

MATLOSANA 132 KV LOOP-IN-LOOP-OUT LINE AND SUBSTATION

Proposed Eskom Line on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province

Heritage Impact Assessment

| Issue Date: | 25 June 2014 |
|---------------|-----------------------------|
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| Proponent: | Anglo Saxon Group and Eskom |

DECLARATION OF INDEPENDENCE

The report has been compiled by PGS Heritage, an appointed Heritage Specialist for the Anglo Saxon Group and Eskom. The views stipulated in this report are purely objective and no other interests are displayed in the findings and recommendations of this Heritage Impact Assessment.

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| Report Title | Proposed Eskom Line on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province. | | |
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EXPLANATION OF ABBREVIATIONS USED IN THIS DOCUMENT

| Abbreviations | Description |
|---------------|---|
| AIA | Archaeological Impact Assessment |
| ASAPA | Association of Southern African Professional Archaeologists |
| СМР | Conservation Management Plan |
| CRM | Cultural Resource Management |
| EIA | Environmental Impact Assessment |
| EMPR | Environmental Management Programme Report |
| ESA | Early Stone Age |
| GPS | Global Positioning System |
| HIA | Heritage Impact Assessment |
| LIA | Late Iron Age |
| LSA | Later Stone Age |
| MSA | Middle Stone Age |
| NEMA | National Environmental Management Act |
| NHRA | National Heritage Resources Act |
| PGS | PGS Heritage |
| PHRA | Provincial Heritage Resources Authority |
| SAHRA | South African Heritage Resources Agency |
| SAHRIS | South African Heritage Resources Information System |

EXECUTIVE SUMMARY

PGS Heritage was appointed by Anglo Saxon Group to undertake a Heritage Impact Assessment in terms of the proposed Matlosana 132 kV Loop-in-Loop-Out Line and Substation located on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province.

An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history.

The desktop study work was followed by a fieldwork component which comprised a walkthrough of the study area. Two heritage sites comprising a cemetery as well as one possible grave were identified within the study area whereas a third heritage site consisting of a cemetery was identified outside of the study area but in the general vicinity of the proposed development.

The impact risk of the proposed development on the heritage sites was established, and where required mitigation measures are proposed. In the table below the three heritage sites mentioned above will be outlined. The table contains the significance levels of the respective sites as well as the required mitigation measures.

| Site | Description | Significance | Coordinates | Summarised Mitigation (see Section 9 for details) |
|--------|-------------------|------------------------------|------------------------------------|--|
| Site 1 | Cemetery | High/Medium Local (GP. A) | S 26° 49' 58.0" E 26° 42' 08.5" | The cemetery must be fenced allowing a 5m corridor between the visible graves and the fence with a 5m buffer on the outside of the fence kept clear of surface development. A monitoring process must be implemented during the construction phase. |
| Site 2 | Possible Grave | High/Medium Local (GP. A) | S 26° 50' 00.2" E 26° 42' 07.8" | Two mitigation alternatives are possible, namely: In situ preservation with the undertaking of the same mitigation measures as required for Site 1, or Reconnaissance excavation of the possible grave to establish whether a grave is |

Table 1: Summarised List of Heritage Sites Identified within the Study Area

| | | | | located here or not. If no evidence for a grave is found no further mitigation measures would be required. However, if evidence for a grave is found grave relocation will have to be undertaken. |
|--------|----------|------------------------------|------------------------------------|---|
| Site 3 | Cemetery | High/Medium Local (GP. A) | S 26° 50' 38.3" E 26° 42' 22.9" | No mitigation measures required. |

With the use of the Palaeontological Sensitivity Map of SAHRA it was established that sections of the proposed development are located in areas classified as Low Palaeontological Sensitivity with other sections of the development situated in areas classified as Insignificant/Zero Palaeontological Sensitivity. As indicated by the map, no further work is required for the areas classified as of zero sensitivity, with the development in areas classified as low sensitivity requiring the compilation of a palaeontological protocol.

The overall impact of the development on heritage resources is seen as acceptably low and impacts can be mitigated to acceptable levels. On the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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1 INTRODUCTION

PGS Heritage was appointed by Anglo Saxon Group to undertake a Heritage Impact Assessment in terms of the proposed Matlosana 132 kV Loop-in-Loop-Out Line and Substation located on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province.

The Environmental Impact Assessment for the proposed development assessed as part of this study has already been completed and a Record of Decision has also been issued.

1.1 Scope of the Study

The Heritage Impact Assessment aims to inform the Environmental Impact Assessment (EIA) in the development of a comprehensive Environmental Management Programme (EMP) to assist the mine in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

1.2 Specialist Qualifications

This Heritage Impact Assessment was compiled by PGS Heritage. Its staff has a combined experience of nearly 40 years in the heritage consulting industry and have extensive experience in managing Heritage Impact Assessment (HIA) processes. Mr. Polke Birkholtz, project manager and archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a professional archaeologist and is also a registered member of the Cultural Resource Management (CRM) Section of ASAPA. He has more than 16 years' experience in the industry.

1.3 Assumptions and Limitations

• This heritage impact assessment only addresses two Eskom lines and one substation located on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP. The lines are proposed between an existing northern substation and the proposed southern substation.

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it
is necessary to realise that the heritage sites located during the fieldwork do not
necessarily represent all the heritage sites present within the area. Should any heritage
features or objects not included in the inventory be located or observed, a heritage
specialist must immediately be contacted. Such observed or located heritage features
and/or objects may not be disturbed or removed in any way, until such time that the
heritage specialist has been able to make an assessment as to the significance of the site
(or material) in question. This applies to graves and cemeteries as well.

1.4 Legislative Context

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- i. National Environmental Management Act (NEMA) Act 107 of 1998
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- iv. Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

- i. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) Section (32)(2)(d)
 - d. EMP (EMP) Section (34)(b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage Resources Sections 34 to 36; and
 - b. Heritage Resources Management Section 38
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34(1) of the NHRA states that "no

person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...". The NEMA (No 107 of 1998) states that an integrated EMP should (23:2 (b)) "...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". In accordance with legislative requirements and EIA rating criteria, the regulations of SAHRA and ASAPA have also been incorporated to ensure that a comprehensive and legally compatible HIA report is compiled.

1.5 Terminology and Abbreviations

Archaeological resources

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including a 10m buffer area;
- iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Development

This means any physical intervention, excavation or action other than those caused by natural forces, which may according to the heritage agency result in a change to the nature, appearance or physical nature of a place or influence its stability & future well-being, including:

- i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- ii. carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- iv. constructing or putting up for display signs or boards;
- v. any change to the natural or existing condition or topography of land; and
- vi. any removal or destruction of trees, or removal of vegetation or topsoil

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance

Later Stone Age

The archaeology of the last 20 000 years, associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's associated with ironworking and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age, dating to between 20 000-300 000 years ago, associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past and any site which contains such fossilised remains or trace.



Figure 1–Human and Cultural Time line in Africa (Morris, 2008)

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location and Description

| Coordinates for Positions of Proposed Structures (Poles) on the loop-in- loop-out line. | Western LineStructure 1: S26° 49' 28.9" E 26° 41' 56.8"Structure 2: S26° 49' 28.5" E26° 41' 59.0"Structure 3: S26° 49' 30.1" E26° 41' 59.4"Structure 4: S26° 49' 36.1" E26° 42' 01.1"Structure 5: S26° 49' 44.2" E26° 42' 03.4"Structure 6: S26° 49' 52.0" E26° 42' 05.6"Structure 7: S26° 49' 59.8" E26° 42' 07.8"Structure 8: S26° 50' 07.3" E26° 42' 10.0"Structure 9: S26° 50' 14.8" E26° 42' 12.2"Structure 10: S26° 50' 31.9" E26° 42' 14.6"Structure 11: S26° 50' 39.4" E26° 42' 19.1"Structure 13: S26° 50' 41.3" E26° 42' 27.0"Structure 14: S26° 50' 43.3" E26° 42' 26.7" | Eastern Line Structure 15: S26° 49' 28.5" E26° 42' 06.6" Structure 16 : S26° 49' 28.5" E26° 41' 59.6" Structure 17: S26° 49' 30.1" E26° 42' 00.1" Structure 18: S26° 49' 36.0" E26° 42' 01.9" Structure 19: S26° 49' 44.0" E26° 42' 04.1" Structure 20: S26° 49' 51.9" E26° 42' 06.4" Structure 21: S26° 49' 59.7" E26° 42' 06.4" Structure 22: S26° 50' 07.1" E26° 42' 10.7" Structure 23: S26° 50' 14.9" E26° 42' 10.7" Structure 24: S26° 50' 23.2" E26° 42' 15.3" Structure 25: S26° 50' 31.6" E26° 42' 19.8" Structure 26: S26° 50' 40.8" E26° 42' 19.8" Structure 27: S26° 50' 40.8" E26° 42' 27.9" Structure 28: S26° 50' 43.4" E26° 42' 27.6" | | | |
|--|---|---|--|--|--|
| Coordinates for the Substation Footprint Area | North-West S26° 50' 43.0" E 26° 42' 26.3" South-West: S26° 50' 46.19" E26° 42' 25.9" | North-East: S26° 50' 43.3" E26° 42' 29.8" South-East: S26° 50' 46.5" E26° 42' 29.5" | | | |
| Properties | Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province. | | | | |
| Location | The study area is located directly east of Klerksdorp in the City of Matlosana Local Municipality. It is located 4.9km north-east of the centre of Klerksdorp. | | | | |
| Extent | The extent of the study area is roughly 9.3014 hectares. This includes both the loop-in- loop-out lines as well as the substation. | | | | |
| Land Description | The study area can be described as reasonably flat although it has sloped sections in vicinity of the non-perennial stream which in some areas run alongside the study. For the most part the study area comprises open grassland which appears to have used for agricultural purposes over a long period of time. Some pockets of trees are found. | | | | |



Figure 2–The arrow indicates the position of the study area within its regional context.



Figure 3–Google Earth image depicting the position of the study area within its immediate context.

2.2 Technical Project Description

The proposed development comprises a sub-transmission loop-in-loop-out (LILO) line and a substation. The loop-in-loop-out line will supply electricity to the the proposed substation from the existing main transmission line located directly north of the study area. Once completed, the substation and loop-in-loop-out lines will provide electricity to the R1 billion Matlosana Mall currently under construction directly south of the N12. Please note the following details with regard to the proposed development:

- In adherence to the principle of a loop-in-loop-out line, two parallel sub-transmission lines will be constructed from the main transmission line on the northern end of the study area to the proposed substation on the southern end of the study area. The western line is known as the Matlosana-Klerksdorp North line, whereas the eastern line is known as the Hermes-Matlosana line. Electricity will be conveyed from the main transmission line to the the proposed substation along the Hermes-Matlosana line (i.e. the loop-in line), with electricity conveyed back from the substation to the main transmission line along the Matlosana-Klerksdorp North line (the loop-out line).
- The voltage of the proposed loop-in-loop-out lines will be 132kV
- The proposed loop-in-loop-out lines will be supported by a total of 28 individual structures (poles).
- Out of the 28 proposed structures (poles), 11 (namely 2, 3, 12, 13, 14, 15, 16, 17, 26, 27 and 28) will have support cables (guy wires). In these cases the footprint area of the structure extends roughly 12m out on one side of the structure. With regard to the remaining 15 structures, the physical footprint area will be no more 2m by 2m.
- The structures (poles) will be between 19.05m and 15.07m in height.
- The distances between the structures (poles) will range between 273.74m and 79.18m.
- From the northern transmission line to the southern substation the proposed development is roughly 2,545.46 m in length. With the loop-in-loop-out configuration the entire length of the proposed line will be double this distance, namely 5,090.92 m.
- The distance between the two proposed parallel lines will be 58.99m.
- No service roads will be constructed underneath the proposed lines.
- The proposed substation on the southern end of the proposed development will be 100m by 100m in extent, which equates to 1 hectare.
- The servitude enclosing the loop-in-loop-out lines as well as the substation will be 9.304 hectares in extent.



Figure 4–Diagram depicting the northern component of the proposed development



Figure 5–Diagram depicting the southern component of the proposed development

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Figure 6-Diagram depicting the coordinates relevant to the proposed development



Figure 7–Google Earth image depicting northern component of the proposed development.



Figure 8–Google Earth image depicting southern component of the proposed development.



Figure 9–These depictions were supplied by Eskom and provide a profile view of the lines.

3 ASSESSMENT METHODOLOGY

3.1 Methodology for Assessing Heritage Site Significance

This report was compiled by PGS Heritage for the proposed Matlosana 132 kV Loop-in-Loop-Out Line and Substation. The applicable maps, tables and figures are included as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey leans greatly on the archival and historical cartographic material assessed as part of the study as well as a study of the available literature. The available archaeological and heritage reports archived electronically on SAHRIS (South African Heritage Resources Information System) were also used as part of this component of the study.

Step II – Physical Survey: A physical survey was conducted on Friday, 20 June 2014. The survey was undertaken by a team comprising a professional archaeologist and field assistant and was undertaken on foot as well as by vehicle. Detailed walk-throughs were undertaken of the section of the line located outside of an area that was already assessed as part of a previous heritage impact assessment undertaken by the PGS Heritage. The section of the line located within the previous study area was driven through with foot assessments undertaken of the proposed structures and substations.

Step III – The final step involved the recording and documentation of relevant heritage resources, as well as the assessment of resources regarding the heritage impact assessment criteria and report writing, as well as mapping and recommendations.

The significance of heritage sites was based on five main criteria:

- site integrity (i.e. primary vs. secondary context),
- amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
 - Low <10/50m2
 - Medium 10-50/50m2
 - High >50/50m2

- uniqueness and
- potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

- A No further action necessary;
- B Mapping of the site and controlled sampling required;
- C No-go or relocate development position
- D Preserve site, or extensive data collection and mapping of the site; and
- E Preserve site

Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report (see **Table 3**).

| FIELD RATING | GRADE | SIGNIFICANCE | RECOMMENDED MITIGATION |
|------------------------------|----------|--------------|---------------------------------|
| National Significance (NS) | Grade 1 | - | Conservation; National Site |
| | | | nomination |
| Provincial Significance (PS) | Grade 2 | - | Conservation; Provincial Site |
| | | | nomination |
| Local Significance (LS) | Grade 3A | High | Conservation; Mitigation not |
| | | | advised |
| Local Significance (LS) | Grade 3B | High | Mitigation (Part of site should |
| | | | be retained) |
| Generally Protected A (GP.A) | - | High/Medium | Mitigation before destruction |
| Generally Protected B (GP.B) | - | Medium | Recording before destruction |
| Generally Protected C (GP.C) | - | Low | Destruction |

| Table 3: Site significance classification s | standards as prescribed by SAHRA |
|---|----------------------------------|
|---|----------------------------------|

3.2 Methodology for Impact Assessment

In order to ensure uniformity, a standard impact assessment methodology has been utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology was used to describe impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors, along with the equivalent quantitative rating scale for each of the aforementioned criteria, is given in **Table 4**.

| RATING | SIGNIFICANCE | EXTENT SCALE | TEMPORAL |
|--------|--------------|---------------------------------------|-------------------|
| | | | SCALE |
| 1 | VERY LOW | Isolated corridor / proposed corridor | Incidental |
| 2 | LOW | Study area | <u>Short-term</u> |
| 3 | MODERATE | Local | Medium-term |
| 4 | HIGH | Regional / Provincial | Long-term |
| 5 | VERY HIGH | Global / National | Permanent |

Table 4: Quantitative rating and equivalent descriptors for the impact assessment criteria

A more detailed description of each of the assessment criteria is given in the following sections.

Significance Assessment

The significance rating (importance) of the associated impacts embraces the notion of extent and magnitude, but does not always clearly define these, since their importance in the rating scale is very relative. For example, 10 structures younger than 60 years might be affected by a proposed development, and if destroyed the impact can be considered as VERY LOW in that the structures are all of Low Heritage Significance. If two of the structures are older than 60 years and of historic significance, and as a result of High Heritage Significance, the impact will be considered to be HIGH to VERY HIGH.

A more detailed description of the impact significance rating scale is given in **Table** 5 below.

| RATING | | DESCRIPTION |
|--------|-----------|--|
| 5 | VERY HIGH | Of the highest order possible within the bounds of impacts which could |
| | | occur. In the case of adverse impacts: there is no possible mitigation |
| | | and/or remedial activity which could offset the impact. In the case of |
| | | beneficial impacts, there is no real alternative to achieving this benefit. |
| 4 | HIGH | Impact is of substantial order within the bounds of impacts which could |
| | | occur. In the case of adverse impacts: mitigation and/or remedial |
| | | activity is feasible but difficult, expensive, time-consuming or some |
| | | combination of these. In the case of beneficial impacts, other means of |
| | | achieving this benefit are feasible but they are more difficult, expensive, |
| | | time-consuming or some combination of these. |
| 3 | MODERATE | Impact is real but not substantial in relation to other impacts, which |
| | | might take effect within the bounds of those which could occur. In the |
| | | case of adverse impacts: mitigation and/or remedial activity are both |
| | | feasible and fairly easily possible. In the case of beneficial impacts: other |
| | | means of achieving this benefit are about equal in time, cost, effort, etc. |
| 2 | LOW | Impact is of a low order and therefore likely to have little real effect. In |
| | | the case of adverse impacts: mitigation and/or remedial activity is either |
| | | easily achieved or little will be required, or both. In the case of beneficial |
| | | impacts, alternative means for achieving this benefit are likely to be |
| | | easier, cheaper, more effective, less time consuming, or some |
| | | combination of these. |
| 1 | VERY LOW | Impact is negligible within the bounds of impacts which could occur. In |
| | | the case of adverse impacts, almost no mitigation and/or remedial |
| | | activity is needed, and any minor steps which might be needed are easy, |
| | | cheap, and simple. In the case of beneficial impacts, alternative means |
| | | are almost all likely to be better, in one or a number of ways, than this |
| | | means of achieving the benefit. Three additional categories must also be |
| | | used where relevant. They are in addition to the category represented |
| | | on the scale, and if used, will replace the scale. |
| 0 | NO IMPACT | There is no impact at all - not even a very low impact on a party or |
| | | system. |

| Tabla Er | Description | of the | cignificanco | rating ccala |
|-----------|-------------|---------|---------------|--------------|
| i uble 5. | Describtion | UI LIIP | SIGNITICATION | ruunu scule |
| | | | | |

Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table** 6.

| RATI | NG | DESCRIPTION | | | |
|------|---------------------|---|--|--|--|
| 5 | Global/National | The maximum extent of any impact. | | | |
| 4 | Regional/Provincial | The spatial scale is moderate within the bounds of possible | | | |
| | | impacts, and will be felt at a regional scale (District Municipality to | | | |
| | | Provincial Level). The impact will affect an area up to 50 km from | | | |
| | | the proposed site / corridor. | | | |
| 3 | Local | The impact will affect an area up to 5 km from the proposed site. | | | |
| 2 | Study Area | The impact will affect an area not exceeding the boundary of the | | | |
| | | study area. | | | |
| 1 | Isolated Sites / | The impact will affect an area no bigger than the site. | | | |
| | proposed site | | | | |

| Table 6: Description of the spatial significance rating scale | Table | 6: | Description | of the | spatial | significance | rating scale |
|---|-------|----|-------------|--------|---------|--------------|--------------|
|---|-------|----|-------------|--------|---------|--------------|--------------|

Temporal/Duration Scale

In order to accurately describe the impact, it is necessary to understand the duration and persistence of an impact in the environment.

The temporal or duration scale is rated according to criteria set out in **Table 7**.

| RATING | | DESCRIPTION | | | |
|--------|-------------|---|--|--|--|
| 1 | Incidental | The impact will be limited to isolated incidences that are expected | | | |
| | | to occur very sporadically. | | | |
| 2 | Short-term | The environmental impact identified will operate for the duration | | | |
| | | of the construction phase or a period of less than 5 years, | | | |
| | | whichever is the greater. | | | |
| 3 | Medium-term | The environmental impact identified will operate for the duration | | | |
| | | of life of the project. | | | |
| 4 | Long-term | The environmental impact identified will operate beyond the life of | | | |
| | | operation of the project. | | | |
| 5 | Permanent | The environmental impact will be permanent. | | | |

Table 7: Description of the temporal rating scale

Degree of Probability

The probability or likelihood of an impact occurring will be outlined in **Table** 8 below.

| RATING | DESCRIPTION |
|--------|-------------------------------------|
| 1 | Practically impossible |
| 2 | Unlikely |
| 3 | Could happen |
| 4 | Very likely |
| 5 | It's going to happen / has occurred |

Table 8: Description of the degree of probability of an impact occurring

Degree of Certainty

As with all studies, it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used, as discussed in **Table** 9. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed with regards to affected parties or environmental components.

Table 9: Description of the degree of certainty rating scale

| RATING | DESCRIPTION |
|------------|---|
| Definite | More than 90% sure of a particular fact. |
| Probable | Between 70 and 90% sure of a particular fact, or of the likelihood of |
| | that impact occurring. |
| Possible | Between 40 and 70% sure of a particular fact, or of the likelihood of |
| | an impact occurring. |
| Unsure | Less than 40% sure of a particular fact or the likelihood of an |
| | impact occurring. |
| Can't know | The consultant believes an assessment is not possible even with |
| | additional research. |

Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner, in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and temporal scale, as described below:

Impact Risk = (SIGNIFICANCE +Spatial+ Temporal) X Probability

3

5

An example of how this rating scale is applied is shown below:

Table 10: Example of Rating Scale

| IMPACT | SIGNIFICANCE | SPATIAL | TEMPORAL | PROBABILITY | RATING |
|------------|--------------|---------|----------|--------------|--------|
| | | SCALE | SCALE | | |
| | Low | Local | Medium | Could Happen | Low |
| | | | Term | | |
| Impact on | 2 | 3 | 3 | 3 | 1.6 |
| heritage | | | | | |
| structures | | | | | |

Note: The significance, spatial and temporal scales are added to give a total of 8, which is divided by 3 to give a criterion rating of 2.67. The probability (3) is divided by 5 to give a probability rating of 0.6. The criteria rating of 2.67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to five classes as described in the table below.

Table 11: Impact Risk Classes

| RATING | IMPACT CLASS | DESCRIPTION |
|-----------|--------------|-------------|
| 0.1 - 1.0 | 1 | Very Low |
| 1.1 – 2.0 | 2 | Low |
| 2.1 - 3.0 | 3 | Moderate |
| 3.1 - 4.0 | 4 | High |
| 4.1 - 5.0 | 5 | Very High |

Therefore, with reference to the example used for heritage structures above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

4 CURRENT STATUS QUO

4.1 Description of Study Area

The study area can be described as reasonably flat although it has sloped sections in the vicinity of the non-perennial stream which in some areas run alongside the study area. For the most part the study area comprises open grassland which appears to have been used for agricultural purposes over a long period of time. Some pockets of trees are also found.



Figure 10 –General view of a section of the study area. This view is along the proposed Eskom line in a southern direction as seen from near the proposed line's northern end.



Figure 11 –General view of a section of the study area. This view is along the proposed Eskom line in a northern direction as seen from near the proposed line's northern end.

5 DESKTOP STUDY FINDINGS

5.1 Archival and Historic Maps of the Study Area and Surrounding Landscape

5.1.1 Klerksdorp sheet of the Major Jackson Series

A section of the Klerksdorp sheet of the Major Jackson Series is depicted below (National Archives, Maps, 3/616). This series was compiled during the South African War (1899-1902) in the Surveyor-General's Office under supervision of Major H.M. Jackson of the Royal Engineers. The depicted sheet is the second revised edition and dates from May 1902.

No features are depicted within the study area. A short distance to the west (and outside) of the present study area boundary a number of black settlements are shown.



Figure 12 – Enlarged section of the Klerksdorp sheet of the Major Jackson Series. The map dates to May 1902. The approximate position of the study area is depicted in red dashed line.

5.1.2 First Edition of the 2626DC Topographical Sheet

A section of the first edition of the 2626DC topographical sheet is depicted below. The aerial photography on which the map is based was undertaken in 1945 while the actual survey was done in 1953. The map was drawn in 1957 by the Trigonometrical Survey Office while its printing was undertaken by the Government Printer during 1958. The following features are depicted within the study area:

• Feature 1

Two 'ruins' are depicted in this locality and likely indicate the presence of farm worker dwellings. No evidence for these ruins could be found in the field.



Figure 13 – This image was compiled using the overlay function of Google Earth and depicts a section of the First Edition of the 2626DC Topographical Sheet as well as the proposed development.

5.2 Aspects of the Area's History and Heritage

5.2.1 The early history and establishment of Klerksdorp

The occupation of the general vicinity of present-day Klerksdorp by humans can be traced back to the early beginnings of our common past during the so-called Early Stone Age. Stone tools (lithics) associated with this and more recent Stone Age phases (the Middle and Later Stone Ages) have been found across the surrounding district. One of the more well known sites from this era is the Bosworth rock art site, which is situated approximately 13 kilometers to the north of the study area. It consists of approximately 400 rock engravings which include numerous human figures as well as a beautiful charging white rhinoceros (Website of the National Museum, Bloemfontein, www.nasmus.co.za). It is recorded that some Later Stone Age material was observed on the Goudkoppie site (Küsel, 2006).

Later, Iron Age agro-pastoralists settled in the area and built large stonewalled settlements still evident today. Bergh (1999) lists a total of 88 Iron Age sites in an area to the north-west of Klerksdorp, though many more are likely situated there. One of the examples from this period is the site excavated by Professor R.J. Mason at Platberg, and which can be associated with the Rolong (Mason, 1974).

During the late 1830's a group of Voortrekkers settled on the banks of the Schoonspruit. One of the first of these Voortrekkers to settle in the area was C.M. du Plooy. Shortly thereafter a group consisting of twelve families under the leadership of H.J. van der Merwe also settled in the area (Du Plessis, 1952).

Although the exact date for the proclamation of the town of Klerksdorp is not certain, the farming settlement along the Schoonspruit was referred to as a 'town' in archival records as old as 1850 (Bergh, 1999). The early development of the town was slow. In 1865 Messrs James Taylor and Thomas Leask established Klerksdorp's first business. After the establishment of the business the town began to grow increasingly as trading centre, a movement which was further boosted by the discovery of diamonds along the Vaal River and the establishment of Kimberley during the early 1870s. A further impetus to the growth of the town as a stop-over and trading town was provided with the discovery of gold along the Witwatersrand in 1886 as well as the establishment and rapid growth of Johannesburg. The growth of Klerksdorp received further impetus when, a few months later in 1887, gold was also discovered in the direct surroundings of the town. The discovery was made by A.P. Roos.



Figure 14 –Early photograph taken during the late 19th century which depicts the so-called "old town" of Klerksdorp. The old town was located west of the Schoonspruit (likely designated on this image by the dense vegetation growth visible in the back) at the foot of a ridge (seen on the left) (National Archives, Photographs, 16342).



Figure 15 – Early photograph taken during the late 19th century which depicts the "new town" of Klerksdorp in the centre, and what appears to be the "old town" in the back (National Archives, Photographs, 16343).

5.2.2 The early history of gold mining at Klerksdorp

While the exact location of the discovery of A.P. Roos is uncertain, Guest (1938) indicates that it was likely made on a low hill known as Town or Railway Hill close to the old Commonage Reef Mine. The position of this hill is not presently known. When news of these finds became public, it was not long before a number of farms in the direct surroundings of Klerksdorp were proclaimed as public diggings with subsequent gold mines eventually established. The first of these proclamations took place on the farm Rietkuil on 11 July 1887 and the Klerksdorp Main Reef Gold Mining Company was later established there (Guest, 1938). Although it is unknown exactly when mining activities started on the farm Palmietfontein 403-IP, it is known that quite a number of gold mining companies were active there during the period 1888 to 1890. These included the West End Syndicate, the Haylett Syndicate, Ceres Syndicate, Van Wyk Syndicate, White Reef United Syndicate, Edith-Emma Syndicate, the Hotspur and Lee. However, by the time that mining operations such as the Buffelsdoorn Consolidated Gold Mining Company Limited and the Palmietfontein Black Reef Gold Mining Company Limited came into existence in 1895, all these earlier syndicates and companies had disappeared from the farm. Although a considerable number of shafts were sunk by these two companies, no gold was ever produced by them.

In 1933 the Western Reefs Company took out options on most of the ground and also purchased 496 morgen from a Mr. E.C. Jones. After acquiring these properties the company started a rigorous drilling process. Later the Klerksdorp Consolidated Goldfields Limited and the Rietkuil Syndicate also became active on the farm.

While the exact location of all these mining operations are not known at present, none of the cartographic evidence assessed as part of this study points to the existence of gold mines or gold mining activities within the study area. Furthermore, no evidence for such features or activities was located during the field work.

5.3 Previous Archaeological and Heritage Work

With the use of the South African Heritage Resources Information System (SAHRIS) as well as the Report Mapping Project of SAHRA, a search was undertaken of previous heritage and archaeological studies within – and in close proximity to – the study area. Three such studies of relevance were identified.

- The southern section of the proposed development comprising the southern end of the loop-in-loop-out lines as well as the substation is situated within an area which had already been assessed by PGS Heritage. The report is titled *Phase 1 Heritage Impact Assessment of the Proposed Township Establishment on Portion 97 of the Farm Palmietfontein 403 JP, Located East of Klerksdorp, City of Matlosana Municipality, North West Province* (Birkholtz, 2010b). Four sites were identified during the fieldwork of this assessment, namely three cemeteries and one historic farm worker settlement. One of these cemeteries is located in proximity to the proposed development and is discussed as Site 3 in this report.
- A heritage impact assessment was undertaken by PGS Heritage & Grave Relocation Consultants in 2010 and the title of the report is as follows: *Phase 1 Heritage Impact Assessment in terms of the Proposed Township Establishment on the farm Isago@N12 564 IP, located east of Klerksdorp, City of Matlosana Local Municiaplity, North West Province* (Birkholtz, 2010a). The study area for this assessment is situated roughly 200m south of the southern end of the present development. The study identified nine heritage sites including one historic homestead, three historic farm worker dwellings, two possible graves, two historic farming-related structures and one recent farmingrelated structure. None of these sites are affected by the present development.
- A heritage impact assessment was undertaken by African Heritage Consultants in 2007 and the title of the report reads as follows: *Cultural Heritage Resources Impact Assessment on Portion 376 (a Portion of Portion 360) of the farm Elandsheuwel 402 IP, Klerksdorp* (Küsel, 2007). The study area for this assessment is situated roughly 986m west of the northern end of the present development. No heritage sites were identified.

5.4 Assessment of the Palaeontological Sensitivity Map

The Palaeontological Sensitivity Map compiled by the South African Heritage Resources Agency (SAHRA) was assessed. A comparison of the proposed development footprint area indicates that the north-western section of the development is located within areas classified as grey with the remainder of the development located in areas classified as blue. Those sections of the sensitivity map classified as blue have Low Palaeontological Sensitivity and while no desktop studies are required a protocol of finds must be compiled. In turn, those sections of the sensitivity map classified as grey have Insignificant/Zero Palaeontological Sensitivity and no further palaeontolgoical work would be required.

6 FIELDWORK FINDINGS

It is important to note that the southern end of the proposed development consisting of the southern end of the proposed loop-in-loop-out lines as well as the proposed substation are located within an area which formed part of a previous heritage impact assessment undertaken by PGS Heritage. This assessment was undertaken for the proposed development of Portion 97 of the farm Palmietfontein 403 IP (refer Birkholtz, 2010b). As a result the fieldwork undertaken for the current development focussed on that section of the proposed development located outside of the area which had been dealt with in the previous assessment. The recorded track logs reflect this. This said, a brief scan through the section of the development area situated within the former study area was also undertaken.



Figure 16 – *Google Earth overlay of the proposed development and the study area that was assessed during the 2010 heritage impact assessment. The boundaries of the previous study area are in white.*

The images that follow provide a depiction of sections of the development area with the track logs recorded using two hand-held GPS devices.



Figure 17 – Google Earth depiction of the northern end of the proposed development showing the track logs that were recorded during the fieldwork using two hand-held GPS devices.



Figure 18 – Google Earth depiction of the north-central section of the proposed development showing the track logs that were recorded during the fieldwork using two hand-held GPS devices.



Figure 19 – Google Earth depiction of the central section of the proposed development showing the track logs that were recorded during the fieldwork using two hand-held GPS devices.



Figure 20 – Google Earth depiction of the south-central section of the proposed development showing the track logs that were recorded during the fieldwork using two hand-held GPS devices.



Figure 21 – Google Earth depiction of the southern section of the proposed development showing the track logs that were recorded during the fieldwork using two hand-held GPS devices. The pink rectangular areas represent the boundaries of the proposed substation.

6.1 Sites Identified within the Study Area

For the purposes of this report the study area is defined as the strip of land where the proposed Eskom line will be constructed as well as the southern substation. Two heritage sites were identified within the study area and numbered as Site 1 and Site 2. Only one heritage site type was identified within the study area namely Graves and Cemeteries.

6.1.1 Site 1

Site Coordinates:

S 26° 49' 58.0" E 26° 42' 08.5"

Site Description:

A cemetery is located here. It is situated on a slight slope roughly 75m south-west of a nonperennial stream. The cemetery comprises a total of 11 graves, all of which have oval and rectangular stone packed dressings orientated along the east-west axis. The cemetery layout consists of two North-South rows with two graves located in the western row and the remaining nine graves in the eastern row. While a number of the graves have upright natural stones on their western ends only one grave was observed with a rectangular cement block. No inscription was found on this block. From the relative sizes of the stone packed dressings it would appear that the graves of four adults and seven children were buried here, but this can of course not be stated as fact. No evidence of grave goods could be observed which suggests that the graves are not visited by the next of kin.

The cemetery is situated 8m north-east of the eastern proposed Eskom line and the nearest structure (pylon) is Eskom Line Structure 21 which is 52m to the south.

Site Significance:

All graves possess high levels of religious, cultural, emotional and legislative significance. As such, the site is of Generally Protected A (GP. A) or High/Medium Significance. This indicates that the site may not be impacted upon without prior mitigation.



Figure 22 – General view of the cemetery at Site 1 as seen from the south.



Figure 23 – Closer view of some of the graves from Site 1.



Figure 24 – Google Earth image depicting the position of Site 1 in relation to the proposed Eskom lines and structures. The coloured lines depict the proposed Eskom lines whereas the white numbers provide the position and respective numbers of the individual structures (pylons).

6.1.2 SITE 2

Site Coordinates:

S 26° 50' 00.2" E 26° 42' 07.8"

Site Description:

The site comprises an oval-shaped stone concentration which is orientated along the East-West axis, has a larger stone on its western end and a glass fragment on top of the concentration. Although it is impossible to state whether this is in fact a grave, it can certainly be classified as a possible grave. The possible grave is located 2.5m south-west of the western proposed Eskom line and the nearest structure (pylon) is Eskom Line Structure 7 which is 15m to the north.

Site Significance:

Although the site can be described as a possible grave a worst case scenario is adopted whereby the site is viewed as a grave site until sufficient evidence to the contrary is obtained. All graves possess high levels of religious, cultural, emotional and legislative significance. As such, the site is of Generally Protected A (GP. A) or High/Medium Significance. This indicates that the site may not be impacted upon without prior mitigation.



Figure 25 – General view of the stone concentration.



Figure 26 – Google Earth image depicting the position of Site 2 in relation to the proposed Eskom lines and structures. The coloured lines depict the proposed Eskom lines whereas the white numbers provide the position and respective numbers of the individual structures (pylons).

6.2 Sites Identified outside of the Study Area

This section deals with those sites identified outside of the study area but still close enough to warrant inclusion in this report. One such a site was identified and numbered as Site 3. Only one heritage site type was identified within the study area, namely Graves and Cemeteries.

6.2.1 Site 3

Site Coordinates:

S 26° 50' 38.3" E 26° 42' 22.9"

Site Description:

The site comprises a small informal cemetery with approximately 38 informal graves. The cemetery is not fenced and is located in the middle of an open field.

The graves were buried in three unequal lines next to each other. All of the graves have informal dressings which consist of oval shaped mounds of soil and packed rocks. These dressings are all orientated along the east-west axis and no headstones or grave goods were observed. The graves are overgrown with grass and weeds.

The cemetery is located 38m north-east northern proposed Eskom line and the nearest structure (pylon) is Eskom Line Structure 26 which is 94m to the south-west.

Site Significance:

All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of Generally Protected A (GP. A) or High/Medium Significance. This indicates that the site may not be impacted upon without prior mitigation. The mitigation measures to be undertaken for the site can be found below.



Figure 27 – General view of the cemetery at Site 3.



Figure 28 – Closer view of some of the graves from Site 3.



Figure 29 – Google Earth image depicting the position of Site 3 in relation to the proposed Eskom lines and structures. The coloured lines depict the proposed Eskom lines whereas the white numbers provide the position and respective numbers of the individual structures (pylons).

7 IMPACT OF PROPOSED DEVELOPMENT ON HERITAGE RESOURCES

7.1 Risk Calculation for the Impact of the Proposed Development on Site 1

In this section the impact of the proposed development on the cemetery at Site 1 will be established. Although the cemetery is located some distance away from the proposed Eskom structure (pylon) positions, its proximity to the proposed development necessitates the consideration of possible ancillary impacts associated with the development. As a result the probability rating was calculated to be "Could Happen" if viewed in the absence of any mitigation measures.



IMPACT RISK = 2.4

| IMPACT | SIGNIFICANCE | SPATIAL | TEMPORAL | PROBABILITY | RATING |
|-----------|--------------|---------|-----------|--------------|----------|
| | | SCALE | SCALE | | |
| | High | Local | Permanent | Could Happen | Moderate |
| Impact on | 4 | 3 | 5 | 3 | 2.4 |
| cemetery | | | | | |

Table 12: Risk Calculation for Development Impact on the Identified Cemetery

7.2 Risk Calculation for the Impact of the Proposed Development on Site 2

This section deals with the impact of the proposed development on the possible grave at Site 2. As was the case in terms of the previous calculation, although the site is located some distance away from the proposed Eskom structure (pylon) positions, its proximity to the proposed development necessitates the consideration of possible ancillary impacts associated with the development. As a result the probability rating was calculated to be "Could Happen" if viewed in the absence of any mitigation measures.

Impact Risk =
$$\frac{\text{(Significance + Spatial + Temporal)}}{3} \times \frac{\text{Probability}}{5}$$



IMPACT RISK = 2.4

Table 13: Risk Calculation for Development Impact on the Possible Grave

| IMPACT | SIGNIFICANCE | SPATIAL | TEMPORAL | PROBABILITY | RATING |
|-----------|--------------|---------|-----------|--------------|----------|
| | | SCALE | SCALE | | |
| | High | Local | Permanent | Could Happen | Moderate |
| Impact on | 4 | 3 | 5 | 3 | 2.4 |
| possible | | | | | |
| grave | | | | | |

7.3 Risk Calculation for the Impact of the Proposed Development on Site 3

In this section the impact of the proposed development on the cemetery at Site 3 will be established. As discussed above, the site is located 38m from the nearest point on the proposed Eskom line and is also situated 94m from the nearest Eskom structure (pylon). As a result the probability of any impacts from the proposed development on the site even when viewed in the absence of any mitigation measures can be considered as "Unlikely".



IMPACT RISK = 1.6

Table 14: Risk Calculation for Development Impact on the Cemetery

| IMPACT | SIGNIFICANCE | SPATIAL | TEMPORAL | PROBABILITY | RATING |
|-----------|--------------|---------|-----------|-------------|--------|
| | | SCALE | SCALE | | |
| | High | Local | Permanent | Unlikely | Low |
| Impact on | 4 | 3 | 5 | 2 | 1.6 |
| cemetery | | | | | |

8 MITIGATION MEASURES AND GENERAL RECOMMENDATIONS

In Section 8 the impact risk of the proposed development on the two sites located within the study area and one site situated in proximity to the study area were assessed. The findings of the impact risk calculations are provided here. The required mitigation measures are discussed below.

| SITE | IMPACT CLASS | IMPACT RISK | MITIGATION | | |
|--|--------------|-------------|------------|--|--|
| PROPOSED DEVELOPMENT IMPACT ON HERITAGE SITES WITHIN THE STUDY AREA | | | | | |
| Site 1 | 3 | Medium | Yes | | |
| Site 2 | 3 | Medium | Yes | | |
| PROPOSED DEVELOPMENT IMPACT ON HERITAGE SITES IN PROXIMITY TO STUDY AREA | | | | | |
| Site 3 | 2 | Low | No | | |

Table 15: Summary of Findings of Impact Risk Calculations

From this table it is evident that no mitigation measures would be required for Site 3 whereas mitigation measures would be required for Site 1 and Site 2.

8.1 Mitigation Measures as Required by the Different Sites

8.1.1 Mitigation measures required for Site 1

As discussed above, the unmitigated impact of the proposed development will result in a medium impact on the cemetery at Site 1. The following mitigation measures are required to minimise this impact:

• The cemetery must be fenced, preferably of the palisade-type. The new fence must be erected in such a way that a 5m corridor is created between the visible graves and the fence. A buffer area of 5m on the outside of the fence must be kept clear of any surface development. The fence must contain signage indicating that a cemetery is located there. Preferably, at least one sign should be erected on each of the four sides of the fence. Both the fence and the sign would make the cemetery highly visible.

- A gate must be installed within the fence at the cemetery. Although the gate will not be locked, a sign must be erected on the gate requesting all visitors to the cemetery to report to a previously designated official of Eskom. A visitor registration must be completed by all visitors to the cemetery who report to this designated official.
- Should the monitoring process (see below) reveal any impacts or vandalism to the graves or cemetery, the abovementioned gate must be kept locked at all time, with the original and copy of the key kept by the designated official of Eskom. A register must be kept of all visitors to the cemetery, and a deposit can be paid to ensure that the keys are returned. A sign can be erected on the gate explaining this process of accessing the cemetery.
- A monitoring process must be undertaken with which any impacts on the cemetery can be identified and acted upon. As construction activities will be undertaken in proximity to the cemetery, it is recommended that an intensive monitoring schedule be implemented consisting of a monitoring visit once every week during construction. Should any impacts on the cemetery be identified, these must be acted upon and at the same time the monitoring schedule must be increased. Monitoring should be undertaken by a suitably qualified heritage specialist.

8.1.2 Mitigation measures required for Site 2

As discussed above, the unmitigated impact of the proposed development will result in a medium impact on the possible grave at Site 2. The mitigation of the site can be undertaken in two different ways and it will be left to the client to decide which alternative would suit their requirements the best. The first entails the *in situ* preservation of the site and based on the assumption of a worst case scenario that the stone concentration identified here is indeed a grave, the following mitigation measures would be required:

- The site must be fenced, preferably of the palisade-type. The new fence must be erected in such a way that a 5m corridor is created between the visible grave and the fence. A buffer area of 5m on the outside of the fence must be kept clear of any surface development. The fence must contain signage indicating that a cemetery is located there. Preferably, at least one sign should be erected on each of the four sides of the fence. Both the fence and the sign would make the cemetery highly visible.
- A gate must be installed within the fence at the cemetery. Although the gate will not be locked, a sign must be erected on the gate requesting all visitors to the cemetery to

report to a previously designated official of Eskom. A visitor registration must be completed by all visitors to the cemetery who report to this designated official.

- Should the monitoring process (see below) reveal any impacts or vandalism to the graves or cemetery, the abovementioned gate must be kept locked at all time, with the original and copy of the key kept by the designated official of Eskom. A register must be kept of all visitors to the cemetery, and a deposit can be paid to ensure that the keys are returned. A sign can be erected on the gate explaining this process of accessing the cemetery.
- A monitoring process must be undertaken with which any impacts on the cemetery can be identified and acted upon. As construction activities will be undertaken in proximity to the cemetery, it is recommended that an intensive monitoring schedule be implemented consisting of a monitoring visit once every week during construction. Should any impacts on the cemetery be identified, these must be acted upon and at the same time the monitoring schedule must be increased. Monitoring should be undertaken by a suitably qualified heritage specialist.

The alternative mitigation option is to establish through archaeological test excavation whether a grave is indeed located here. The following mitigation measures would be required:

- The site must be temporarily fenced with danger tape and rods.
- A permit application for reconnaissance excavations must be submitted to the South African Heritage Resources Agency.
- Once the permit is received from SAHRA reconnaissance excavations can take place.
- If no evidence for a grave is found, this will be reported in writing to the client and SAHRA subsequent to which no further mitigation measures would be required.
- However, if evidence for a grave (i.e. coffin fragment, burial pit, skeletal matter) is found, the excavation will be backfilled and a full grave relocation process undertaken. This process will include permit applications to SAHRA and other institutions, site notices, social consultation etc.

9 CONCLUSIONS

PGS Heritage was appointed by Anglo Saxon Group to undertake a Heritage Impact Assessment in terms of the proposed Matlosana 132 kV Loop-in-Loop-Out Line and Substation located on Sections of Portions 36 and 60 of the farm Palmietfontein 403 IP, City of Matlosana Local Municipality, North West Province.

An archival and historical desktop study was undertaken which was used to compile a historical layering of the study area within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history.

The desktop study work was followed by a fieldwork component which comprised a walkthrough of the study area. Two heritage sites comprising a cemetery as well as one possible grave were identified within the study area whereas a third heritage site consisting of a cemetery was identified outside of the study area but in the general vicinity of the proposed development.

The impact risk of the proposed development on the heritage sites was established, and where required mitigation measures are proposed. In the table below the three heritage sites mentioned above will be outlined. The table contains the significance levels of the respective sites as well as the required mitigation measures.

| Site | Description | Significance | Coordinates | Summarised Mitigation (see Section 9 for details) |
|--------|-------------------|------------------------------|------------------------------------|--|
| Site 1 | Cemetery | High/Medium Local (GP. A) | S 26° 49' 58.0" E 26° 42' 08.5" | The cemetery must be fenced allowing a 5m corridor between the visible graves and the fence with a 5m buffer on the outside of the fence kept clear of surface development. A monitoring process must be implemented during the construction phase. |
| Site 2 | Possible Grave | High/Medium Local (GP. A) | S 26° 50' 00.2" E 26° 42' 07.8" | Two mitigation alternatives are possible, namely: In situ preservation with the undertaking of the same mitigation measures as required for Site 1, or Reconnaissance excavation of the possible grave to establish whether a grave is located here or not. If no evidence for a |

Table 1: Summarised List of Heritage Sites Identified within the Study Area

| | | | | grave is found no further mitigation measures would be required. However, if evidence for a grave is found grave relocation will have to be undertaken. |
|--------|----------|---------------|-----------------|--|
| Site 3 | Cemetery | High/Medium | S 26° 50' 38.3" | No mitigation measures required. |
| | | Local (GP. A) | E 26° 42' 22.9" | |

With the use of the Palaeontological Sensitivity Map of SAHRA it was established that sections of the proposed development are located in areas classified as Low Palaeontological Sensitivity with other sections of the development situated in areas classified as Insignificant/Zero Palaeontological Sensitivity. As indicated by the map, no further work is required for the areas classified as of zero sensitivity, with the development in areas classified as low sensitivity requiring the compilation of a palaeontological protocol.

The overall impact of the development on heritage resources is seen as acceptably low and impacts can be mitigated to acceptable levels. On the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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Archival References

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Historic Topographic Maps

The historic topographic maps used in this report were obtained from the Directorate: National Geo-spatial Information of the Department of Rural Development & Land Reform, Cape Town.

Google Earth

All the aerial depictions used in this report are from Google Earth.

Appendix A
SITE DISTRIBUTION MAP



Appendix B

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

General principles

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In terms of the heritage legislation, permits are required to damage, destroy, alter, or disturb them. Furthermore, individuals who already possess heritage material are required to register it. The management of heritage resources is integrated with environmental resources and this means that, before development takes place, heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves which are older than 60 years and are not located in a cemetery (such as ancestral graves in rural areas), are protected. The legislation also protects the interests of communities that have an interest in the graves: they should be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle are to be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resources authority and, if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the construction company's cost. Thus, the construction company will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that: An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;

- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video 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), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection to, all historic and prehistoric cultural remains, including graves and human remains.

Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are under the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years, fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are under the jurisdiction of the South African Heritage Resources Agency (SAHRA). The procedure

for Consultation regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years, over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.