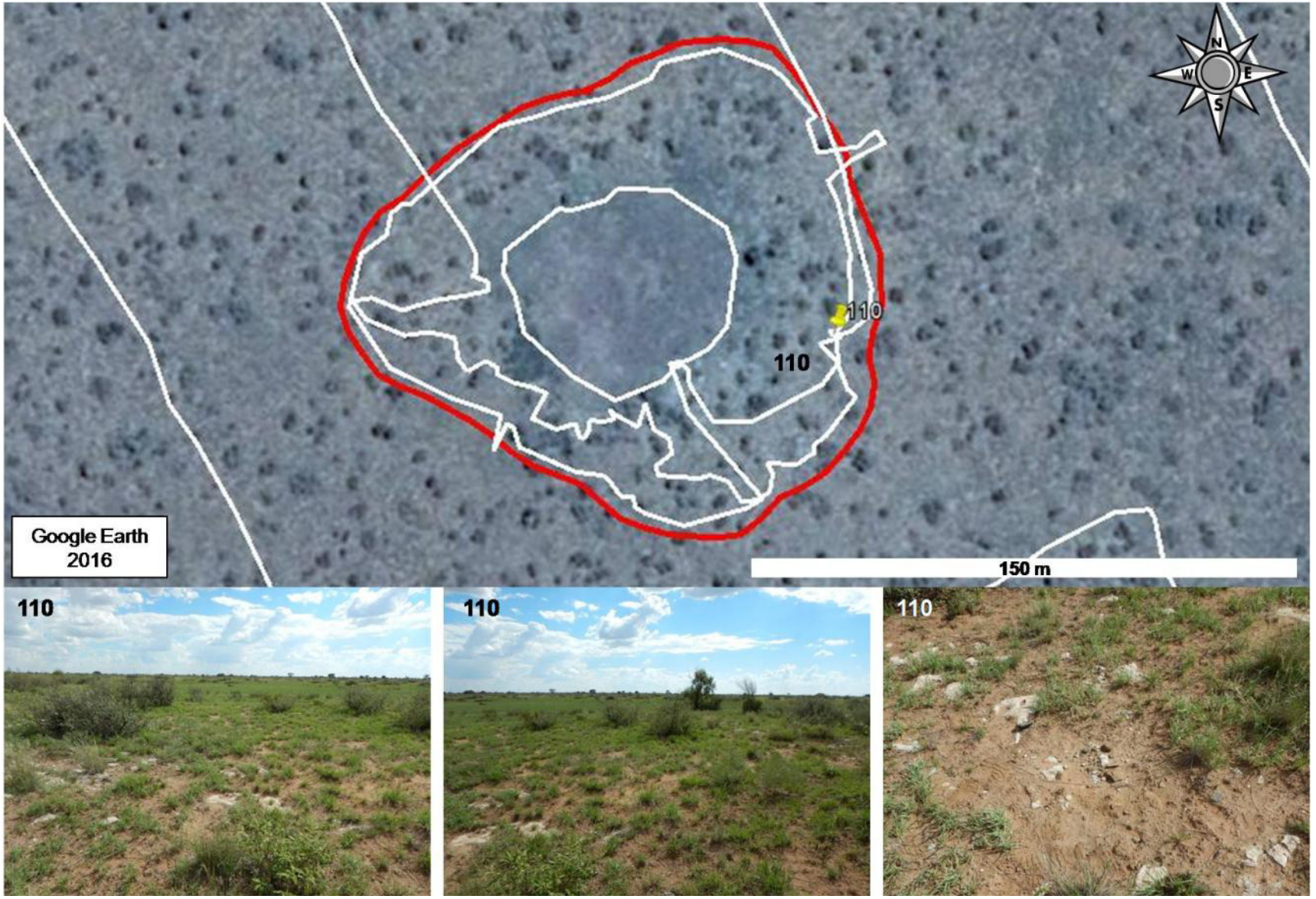

Plate 8. Aerial view of the LSA & MSA pan site at waypoint 110 showing survey walk tracks (white lines) andrecommended area for conservation (red polygon). Lower images show context of the site with grassed centre, bushy / grassy surrounds and exposures of calcrete rim around pan.

Plate 9. Examples of MSA and LSA specimens at waypoint 110; showing cores, flakes, a blade, scrapers and adzes including some thumbnail scrapers. Artefacts are in quartzite and hornfels and possibly chert.

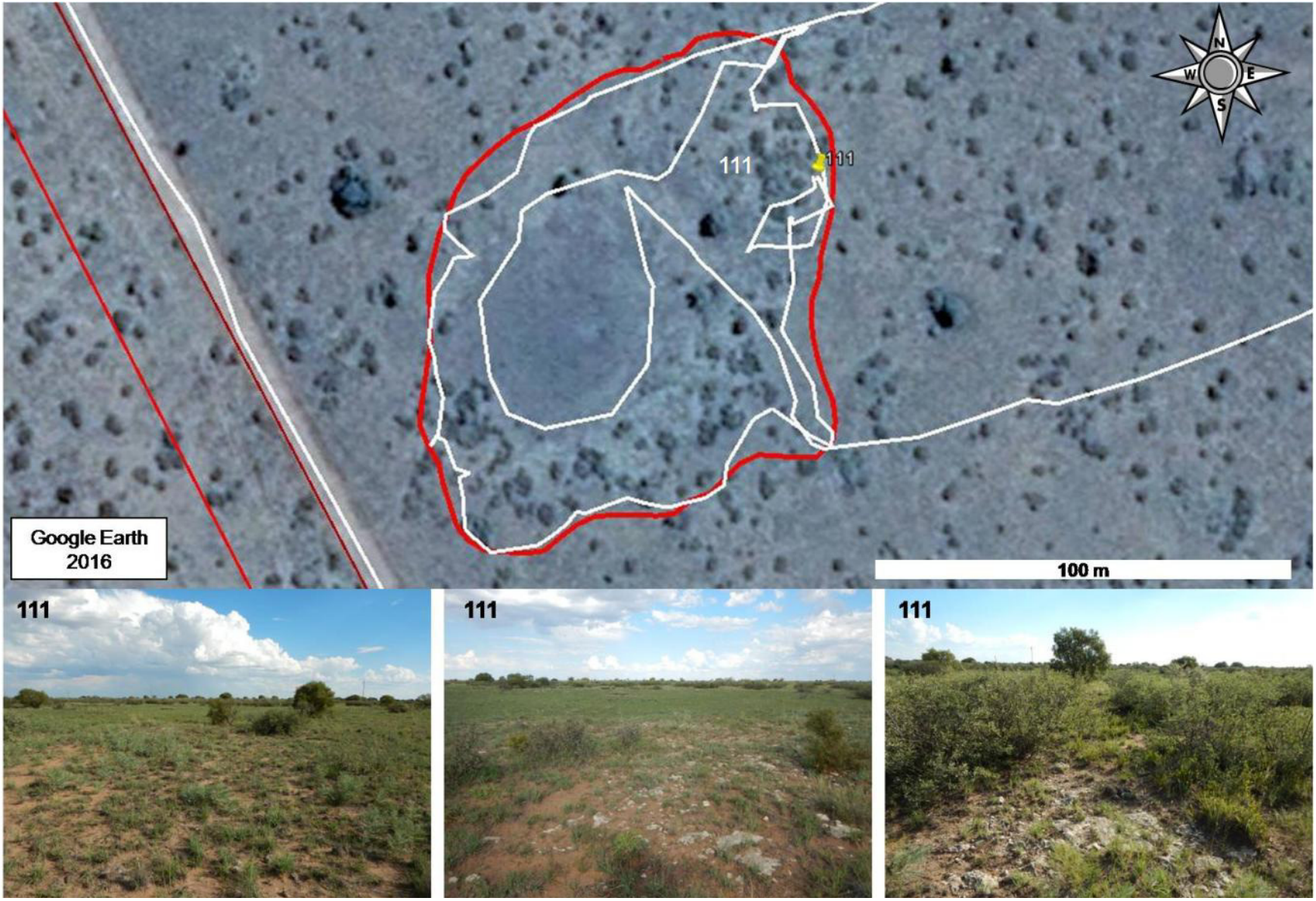

Plate 10. Aerial view of the LSA & MSA pan site at waypoint 111 showing survey walk tracks (white lines) and recommended area for conservation (red polygon). Lower images show context of the site with grassed centre, bushy / grassy surrounds and exposures of calcrete rim around pan.

Plate 11. Examples of LSA & MSA artefacts at waypoint 111 showing flakes and retouched pieces including scrapers and adzes in hornfels and basalt or chert. Note tiny LSA scrapers and adzes.

Plate 12. Examples of stone artefacts from pan site at waypoint 111 including a small scrapers in hornfels and chert (top and bottom left) and large weathered and patinated MSA flake in quartzite (bottom middle) and MSA disc core in quartzite (bottom right).

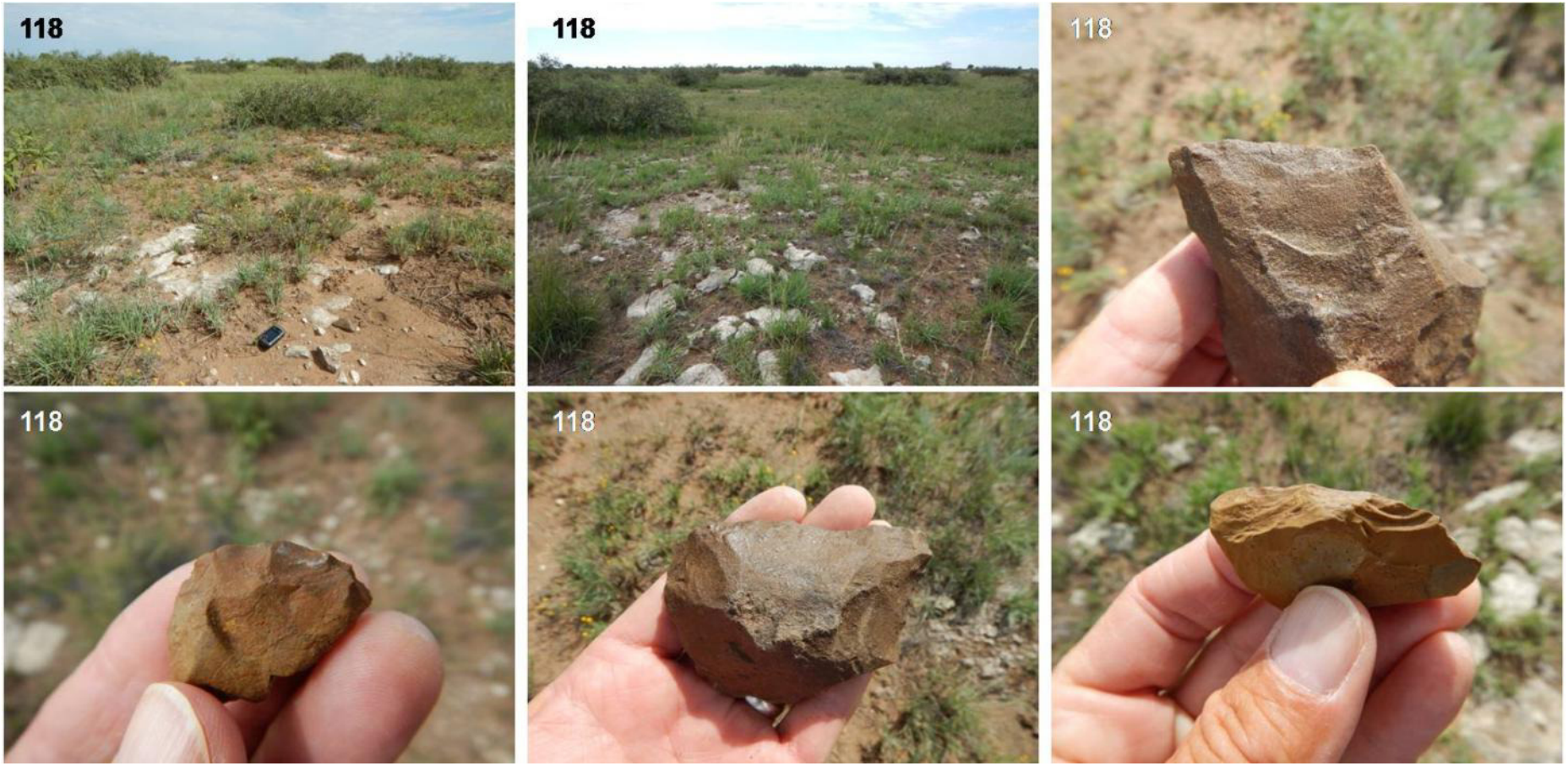

Plate 13. Context (top left and middle), and examples of MSA pieces from the pan at waypoint 118 showing retouched pieces including scrapers and notched pieces in quartzite and weathered hornfels.

Plate 14. Examples of isolated Stone Age stone artefacts identified along the grid connection corridorincluding a flaked piece and flake in quartzite (top left and middle, likely MSA), heavily weathered and patinated piece of basalt that is bifacially work and of likely late ESA or Fauresmith age (top right), a large MSA blade in weathered and patinated quartzite (bottom left) and a single platform core in hornfels or fine quartzite of LSA age (bottom middle and right).

Plate 15. Examples of isolated Stone Age stone artefacts along the grid connection corridor showing a heavily weathered and patinated piece in quartzite that is bifacially worked and of either late ESA or Fauresmith age (note that this specimen has calcrete adhering to the one side,top left), a flaked piece of quartzite of likely MSA age (top middle), an adze or notched LSA tool in hornfels (top right), a quartzite flake with scraper retouch (bottom left), a collection of MSA and LSA pieces from a small very low density scatter (middle) and a small bifacial hand axe in weathered and patinated quartzite. Scale in cm.

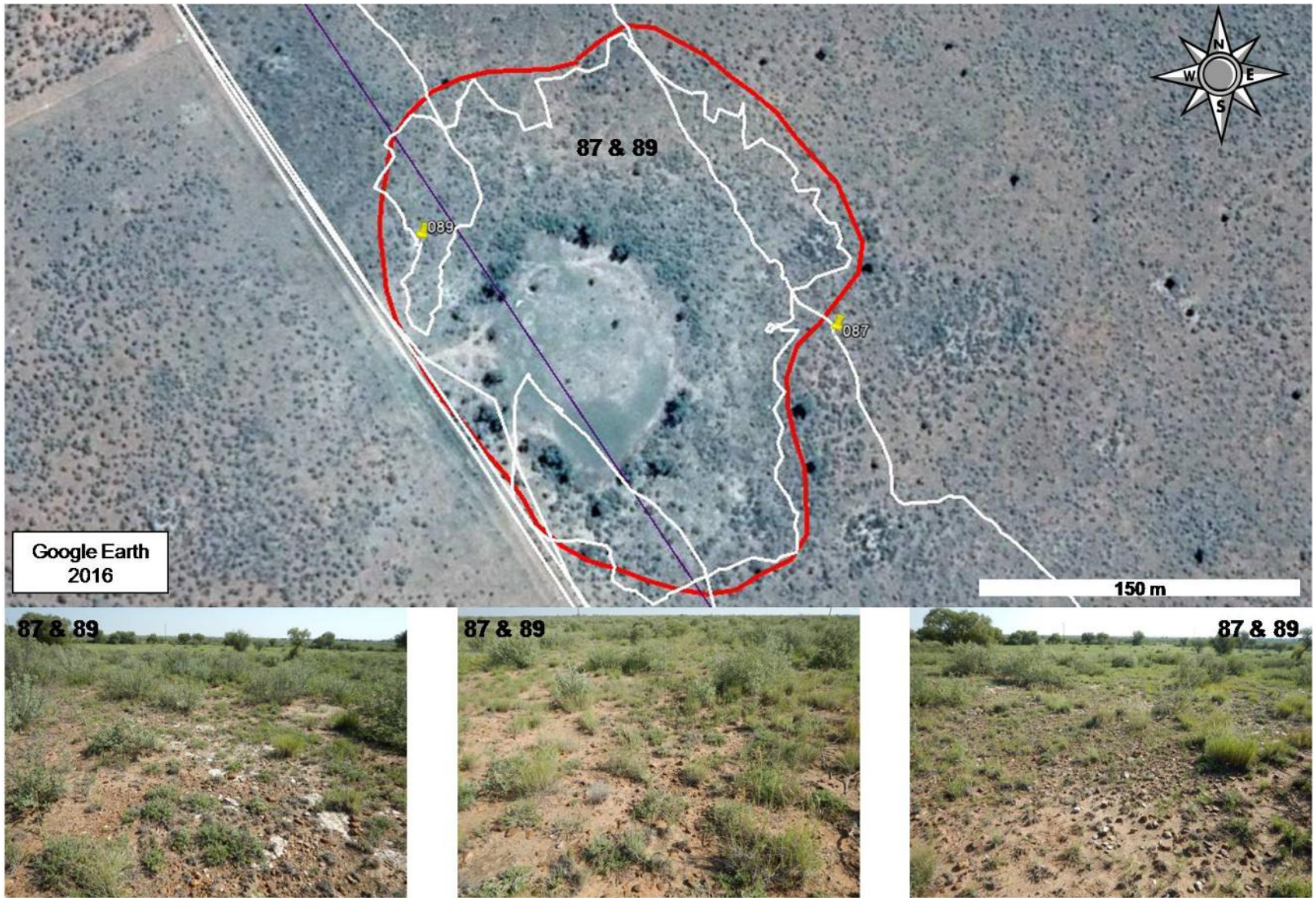

Plate 16. Top shows aerial view of the LSA & MSA pan site at waypoints 87 & 89. Lower images show the context in the immediate vicinity of the pan including rim of trees, grass and exposed surfaces of gravel and bedded calcrete where stone artefacts are located. The red polygon is the suggested placement of a temporary fence and area for conservation.

Plate 17. Examples of LSA and MSA stone artefacts around the pan at waypoints 87 & 89 includingcores, flaked pieces, a hammer stone, flakes, convergent flakes, blades, chunks and chips. Formal tools are dominated by scrapers (top middle and bottom right), but a few adzes or notched pieces were also identified. Stone artefacts are most commonly in quartzite, but artefacts in chert, hornfels, quartz and possibly banded ironstone are also present. Scale is in cm.

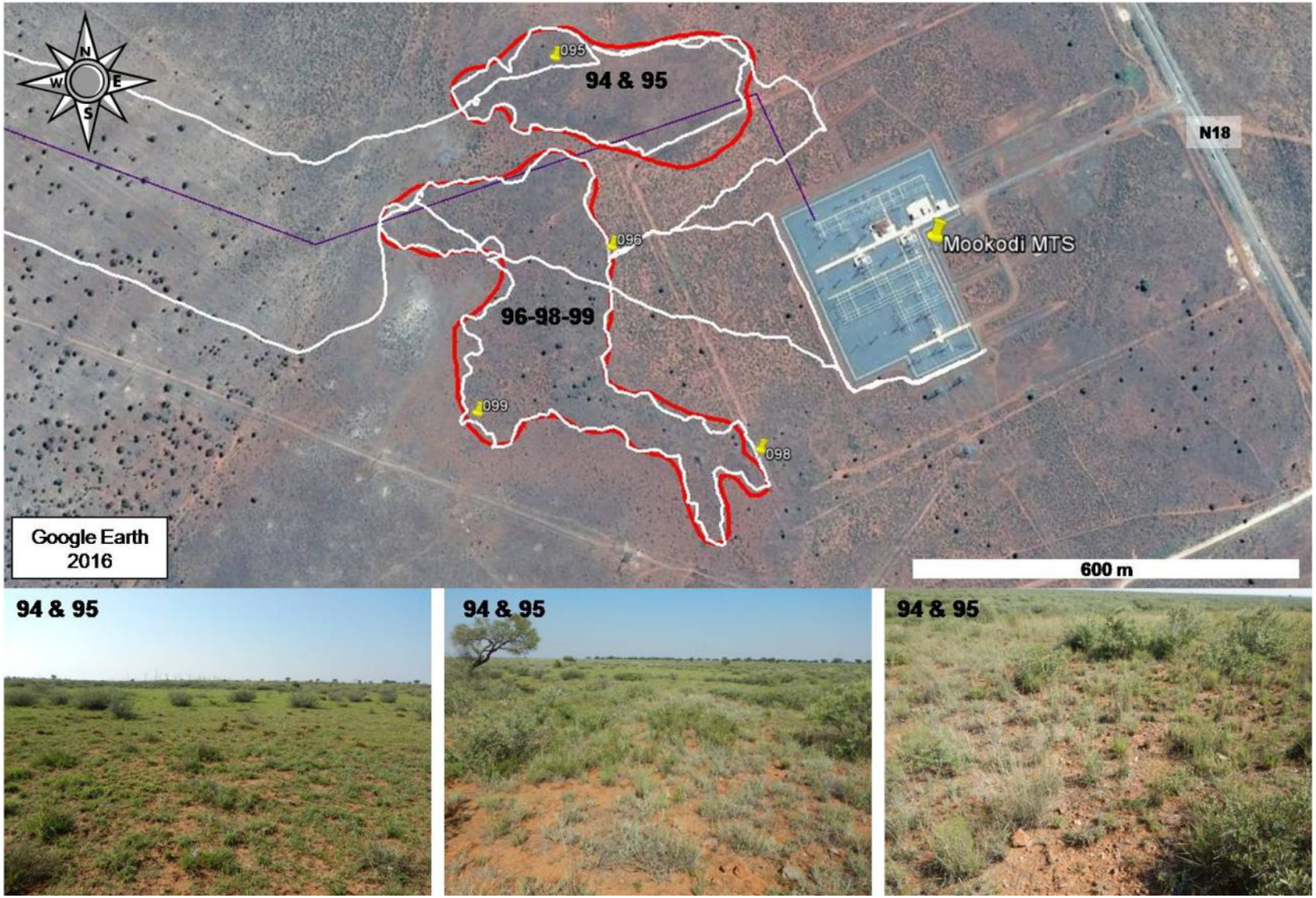

Plate 18. Top shows an aerial view of the LSA and MSA quarry and pan sites at waypoints 94 & 95 and waypoints 96, 98 & 99. Lower images show the context in the immediate vicinity of the pan west of waypoints 94 & 95 including grass, a prominent old tree and exposed rocky outcrops and gravel surfaces where stone artefacts are located. Red polygons are the suggested placements of temporary fences for protection and conservation.

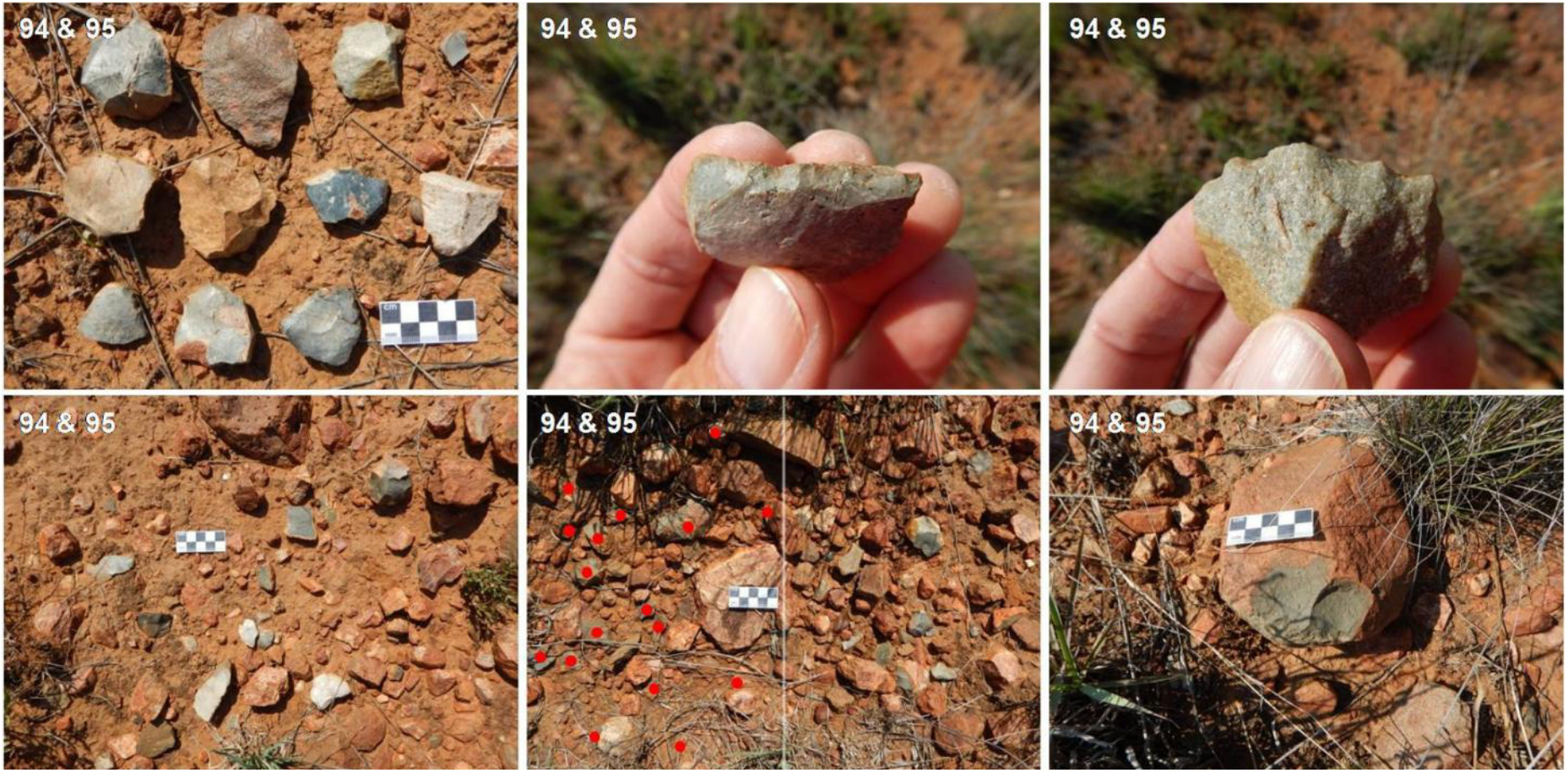

Plate 19. Examples of LSA (dominant over MSA) and MSA stone artefacts around the pan at waypoints 87 & 89 including hammer stones, flaked / quarried in situ outcrops of basalt, cores, flaked pieces, flakes, convergent flakes, blades, chunks and chips. Formal tools are rare and dominated by scrapers (Top middle and right) with notably fewer adzes or notched pieces. Most artefacts are in basalt, but quartzite is also common with fewer pieces in quartz. Only a few artefacts in other fine grained raw material such as chert were identified. Red dots on artefacts in the left half of the bottom middle photograph give an impression of artefact densities near the top of the rocky ridges. Scale is in cm.

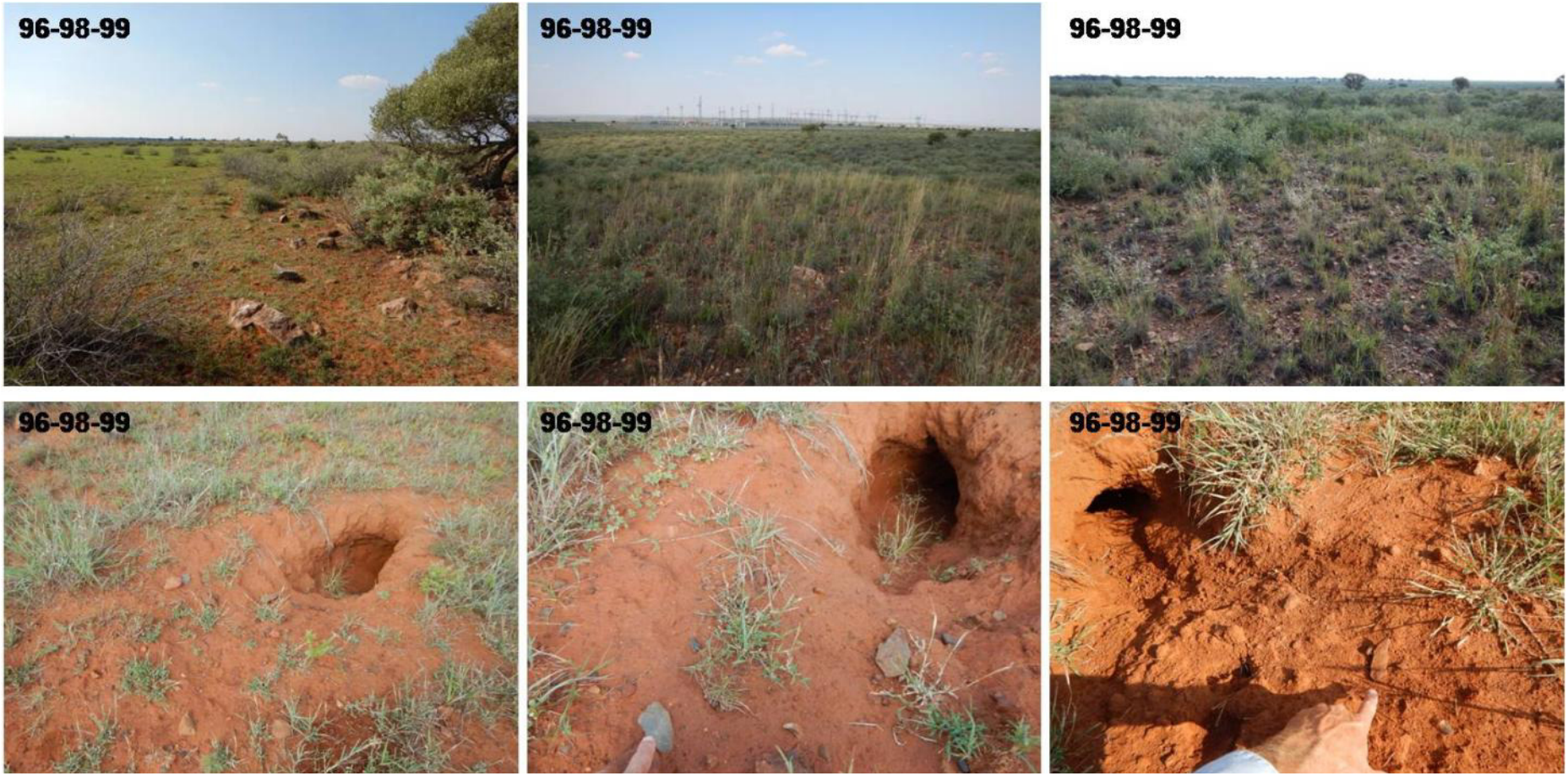

Plate 20. Top images show examples of the immediate surroundings of the quarry and pan site at waypoints 96, 98 & 99 including the grass lined pan to the west (left), view from atop ridge looking east toward the Mookodi MTS sub-station (middle) and exposed rocky outcrops and gravels where stone artefacts occur in medium to high densities (right). Bottom images show examples of stone artefacts being unearthed by burrowing animals, indicating that sub-surface archaeology is present in certain areas around the rocky ridges..

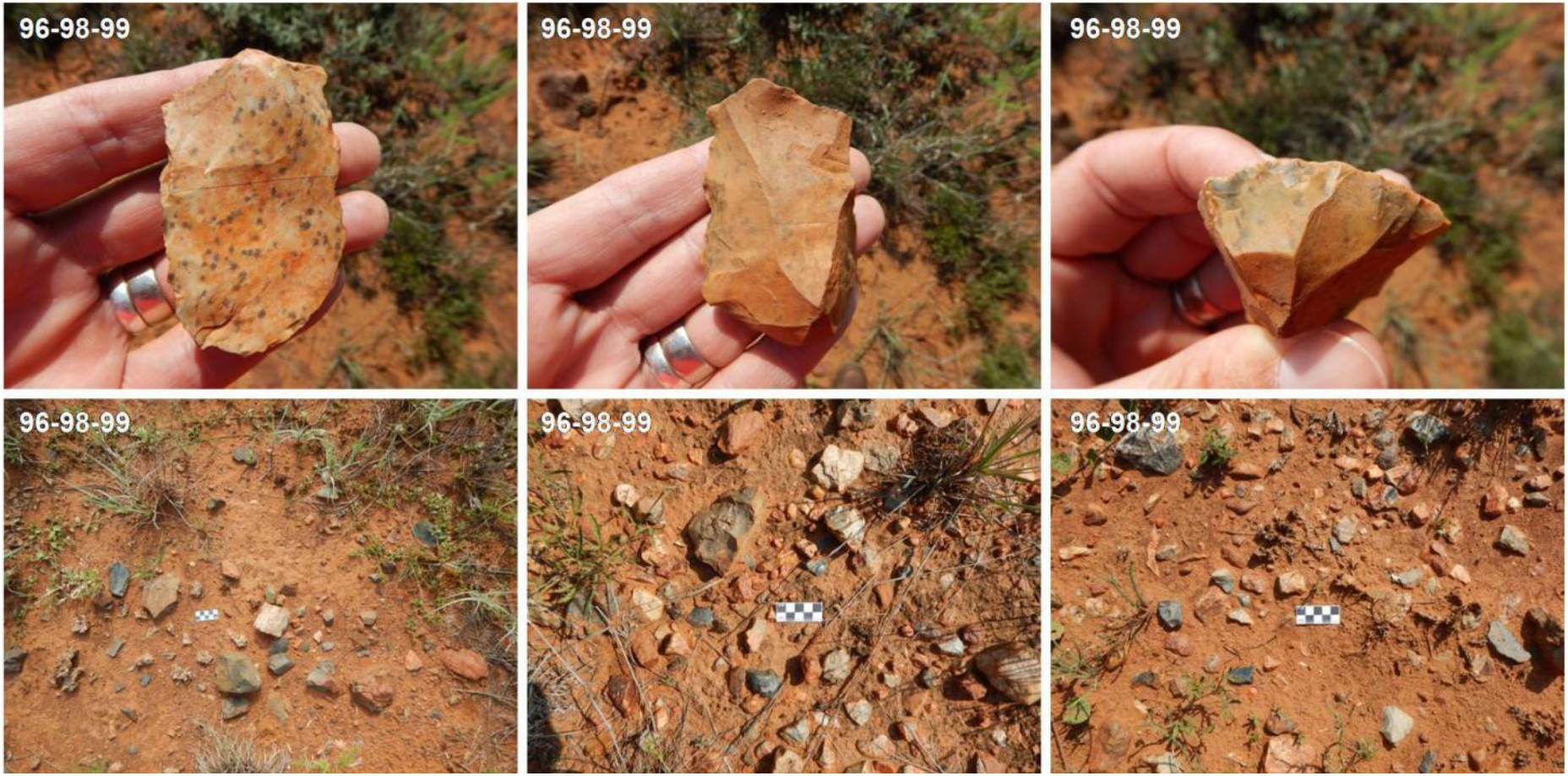

Plate 21. Top images show an example of a large end-side scraper in basalt that is of either LSA or MSA age. Bottom images show medium density stone artefact scatter at waypoints 96, 98 & 99 that include cores, flaked pieces, flakes, convergent flakes, blades, chunks and chips with the occasional scraper and adze. Here, artefacts are almost exclusively in basalt. Scale is in cm.

Plate 22. Further examples of the quarry and pan site at waypoints 96, 98 and 99 showing medium to high density scatter of mainly LSA stone artefacts (top left), a disc or radial core in quartzite (top left), basalt outcrop at prominent old tree and flaked or quarried in situ outcrop of basalt near tree (bottom right).

Appendix A

Legislation relevant to archaeology and palaeontology taken from the National Heritage Resources Act (Act 25 of 1999)

Archaeology, palaeontology and meteorites

35. (1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

(5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedure in terms of section 38 has been followed, it may—

(a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;

(b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;

(c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and

(d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

(6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or a meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

(7) (a) Within a period of two years from the commencement of this Act, any person in possession of any archaeological or palaeontological material or object or any meteorite which was acquired other than in terms of a permit issued in terms of this Act, equivalent provincial legislation or the National Monuments Act, 1969 (Act No. 28 of 1969), must lodge with the responsible heritage resources authority lists of such objects and other information prescribed by that authority. Any such object which is not listed within the prescribed period shall be deemed to have been recovered after the date on which this Act came into effect.

(b) Paragraph (a) does not apply to any public museum or university.

(c) The responsible authority may at its discretion, by notice in the Gazette or the Provincial Gazette, as the case may be, exempt any institution from the requirements of paragraph (a) subject to such conditions as may be specified in the notice, and may by similar notice withdraw or amend such exemption.

(8) An object or collection listed under subsection (7)—

(a) remains in the ownership of the possessor for the duration of his or her lifetime, and SAHRA must be notified who the successor is; and

(b) must be regularly monitored in accordance with regulations by the responsible heritage authority.

Legislation relevant to the proposed activity under consideration taken from the National Heritage Resources Act (Act 25 of 1999)

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000 m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.