

**HERITAGE SURVEY OF THE PROPOSED LANGA
SOLAR ENERGY FACILITY**

FOR COASTAL ENVIRONMENTAL SERVICES

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INTRODUCTION

Umlando was contracted by Coastal Environmental Services to undertake a Heritage Impact Assessment of a proposed Langa Energy (Pty) Ltd photovoltaic facility. The study area is situated in Berlin, between East London and King William's Town (fig. 1 – 3). The development falls under the Buffalo City Local Municipality in the Eastern Cape. The proposed Langa Solar Energy Facility will generate an estimated 100MW of electricity.

The land has been zoned for agricultural purposes and has been ploughed and/or left for grazing purposes. The total property, as well as the specific area for photovoltaic activity was surveyed. The terrain consists of mostly gentle slopes, wattle and blue gums along the western areas, and some industrial activities in the central and eastern areas (fig. 4). There are a few wetlands and rivers throughout the property.

The impacts on the land will be:

- Photovoltaic facility
- Underground cables

Road infrastructure already exists, and the cables will enter into the main substation to the west of Berlin along the N2.

In general, the photovoltaic area, and the eastern half of the total property, contains a sparse scatter of Late Stone Age and Middle Stone Age tools. The western half of the property consists of abandoned 20th century farm buildings and a few labourers' houses with a possible grave. There are no red flags for this proposal in terms of heritage sites.

FIG. 1 GENERAL LOCATION OF THE SUNTECH PHOTOVOLTAIC AREA

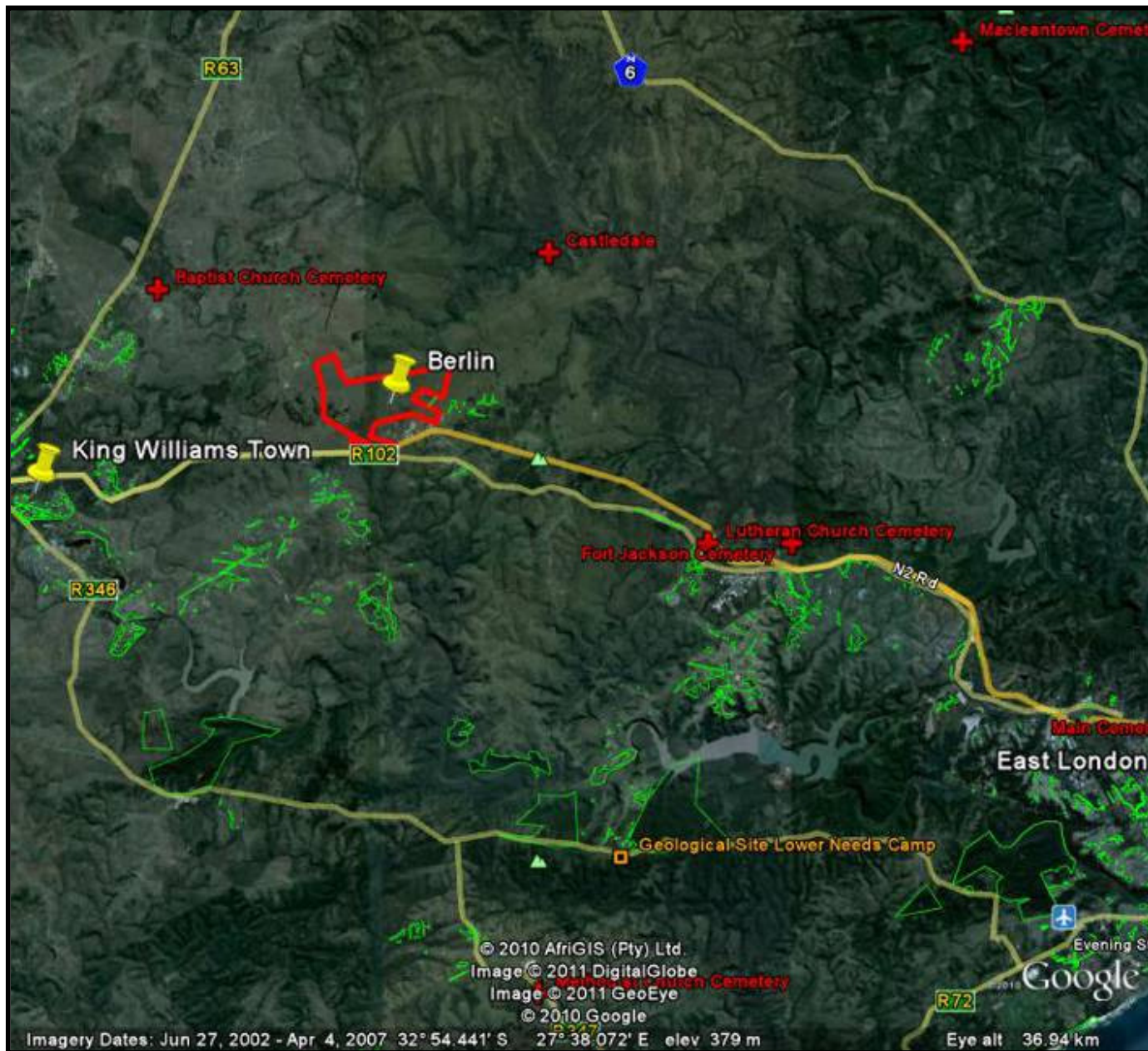


FIG. 2: AERIAL OVERVIEW OF THE SUNTECH PHOTOVOLTAIC AREA

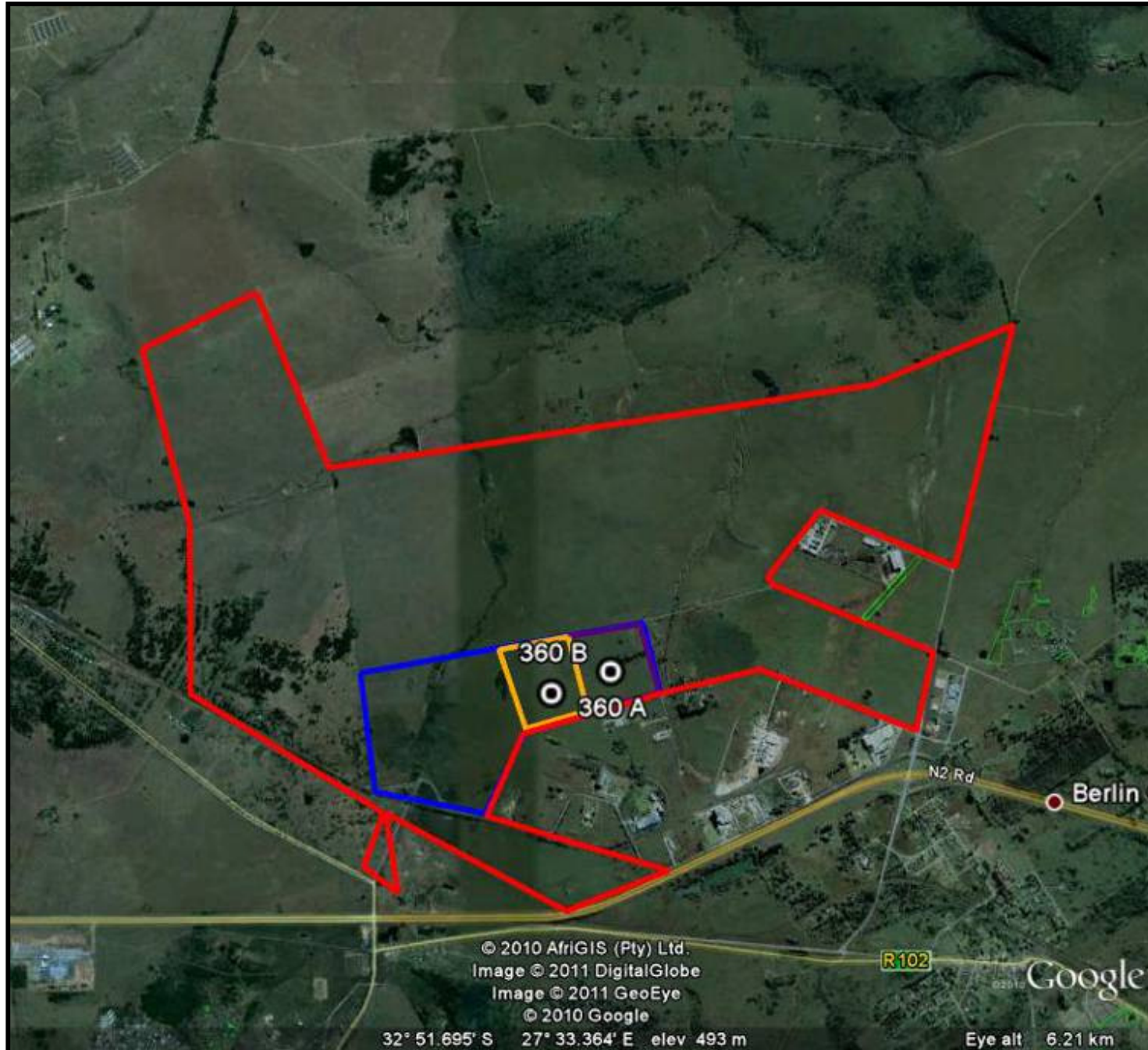
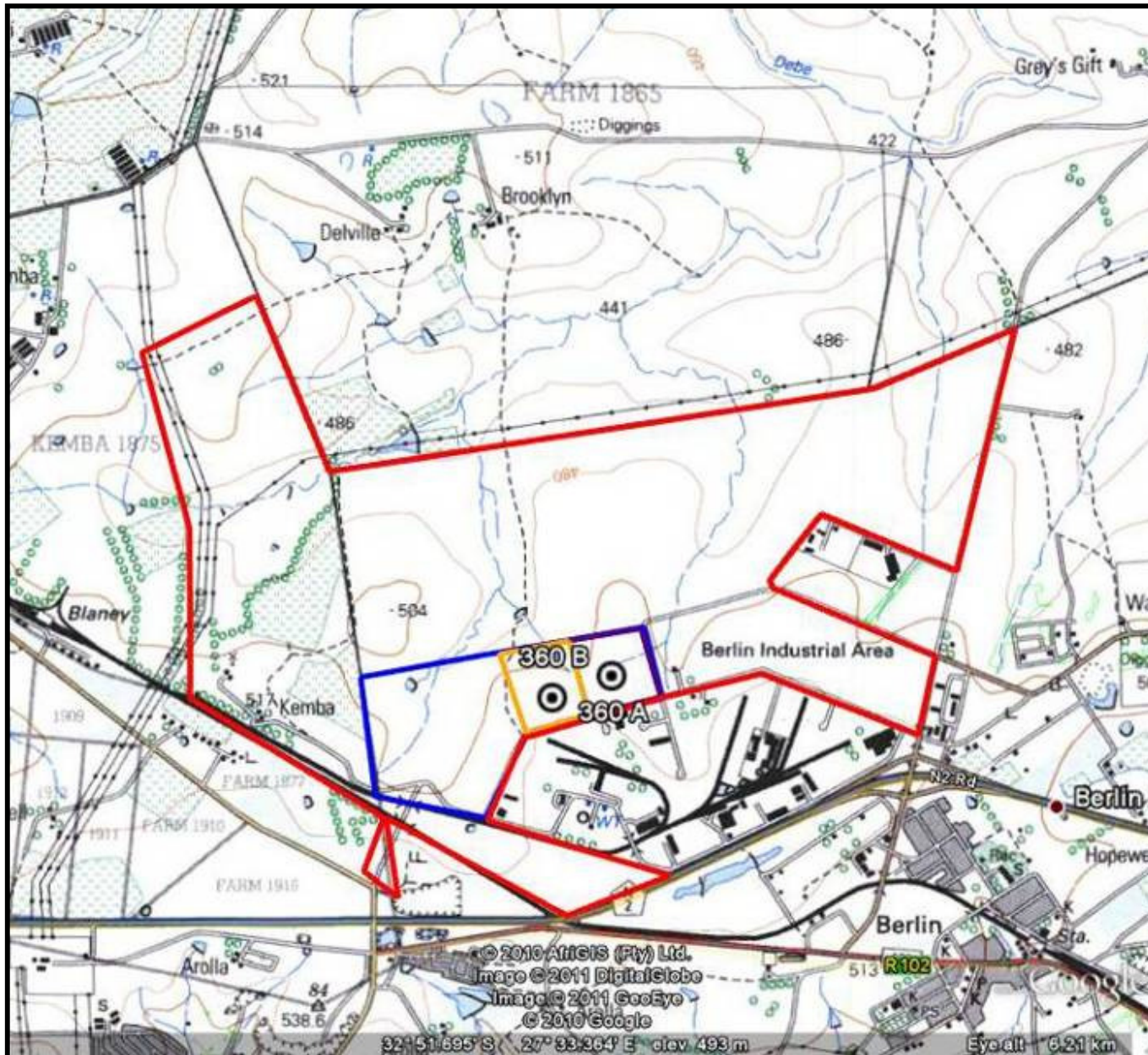


FIG. 3: 3227DC BERLIN 1996 TOPOGRAPHICAL MAP OF THE STUDY AREA¹



¹ Red outline = total property boundary; 360A and 360B are the main affected areas

FIG. 4: VIEWS OF THE DEVELOPMENT²



² Arrow indicates area of main development

NATIONAL HERITAGE RESOURCES ACT OF 1999

The National Heritage Resources Act of 1999 (pp 12-14) protects a variety of heritage resources. These resources are defined as follows:

1. “For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
2. Without limiting the generality of subsection (1), the national estate may include—
 - 2.1. Places, buildings, structures and equipment of cultural significance;
 - 2.2. Places to which oral traditions are attached or which are associated with living heritage;
 - 2.3. Historical settlements and townscapes;
 - 2.4. Landscapes and natural features of cultural significance;
 - 2.5. Geological sites of scientific or cultural importance;
 - 2.6. Archaeological and palaeontological sites;
 - 2.7. Graves and burial grounds, including—
 - 2.8. Ancestral graves;
 - 2.9. Royal graves and graves of traditional leaders;
 - 2.10. Graves of victims of conflict;
 - 2.11. Graves of individuals designated by the Minister by notice in the Gazette;
 - 2.12. Historical graves and cemeteries; and
 - 2.13. Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
3. Sites of significance relating to the history of slavery in South Africa;
 - 3.1. Movable objects, including—

4. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - 4.1. Objects to which oral traditions are attached or which are associated with living heritage;
 - 4.2. Ethnographic art and objects;
 - 4.3. Military objects;
 - 4.4. objects of decorative or fine art;
 - 4.5. Objects of scientific or technological interest; and
 - 4.6. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
5. Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
 - 5.1. Its importance in the community, or pattern of South Africa's history;
 - 5.2. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
 - 5.3. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
 - 5.4. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
 - 5.5. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
 - 5.6. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
 - 5.7. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
 - 5.8. Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

5.9. sites of significance relating to the history of slavery in South Africa.”

METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. This databases contains archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1st and 2nd edition 1:50 000 topographical and 1937 aerial photographs, where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where possible, we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually

occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

Defining significance

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

1. State of preservation of:

- 1.1. Organic remains:
 - 1.1.1. Faunal
 - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
 - 1.5.1. Ash Features
 - 1.5.2. Graves
 - 1.5.3. Middens
 - 1.5.4. Cattle byres
 - 1.5.5. Bedding and ash complexes

2. Spatial arrangements:

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns
- 2.3. Inter-site settlement patterns

3. Features of the site:

- 3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.3. Does the site have a very good example of a specific time period, feature, or artefact?

4. Research:

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

5. Inter- and intra-site variability

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

6. Archaeological Experience:

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

7. Educational:

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

8. Other Heritage Significance:

8.1. Palaeontological sites

8.2. Historical buildings

8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites

8.4. Graves and/or community cemeteries

8.5. Living Heritage Sites

8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

RESULTS

DESKTOP STUDY

The desktop study used the 1954 and 1996 topographical maps, and recent aerial photography (figures 3, 5 and 6). There are no recorded farmhouses or labourers' houses on the 1954 maps. There is one 'hut' (S32° 52.163' E27° 33.685') between BER01 and BER02, but the area had been cleared for industrial purposes by 2010.

The two photovoltaic areas (360A and 360B) appear to be undisturbed, except for a possible road that was begun in 360A, but was never completed.

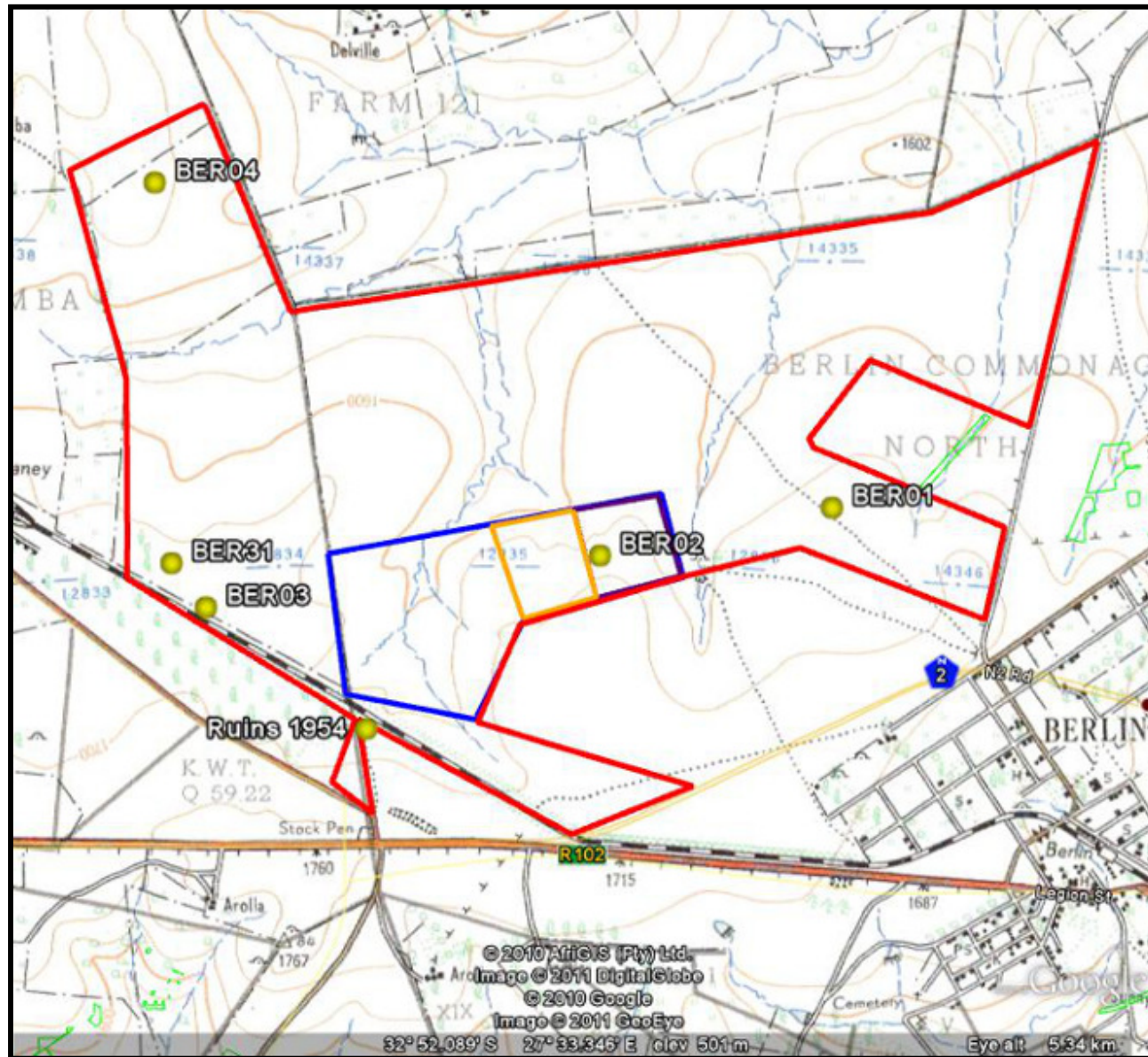
FIELD SURVEY

The area outside of 360A and 360B was also surveyed to obtain a general idea of what the potential heritage would entail. That is if the general area consists of isolated stone tools, and this pattern continued within the development zone, then it would be safe to state that the entire property boundary would be the same, for stone tools.

FIG. 5: LOCATION OF SITES FOR THE STUDY AREA



FIG. 6: LOCATION OF SITES FOR THE STUDY AREA IN 1954³



³ 3227DC Berlin

BER01

The area of BER01 consists of a gentle hill and grasslands, with small sandstone outcrops. There are two recent quarries, and some eroded areas (fig. 7). The site occurs in the general property boundary and not the study area. I observed four flakes and one core. The flakes and core were all on local sandstone. Two of the flakes and the one core were standard Late Stone Age (LSA) flakes ~5cm in length. The other flakes date to the Middle Stone Age (MSA) and one had a faceted platform. These tools were found over a ~50m radius and appear to be in a secondary context. I would expect the rest of the hill has isolated artefacts such as these. The hill can be considered as an ephemeral scatter of LSA and MSA tools.

Significance: The site is of low significance

Mitigation: No mitigation is required as the sites in outside of the study area.

FIG. 7: QUARRY WHERE MSA TOOLS WERE OBSERVED



BER02

BER02 begins in the road cutting on the eastern border of 360A, and continues across the study area. As with BER01, the site consists of isolated stone tools over a wide area. The stone tools are probably a continuation of the BER01 scatter that will continue across the entire study area.

I noted the following artefacts:

- 1 Quartzite irregular core
- 1 Quartzite LSA flake
- 1 Quartzite LSA utilised flake (fig. 8)
- 1 Quartzite MSA flake

Significance: The site is of low significance as it is in a secondary context and too ephemeral.

Mitigation: No mitigation is required. The development would require a permit from SAHRA to damage the site.

FIG. 8: LATE STONE AGE UTILISED FLAKE FROM BER02



BER03

BER03 is an abandoned farmhouse that probably dates to the 1960s – 1970s (fig. 9). The building is not on the 1954 1:50 000 topographical map, but is noted as Kemba on the 1996 map. Much of the building has been ‘robbed’⁴ for building materials, and some of the back walls have collapsed.

Significance: the building is of low significance

Mitigation: No mitigation is required.

FIG. 9: ABANDONED HOUSE AT BER03



⁴ The material has been removed from the primary location and re-used elsewhere

BER03.1

BER03.1 is located ~270m northwest of BER03 and is probably part of the same farm complex (fig. 10). BER03.1 is an abandoned farmhouse that probably dates to the 1960s – 1970s. The building is not on the 1954 1:50 000 topographical map, but is noted as Kemba on the 1996 map. Much of the building has been ‘robbed’ for building materials, and some of the back walls have collapsed.

Significance: The building is of low significance

Mitigation: No mitigation is required.

FIG. 10 ABANDONED HOUSE AT BER03.1



BER04

BER04 is located in the northwest corner of the property boundary. It consists of a wattle woodlot, a lower grinding stone, and an old (possible) *Euphorbia spp.* (fig. 11). There are two circular brick foundations ~100m to the west, but these are made from modern bricks. The grinding stone shows the beginnings of being used as a grinding stone as it does not have a deep bowl. The *Euphorbia* also appears to be old, although its exact age is difficult to determine. The woodlot is not indicated on the 1954 topographical map, but on the 1996 map. The main concern I have for this site is the *Euphorbia* plant. It is common in KwaZulu-Natal for *Euphorbia spp.*, as well as a few other tree species to be placed, and grown, on top of graves. In the E. Cape, prickly pears have been used to demarcate graves in the Sundays River Valley Thicket. Similar sites have been noted K. van Ryneveldt (2010, 2011). The *Euphorbia* at this site may indicate a grave and any earthmoving activity in this area need to be monitored for possible human remains. BER04 is not in the main photovoltaic development, but in the general property boundary.

Significance: The prickly pear tree and immediate surrounds are of possible high significance.

Mitigation: The area needs to be monitored for possible human graves if any earthmoving activity occurs. If human remains do occur, all work would need to stop immediately and a social impact assessment related to human remains would need to be undertaken.

FIG. 11: LOWER GRINDINGSTONE AND EUPHORBIA SPP AT BER04



RUINS

The 1954 topographical map noted the occurrence of ruins on the border of the study area. The ruins still exist in 2011, and consist of the rectangular foundations of a structure, of which some of it is exposed (fig. 12). The 1954 topographical map indicates that there were cattle pens to the south of this feature, and the railway to the north. The ruins may relate to these cattle pens or to the railway. The ruins are just outside of the property boundary.

Significance: The site is probably of low significance, but further research would be required to assess the site in more detail.

Mitigation: No mitigation is required, as the site will not be affected

FIG. 12: RUINS NEAR THE PROPERTY BOUNDARY



PALAEONTOLOGY

To be inserted

MANAGEMENT PLAN

The Stone Age scatters that occur in the property boundary, and the photovoltaic area, are general scatters of stone tools commonly associated with the MSA and LSA. These scatters are ephemeral and in secondary context. This is a common occurrence in the Eastern Cape, and KwaZulu-Natal, and these sites have little to contribute to a better understanding of the MSA and LSA.

The buildings and labourers' houses, and possible grave, will not be affected by the photovoltaic development. However, if there is future development in the area, then the cactus will need to either be fenced off with a 20m border, or be monitored by a heritage specialist, when earthmoving activity occurs. I suggest the area is fenced off regardless of the development, to ensure it is not accidentally damaged in the future.

CONCLUSION

Umlando undertook a heritage survey of the proposed Langa Solar Energy Facility, near Berlin, E. Cape. The survey covered the two areas for the photovoltaic cells, as well as the general property. The area consists of agricultural land that has been partly ploughed and the rest left for grazing. More recently, there has been industrial activity in some area such as roads and buildings.

The survey noted that there is a general, yet ephemeral; scatter of Late Stone Age and Middle Stone Age artefacts along the southern part of the site. These are all in a secondary context and are of low significance. The two houses are younger than 60 years, and have been abandoned and 'robbed'. The ruins fall outside of the property boundary and will not be affected by this development. There is a possible human grave under a Euphorbia in the northwest corner of the property, and this should be fenced off in case of accidental damage.

REFERENCES

Karen Van Ryneveld 2010. Proposed Construction Of The Balmoral – Florida Collector Sewerage System Near Uitenhage And Despatch, Eastern Cape, South Africa. *2011-01-03*. Archaeomaps Archaeological Consultancy

Karen Van Ryneveld 2011. Gqaga Villages Water Reticulation Supply Scheme – Bulkwater Supply Backlog: Ngcobo Cluster 6, Eastern Cape, South Africa *2011-01-14*. Archaeomaps Archaeological Consultancy

**APPENDIX A
SITE RECORD FORMS**

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)

Stone Age: MSA, LSA

Early Iron Age:

Late Iron Age

Historical Period:

Recorder's Site No.: BER01

Official Name: Berlin Commonage

Local Name:

Map Sheet: 3227DC BERLIN

GPS reading: 32° 52.021'S 27° 34.104'E



DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

1. From East London travel to Berlin. At the off ramp:
2. Get on Ramp and drive west 0 m 0 m S32 52.485 E27 34.769
3. Turn right onto Road 395 m 395 m 25 25 S32 52.514 E27 34.523
4. Turn left onto Piet Rautenbach Street 763 m 368 m S32 52.321 E27 34.576
5. BER01 1.9 km 1.1 km 0:01:09 0:02:37 23S32 52.021 E27 34.104

SITE DESCRIPTION:

Type of Site: stone tool scatter

Merits conservation: No

Threats: Yes

What threats: general development

RECORDING:

Graphic record: Yes

Digital pictures: x

Tracings :

Re-drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 15/01/2011

Owner: State

Description of site and artefactual content.

The area of BER01 consists of a gentle hill and grasslands, with small sandstone outcrops. There are two recent quarries, and some eroded areas. The site occurs in the general property boundary and not the study area. I observed four flakes and one core. The flakes and core were all on local sandstone. Two of the flakes and the one core were standard Late Stone Age (LSA) flakes ~5cm in length. The other flakes date to the Middle Stone Age (MSA) and one had a faceted platform. These tools were found over a ~50m radius and appear to be in a secondary context. I would expect the rest of the hill has isolated artefacts such as these. The hill can be considered as an ephemeral scatter of LSA and MSA tools.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)

Stone Age: LSA, MSA

Early Iron Age:

Late Iron Age

Historical Period:

Recorder's Site No.: BER02

Official Name: Berlin Commonage

Local Name:

Map Sheet: 3227DC BERLIN

GPS reading: S32 52.146 E27 33.383



DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

1. From East London travel to Berlin. At the off ramp:
2. Get on Ramp and drive west 0 m 0 m 90S32 52.485 E27 34.769
3. Turn right onto Road 395 m 395 m 25 25 262S32 52.514 E27 34.523
4. Turn left onto Piet Rautenbach Street 763 m 368 m S32 52.321 E27 34.576
5. BER02 2.9 km 2.1 km 0:02:13 S32 52.146 E27 33.383

SITE DESCRIPTION:

Type of Site: stone tool scatter

Merits conservation: No

Threats: Yes

What threats: Photovoltaic development

RECORDING:

Graphic record: Yes

Digital pictures: x

Tracings :

Re-drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 15/01/2011

Owner: State

Description of site and artefactual content.

BER02 begins in the road cutting on the eastern border of 360A, and continues across the study area. As with BER01, the site consists of isolated stone tools over a wide area. The stone tools are probably a continuation of the BER01 scatter that will continue across the entire study area.

I noted the following artefacts: 1 Quartzite irregular core, 1 Quartzite LSA flake, 1 Quartzite LSA utilised flake, 1 Quartzite MSA flake

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)

Stone Age:
Early Iron Age:
Late Iron Age
Historical Period:



Recorder's Site No.: BER03
Official Name: Kemba
Local Name: Kemba
Map Sheet: 3227DC BERLIN
GPS reading: S32 52.281 E27 32.159

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

1. From East London travel to Berlin. At the off ramp:
2. Get on Ramp and drive west S32 52.485 E27 34.769
3. Continue on N2 ramp 395 m 395 m S32 52.514 E27 34.523
4. Turn right onto Road 3.6 km 3.2 km S32 52.904 E27 32.591
5. Turn left onto Road 3.8 km 208 m 58 0:03:19 OS32 52.792 E27 32.591
6. BER03 5.4 km 1.6 km 0:01:47 0: S32 52.281 E27 32.159

SITE DESCRIPTION:

Type of Site: recent house
Merits conservation: No
Threats: No
What threats:

RECORDING:

Graphic record: Yes
Digital pictures: x Tracings : Re-drawings:

Recorder/Informant: Name: Gavin and Louise Anderson
Address: PO Box 102532, Meerensee, 3901
Date: 15/01/2011
Owner: State

Description of site and artefactual content.

BER03 is an abandoned farmhouse that probably dates to the 1960s – 1970s. The building is not on the 1954 1:50 000 topographical map, but is noted as Kemba on the 1996 map. Much of the building has been 'robbed' for building materials, and some of the back walls have collapsed.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)

Stone Age:
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: BER3.1
Official Name:
Local Name:
Map Sheet: 3227DC BERLIN
GPS reading: S32 52.166 E27 32.050



DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

1. From East London travel to Berlin. At the off ramp:
2. Get on Ramp and drive west 0 m 0 m S32 52.485 E27 34.769
3. Continue on N2 ramp 395 m 395 m S32 52.514 E27 34.523
4. Turn right onto Road 3.6 km 3.2 km S32 52.904 E27 32.591
5. Turn left onto Road 3.8 km 208 m S32 52.792 E27 32.591
6. BER31 5.7 km 1.9 km S32 52.166 E27 32.050

SITE DESCRIPTION:

Type of Site: modern house
Merits conservation:
Threats: Yes
What threats:

RECORDING:

Graphic record: Yes
Digital pictures: x Tracings : Re-drawings:

Recorder/Informant: Name: Gavin and Louise Anderson
Address: PO Box 102532, Meerensee, 3901
Date: 15/01/2011
Owner: State

Description of site and artefactual content.

BER03.1 is located ~270m northwest of BER03 and is probably part of the same farm complex. BER03.1 is an abandoned farmhouse that probably dates to the 1960s – 1970s. The building is not on the 1954 1:50 000 topographical map, but is noted as Kemba on the 1996 map. Much of the building has been 'robbed' for building materials, and some of the back walls have collapsed.

APPENDIX B
PALAEONTOLOGICAL IMPACT ASSESSMENT

