

APPENDIX D

Specialist Reports
Heritage Impact Assessment
Vegetation Survey

**HERITAGE DESKTOP SURVEY OF THE PROPOSED
10 MW LANGA ENERGY SOLAR FACILITY,
BERLIN, EASTERN CAPE**

FOR COASTAL ENVIRONMENTAL SERVICES

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INTRODUCTION

Umlando cc was contracted by Coastal & Environmental Services to undertake a desktop Heritage Impact Assessment of the proposed Langa Solar Energy Facility. This would serve as part of the basic assessment, with a follow up field survey. The proposed solar farm is located ~northwest of Berlin, Eastern Cape (fig.'s 1 - 3).

The land has mostly been used as pasturage, and appears to have had little development since 1954, with the exception of rows of trees for presumed windbreaks, and farm buildings.

The impacts on the area will be:

- Solar panel foundations
- Servitudes such as underground cables.

The aim of the desktop is to note any potential red flags, and to highlight certain areas that may be sensitive.

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:

“3. (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—

- (a) Places, buildings, structures and equipment of cultural significance;

(b) Places to which oral traditions are attached or which are associated with living heritage;

(c) Historical settlements and townscapes;

(d) Landscapes and natural features of cultural significance;

(e) Geological sites of scientific or cultural importance;

(f) Archaeological and palaeontological sites;

(g) Graves and burial grounds, including—

(i) Ancestral graves;

(ii) Royal graves and graves of traditional leaders;

(iii) Graves of victims of conflict;

(iv) Graves of individuals designated by the Minister by notice in the Gazette;

(v) Historical graves and cemeteries; and

(vi) Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

(h) Sites of significance relating to the history of slavery in South Africa;

(i) Movable objects, including—

(i) Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;

(ii) Objects to which oral traditions are attached or which are associated with living heritage;

(iii) Ethnographic art and objects;

(iv) Military objects;

(v) objects of decorative or fine art;

(vi) Objects of scientific or technological interest; and

(vii) 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).

(3) 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—

(a) Its importance in the community, or pattern of South Africa's history;

- (b) Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (c) Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (d) Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) 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
- (i) 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 databases. These databases contain most of the known heritage sites in KwaZulu-Natal, and known memorials and other protected sites, battlefields and cemeteries in southern Africa. 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 fulfil 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.

FIG. 1 GENERAL LOCATION OF THE LANGA SOLAR ENERGY FACILITY

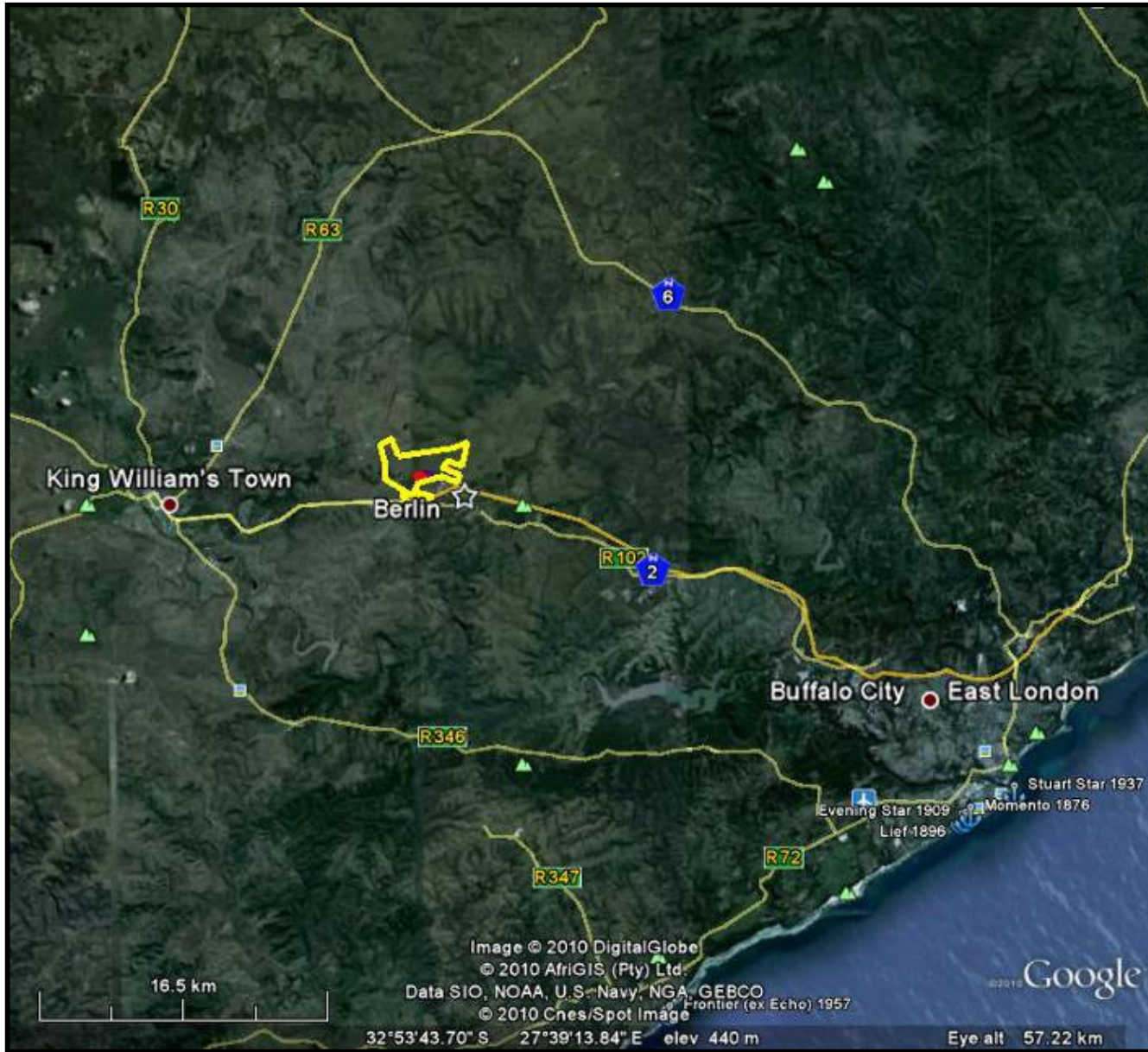


FIG. 2: AERIAL OVERVIEW OF THE LANGA SOLAR ENERGY FACILITY. THE RED AND PURPLE AREAS ARE EARMARKED FOR THE 10MW PILOT.



FIG. 3: 1996 TOPOGRAPHICAL MAP OF THE LANGA SOLAR ENERGY FACILITY

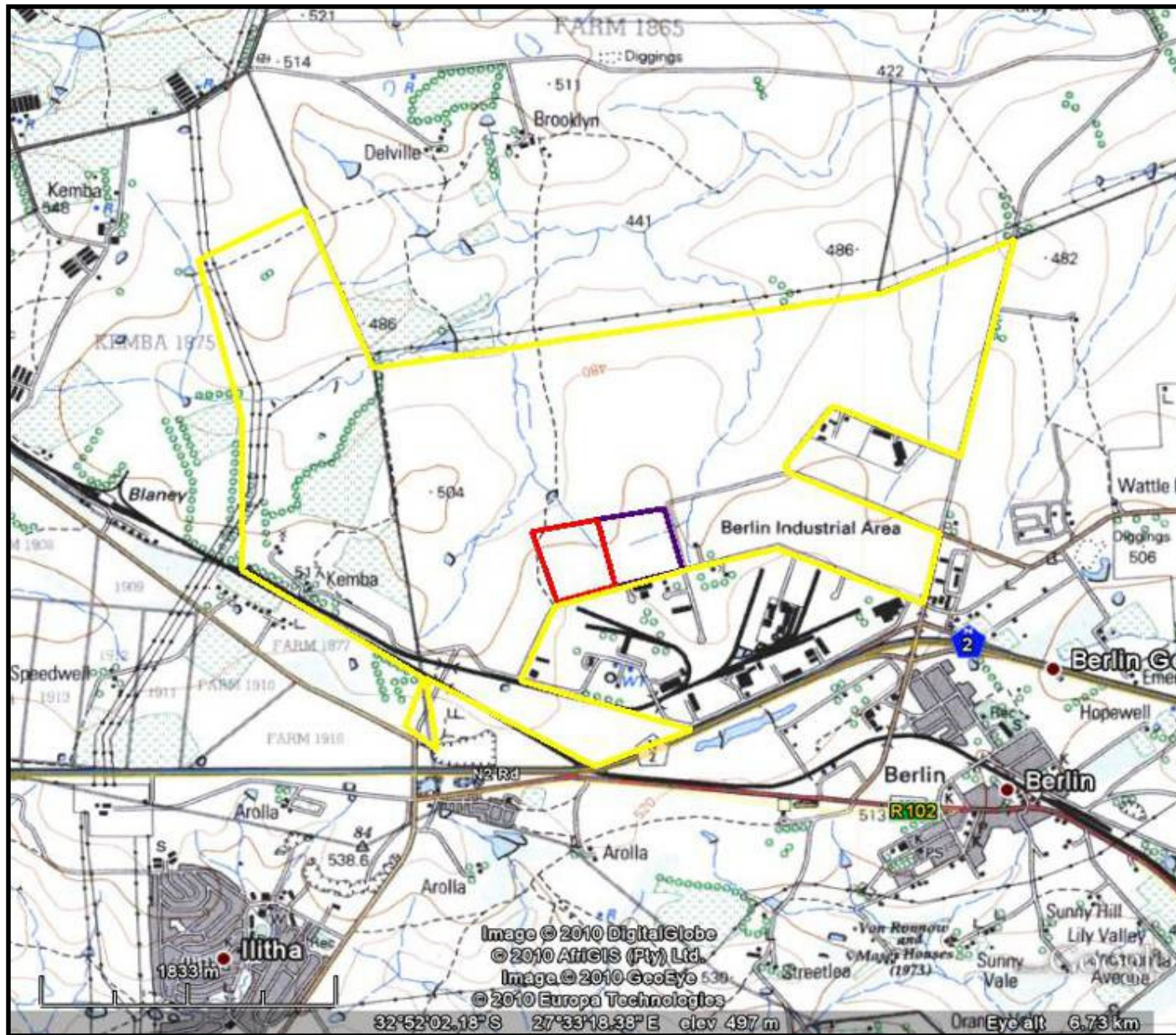
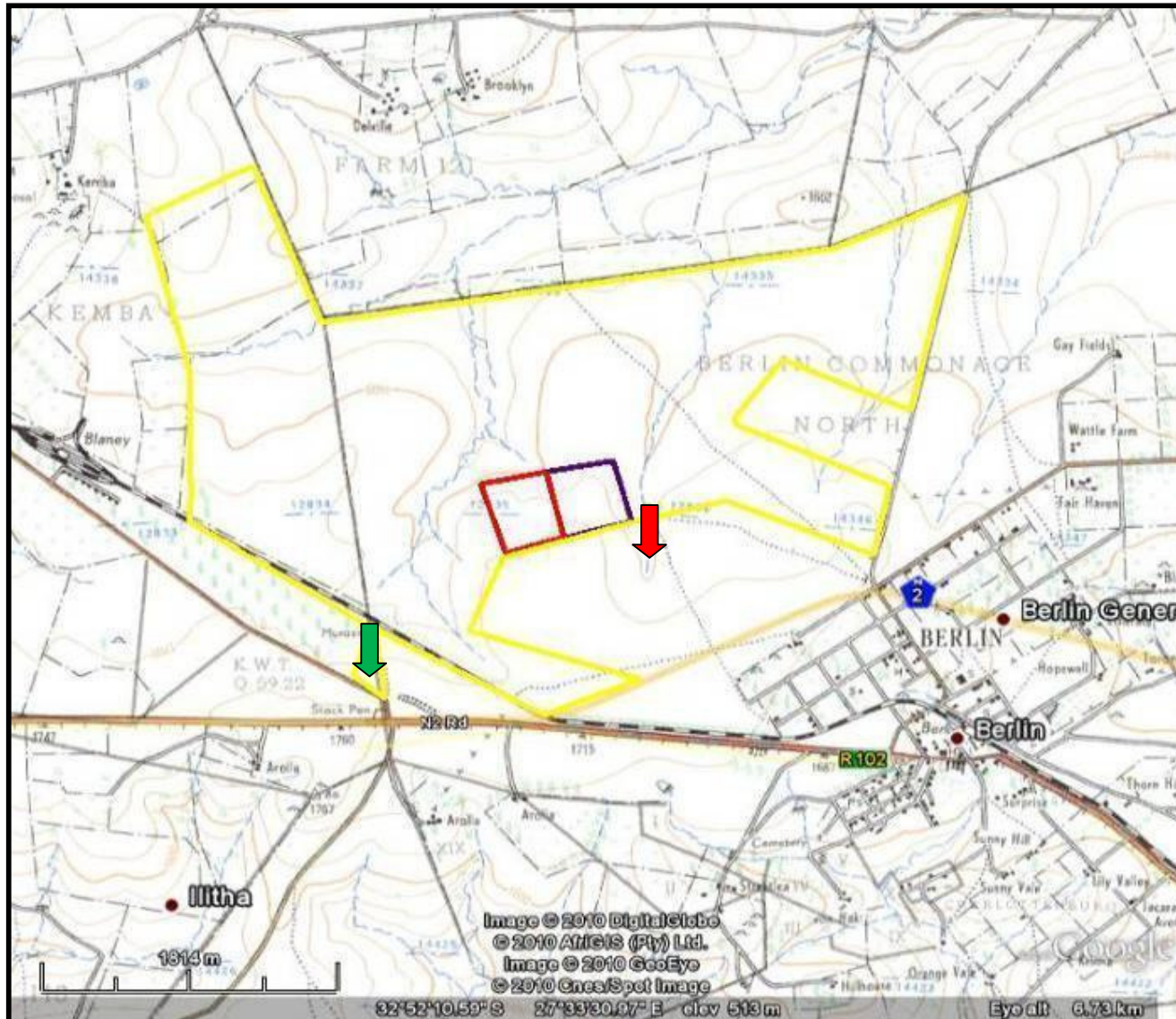


FIG. 4: 1954 TOPOGRAPHICAL MAP OF THE SUNTECH SOLAR FARM²



² Green arrow indicates location of ruins; red arrow indicates 'hut' and/or grave(s)

RESULTS

Archaeological sites

No known archaeological sites exist in the study area. This is probably due to a lack of field survey, rather than a lack of archaeological material. I would expect to observe at least late Stone Age artefacts in the study area. These artefacts will probably be in a secondary context and have little significance

The study area is too flat to produce overhangs and rock shelters that could contain rock art images.

Historical buildings

The 1954 topographical map (fig, 4) indicates that there are ruins in the study area. Since the buildings are already ruins in 1954, one can assume that they predate 1950s. Since this is a built structure it would be protected by the heritage legislation. The ruins are not shown on the 1996 topographical map (fig, 3), however, there are possible ruins visible on the Google Earth map. There is one 'hut'³ on the 1954 map, and thus it may have associated graves. However, this 'hut' has more recent houses nearby.

Between 1996 and 2010 some farm buildings have "disappeared". However since these are not older than 60 years in age, they are not protected by the Heritage Act, unless they have recent historical significance.

The Google Earth image shows that some areas have possible building foundations.

Graves

One area has possible graves older than 60 years (fig. 4). The general area has been disturbed with more recent buildings. This will need to be verified.

Land Modifications

³ Term on topographical maps probably referring to a wattle and daub house

Some areas have been modified by humans such as canals. One 'canal' appears to have been originally a perennial stream that was the canalised. Other streams have modifications as well that are visible on aerial imagery.

MANAGEMENT PLAN

The desktop survey did not note any red flags. However, it did note that there may be several types of heritage resources in the study area. These resources will need to be verified with a field survey.

CONCLUSION

The desktop study of the proposed Langa Solar Energy Facility found several heritage sites on the 1954 and 1996 topographical maps, as well as on the Google Earth images. These will need to be verified with a field survey.

VEGETATION SURVEY

LANGA SOLAR ENERGY 10MW PILOT FACILITY, BERLIN

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1. Aims and objectives

- Survey and identify species of special concern or potential protected, rare and endangered plant species
- Report on the vegetation cover and quality
- Make recommendations to be implemented during construction

2. Methodology

A survey was carried out on the 15th November 2010. Many of the plant species were flowering at the time, which aided in the identification process. All the species observed were noted and are presented below. A number bulbous, graminoid and herbaceous species were recorded. In total, 19 dominant species were observed. The South African National Biodiversity Institute (SANBI): Vegetation of South Africa was referenced in order to determine the expected vegetation type and conservation status.

3. Results

The SANBI Vegetation map has indicated that the current site falls within BhishoThornveld. This vegetation type is widely distributed and does not contain any endemic taxa (Rutherford *et al.*, 2006).

3.1 Plant species observed

*Ledebouriarevo
luta*



*Heliophilalinea
ris*



*Helichrysumeck
lonis*



*Crotalaria
obscura*



*Cyperusphaer
ocephalus*



*Still to be
identified*



Cyrtocarpus
a



Asclepias fruticosa
sa



Asclepias sp



Asclepias *navicularis*



*Chamaecrista
apensis*



*Eragrostis cape
nsis*



Themeda triandra



Senecio macrocephalus



Dierama pulcherrimum



Berkheyasp



Monopsis undulata



Pelargonium
sp.



Helichrysum argyrophyllum



3.2 General characteristics and state of the grassland



The site is currently being grazed by a herd of cattle freely roaming the site. Evidence of severe overgrazing has resulted in sparse vegetative cover, even after good rains. Bare soil is exposed resulting in potential erosive activities. In addition, alien invasive plant species (mainly *Acacia mearnsii* or Black Wattle) have established in water courses and patches throughout the site.

4. Assumptions and limitations

The vegetation survey was based on a single site visit. In spite of the short sampling period, it is important to note that the survey was conducted after rains had broken the drought in East London. As a result, the plant species present on the site were flowering and well within spring-associated growth stages. Some species may have gone undetected, but it is felt that most of the dominant species were included.

5. Conclusions and Recommendations

Some species of special concern were identified on site. These species should be transplanted into an onsite nursery which will be used for replanting post-construction. No protected, rare or endangered species were observed.

During site preparation and construction, an Environmental Control Officer with botanical knowledge, must be present to recover and transplant all bulbs, and collect all seeds for reseedling the site post-construction.

