



Archaetnos Culture & Cultural
Resource Consultants
BK 98 09854/23

**A REPORT ON A CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE
PROPOSED ALEXANDER PROJECT NEAR KRIEL, MPUMALANGA PROVINCE**

For:

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REPORT NO.: AE01621V

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8 April 2016

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SUBMISSION OF REPORT

Please note that the South African Heritage Resources Agency (SAHRA) or one of its subsidiary bodies needs to comment on this report.

It is the client's responsibility to do the submission via the SAHRIS System on the SAHRA website.

Clients are advised not to proceed with any action before receiving the necessary comments from SAHRA.

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SUMMARY

In 2014 and 2016 Archaetnos cc was requested by Synergistics Environmental Services (Synergistics), a SLR Group Company, to conduct a cultural heritage impact assessment for the proposed Alexander Project. The project spans over a large area, including various farms, close to Kriel in the Mpumalanga Province.

A survey of the available literature was undertaken in order to obtain background information regarding the area. This was followed by the field survey which was conducted according to generally accepted Heritage Impact Assessment (HIA) practices, aimed at locating all possible objects, sites and features of cultural significance in the area of the proposed development.

All sites, objects, features and structures identified were to be documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities were determined by means of a Global Positioning System (GPS). The information was added to photographs and the description in order to facilitate the identification of each locality.

During the initial (2014) survey twenty nine sites of cultural heritage significance were located. No additional sites were located during the 2016 survey. None of these sites are within the area to be disturbed by mining activities. The sites are discussed in the report and mitigation measures are proposed. After implementation of these, the proposed development may continue.

It should be noted however that due to the vastness of area, coupled with other factors, this definitely is an under representation of heritage sites in the mining right area. This will however mostly be left undisturbed as the mining will be underground. Also, due to the subterranean presence of archaeological and/or historical sites, features or artifacts, always is a distinct possibility. Therefore, care should be taken that if any other sites are encountered during the development, a qualified archaeologist should be called in to investigate.

It is also important to take cognizance that it is the client's responsibility to do the submission of this report via the SAHRIS System on the SAHRA website. No work on site may commence before receiving the necessary comments from SAHRA.

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- Post-Graduate Diploma in Museology 1993 (cum laude), University of Pretoria
- Diploma Tertiary Education 1993, University of Pretoria
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- MA Cultural History 1998 (cum laude), University of Stellenbosch
- Management Diploma 2007 (cum laude), Tshwane University of Technology
- DPhil History 2010, University of Stellenbosch

Employment history

- 1988-1991: Fort Klapperkop Military Museum - Researcher
- 1991-1999: National Cultural History Museum. Work as Archaeologist, as well as Curator/Manager of Pioneer Museum (1994-1997)
- 1999-2002: City Council of Pretoria. Work as Curator: Fort Klapperkop Heritage Site and Acting Deputy Manager Museums and Heritage.
- 2002-2007: City of Tshwane Metropolitan Municipality. Work as Deputy Manager Museums and Heritage.
- August 2007 – present – Managing Director for Archætnos Archaeologists.
- 1988-2003: Part-time lecturer in Archaeology at the University of Pretoria and a part-time lecturer on Cultural Resources Management in the Department of History at the University of Pretoria.
- 2014: Part-time lecturer for the Honours degree in Museum Sciences in the Department of History and Heritage Studies at the University of Pretoria
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- Published 75 articles in scientific and popular journals on archaeology and history.
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- Contributed to a book on Mapungubwe.
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- Member of the South African Academy for Science and Art.
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ASAPA Accreditation number: 166
SASCH Accreditation number: CH001

DECLARATION OF INDEPENDENCE

I, Anton Carl van Vollenhoven from Archaetnos, hereby declare that I am an independent specialist within the field of heritage management.

Signed:

A rectangular box containing a handwritten signature in dark ink. The signature is cursive and appears to read 'Anton Carl van Vollenhoven'.

Date: 8 April 2016

1. INTRODUCTION

In 2014 and 2016 Archaetnos cc was requested by Synergistics Environmental Services (Synergistics), a SLR group company, to conduct a cultural heritage impact assessment for the proposed Alexander Project.

The proposed mining right area spans over a large area, including various farms, close to Kriel in the Mpumalanga Province. The farms applicable to the study are Onverwacht 70 IS, Aangewys 81 IS, Witbank 80 IS, Witbank 576 IS, Alexander 102 IS, Caley 77 IS, Elandsfontein 75 IS, Witrand 103 IS, Kafferstad 79 IS, Dorstfontein 71 IS and Rensburgshoop 74 IS. In some cases it includes the entire farm, but in other only certain portions. Additional to this, some farms are affected by the proposed placement of a conveyor for the transporting of coal (Figure 1 - 6). These farms are portions 2, 3, 4, 7, 8 and 10 of the farm Elandsfontein 75 IS, portions 1, 5, 6, 7, and 16 of the farm Legdaar 78 IS, portion 3 of the farm Middelkraal 50 IS, portions 6 and 10 of the farm Rensburgshoop 74 IS, portion 2 of the farm Schoon-Vlei 52 IS and the Remainder of the farm Vlakkuielen 76 IS.

The project will entail underground mining. At least one shaft will be used to gain access to the underground mining.

The client indicated the area of potential project related disturbance to be surveyed. The field survey was confined to this area and was done via off-road vehicle and on foot.

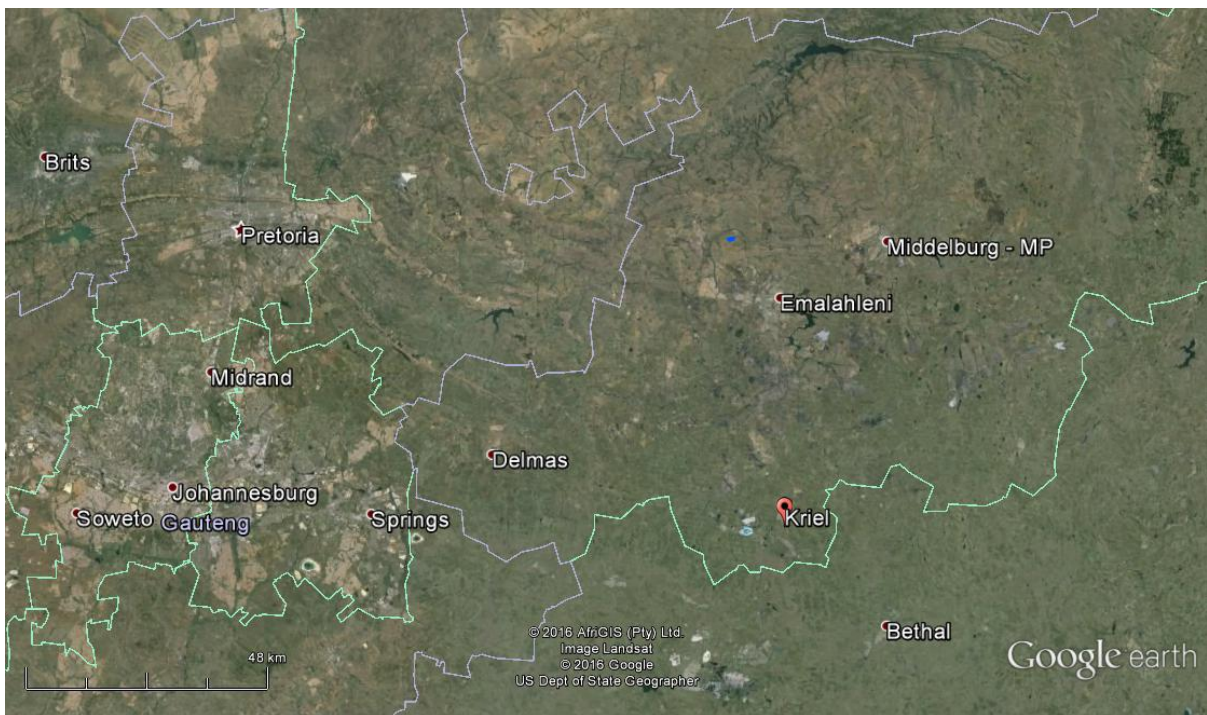


Figure 1 Location of the town of Kriel in the Mpumalanga Province. North reference is to the top.

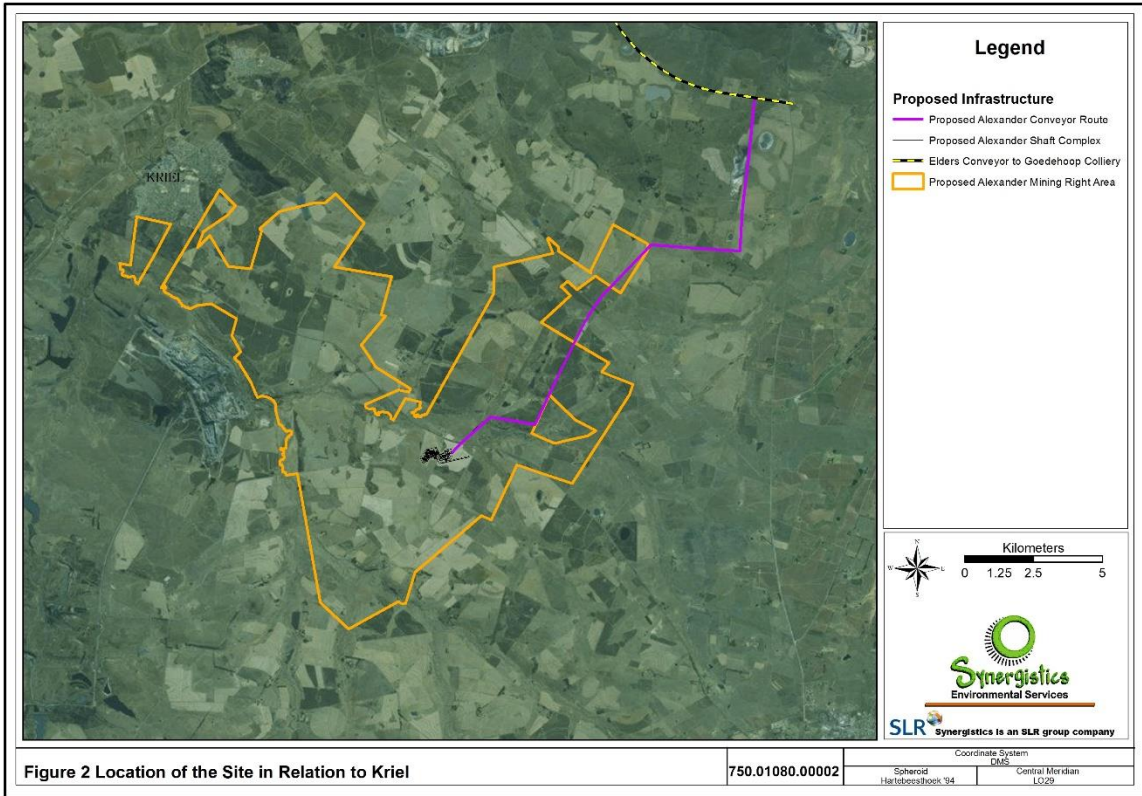


Figure 2 Location of the site in relation to Kriel.

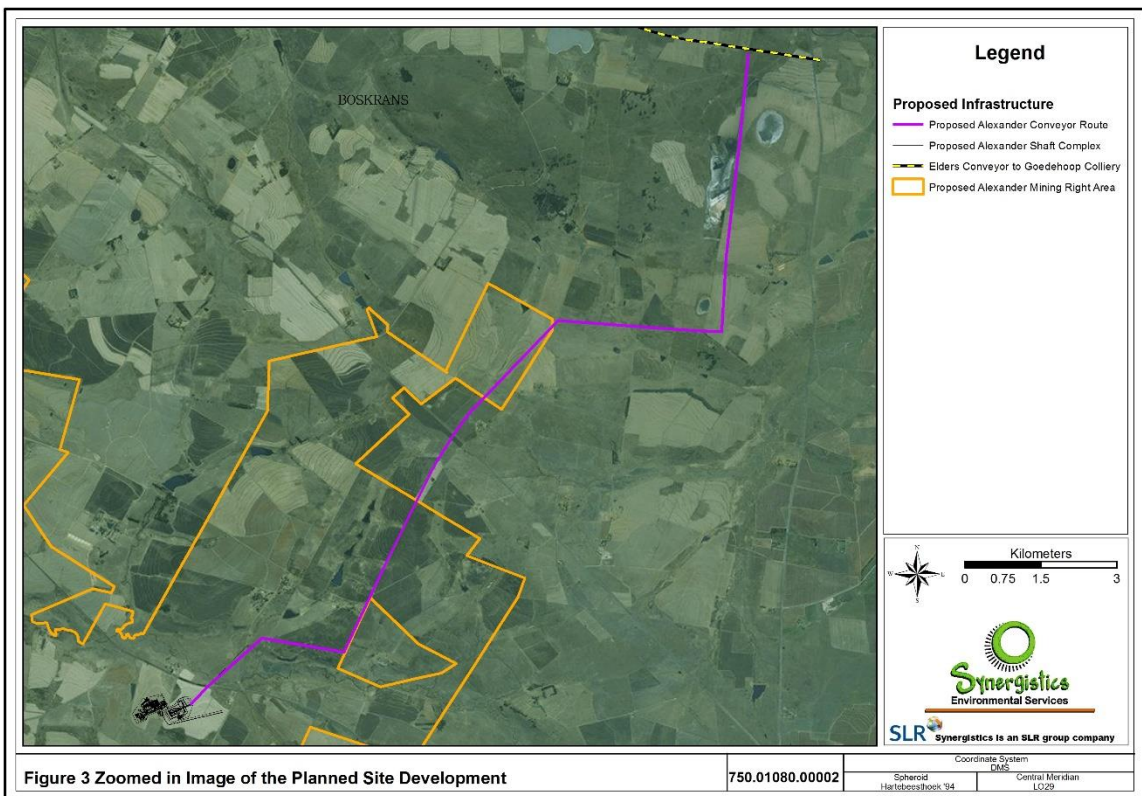


Figure 3 Zoomed in image of the planned site development.

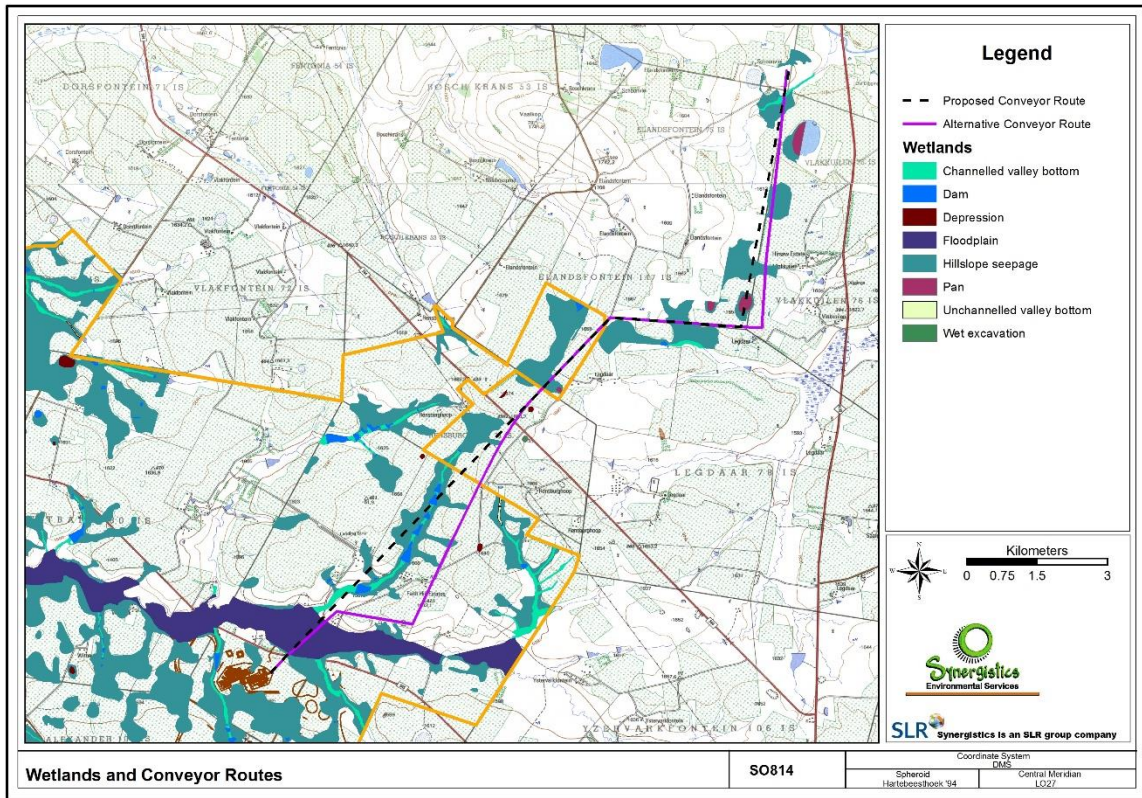


Figure 4 This wetland map indicates the project area.

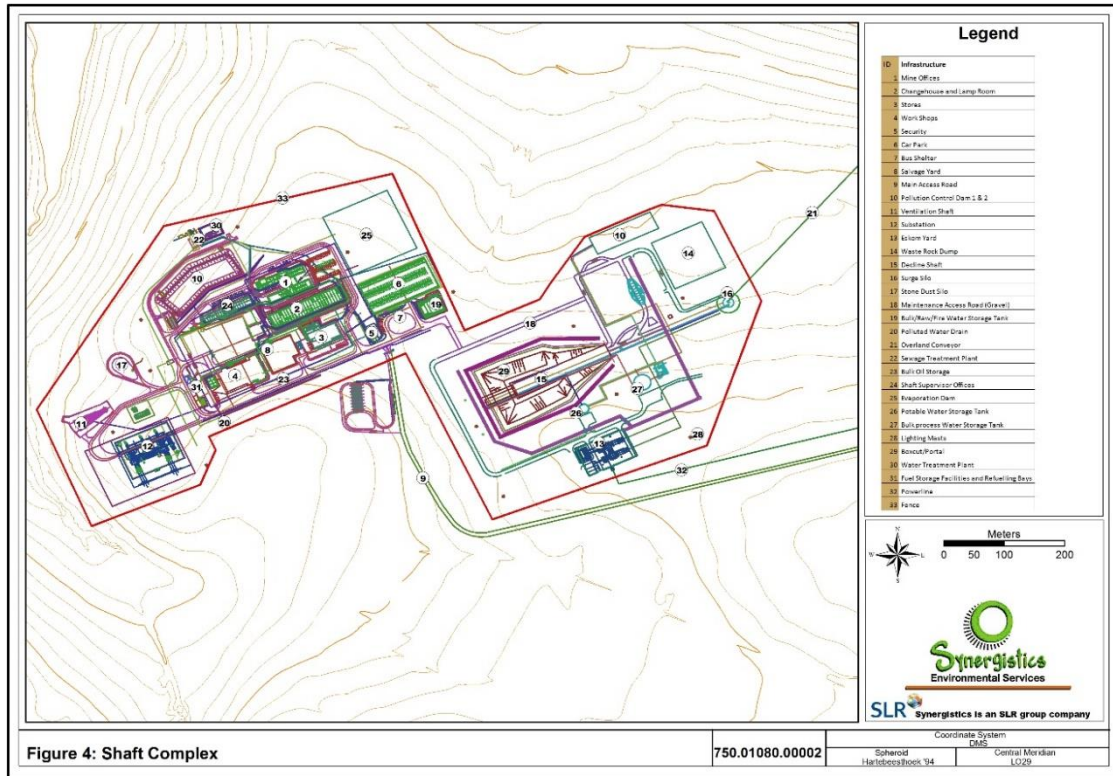


Figure 5 Map indicating the proposed mine shaft complex layout.

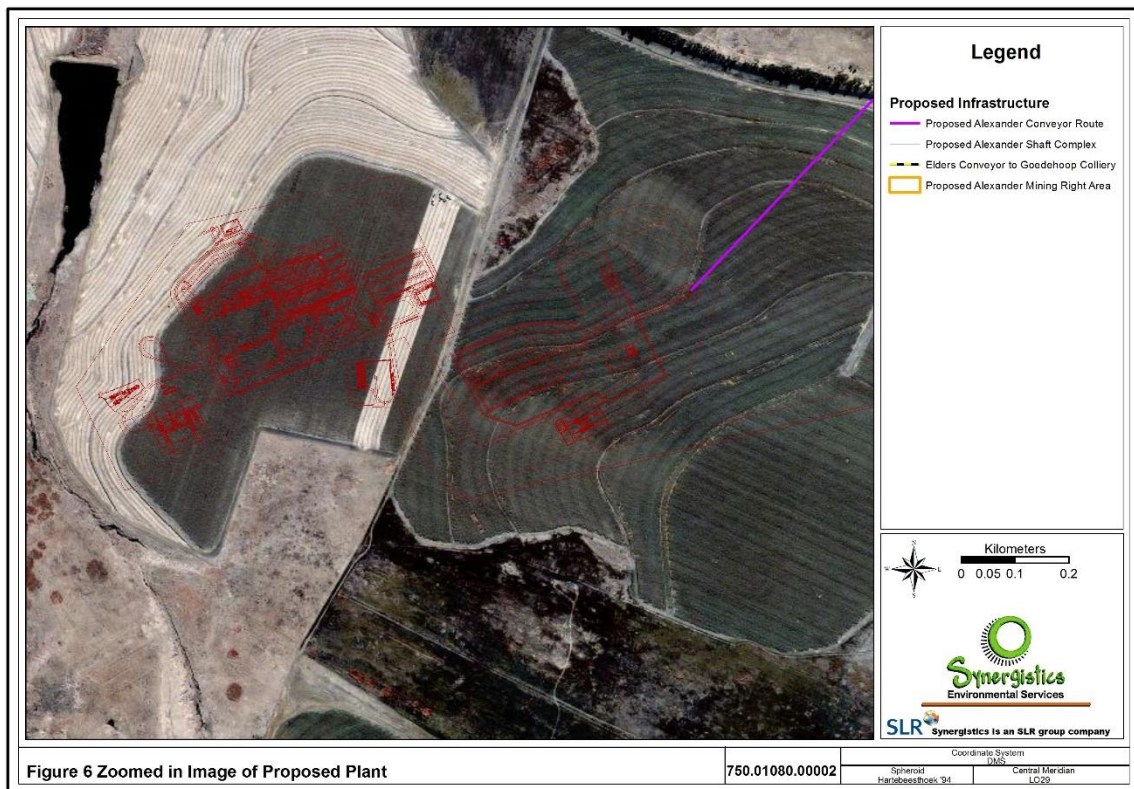


Figure 6 Zoomed in image of proposed plant.

2. TERMS OF REFERENCE

The Terms of Reference for the survey were to:

1. Identify as much as possible objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the proposed project disturbance area (see Appendix A).
2. Study background information on the area to be developed.
3. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value (see Appendix B).
4. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions.
5. Recommend suitable mitigation measures to minimize possible negative impacts on the cultural resources by the proposed development.
6. Review applicable legislative requirements.

3. CONDITIONS, ASSUMPTIONS & KNOWLEDGE GAPS

The following conditions and assumptions have a direct bearing on the survey and the resulting report:

1. Cultural Resources are all non-physical and physical man-made occurrences, as well as natural occurrences associated with human activity (Appendix A). These include all sites, structures and artifacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development. Graves and cemeteries are included in this.
2. The significance of the sites, structures and artifacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects.
3. Cultural significance is site-specific and relates to the content and context of the site. Sites regarded as having low cultural significance have already been recorded in full and require no further mitigation. Sites with medium cultural significance may or may not require mitigation depending on other factors such as the significance of impact on the site. Sites with a high cultural significance require further mitigation (see Appendix C).

4. The latitude and longitude of any archaeological or historical site or feature, is to be treated as sensitive information by the developer and should not be disclosed to members of the public.
5. All recommendations are made with full cognizance of the relevant legislation.
6. It needs to be stated that it is impossible to identify all heritage resources in a large area, especially during the summer months when vegetation is high and dense. It would simply be extremely time consuming and expensive to survey every square meter of land. Therefore there always is a possibility that some sites may only become known later on. Developers should however note that the report should make it clear how to handle any other finds that might occur.
7. During both field work seasons' (2014 and 2016) there were certain areas where the vegetation cover was very dense and high which had a negative effect on both the horizontal and the vertical archaeological visibility. This included agricultural fields, mainly maize and soya beans in full season. Accessibility was also a problem due to access not being allowed and extremely slippery and wet surfaces due to rains in January to March 2014 when the first field work was undertaken.
8. It also should be noted that there is no comprehensive database with possible desktop information on heritage sites in South Africa. The SAHRIS system is being developed by SAHRA, but information obtained before 2012 is only gradually being placed on this database.

4. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

4.1 The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The national estate (see Appendix D) includes the following:

- 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 features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Archaeological and paleontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment only looks at archaeological resources and can only be done by a professional archaeologist. A Paleontological Impact Assessment (PIA) is an assessment of paleontological heritage. Paleontology is a different field of study, and although also sometimes required by the South African Heritage Resources Agency (SAHRA)¹, should be done by a professional paleontologist.

The different phases during the HIA process are described in Appendix E. An HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m² or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000 m²
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

Structures

Section 34 (1) of the mentioned act states that no person may demolish any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

¹ Please consult SAHRA to determine whether a PIA is necessary.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology and meteorites

Section 35(4) of this act deals with archaeology, palaeontology and meteorites. The act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial):

- a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;
- c. trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or
- d. Bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- e. Alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Human remains

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b. destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which

- is situated outside a formal cemetery administered by a local authority;
or
- c. Bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

All graves older than 60 years are called heritage graves and should be handled by an archaeologist. This includes archaeological graves, which are older than 100 years. Unidentified/unknown graves (which refers to date of death) are also handled as older than 60 until proven otherwise.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations (Ordinance no. 12 of 1980)** (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

4.2 The National Environmental Management Act

This act (Act 107 of 1998) states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof be made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

This report complies with the requirements of the NEMA and environmental impact assessment (EIA) regulations (GNR 982 of 2014). This report complies with the requirements of the NEMA and environmental impact assessment (EIA) regulations (GNR 982 of 2014). The table below provides a summary of the requirements, with cross references to the report sections where these requirements have been addressed.

Table 1.1: Specialist report requirements in terms of Appendix 6 of the EIA Regulations (2014)

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 must contain:	Relevant section in report
Details of the specialist who prepared the report	p. 5
The expertise of that person to compile a specialist report including a curriculum vitae	p.5
A declaration that the person is independent in a form as may be specified by the competent authority	p.6
An indication of the scope of, and the purpose for which, the report was prepared	Sec. 1 & 2
The date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 6
A description of the methodology adopted in preparing the report or carrying out the specialised process	Sec. 6
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Sec. 9
An identification of any areas to be avoided, including buffers	Sec. 10
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Sec.10
A description of any assumptions made and any uncertainties or gaps in knowledge;	Sec. 3
A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Sec. 10
Any mitigation measures for inclusion in the EMPr	Sec. 10
Any conditions for inclusion in the environmental authorization	Sec. 10
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Sec. 10
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	Sec. 10
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Sec. 10
A description of any consultation process that was undertaken during the course of carrying out the study	Sec. 6 & 11
A summary and copies if any comments that were received during any consultation process	n/a
Any other information requested by the competent authority.	Sec. 4

5. THE INTERNATIONAL FINANCE CORPORATIONS' PERFORMANCE STANDARD FOR CULTURAL HERITAGE

This standard recognizes the importance of cultural heritage for current and future generations. It aims to ensure that clients protect cultural heritage in the course of their project activities.

This is done by clients abiding to the law and having heritage surveys done in order to identify and protect cultural heritage resources via field studies and the documentation of such resources. These need to be done by competent professionals (e.g. archaeologists and cultural historians).

Possible chance finds, encountered during the project development, also need to be managed by not disturbing such finds and by having them assessed by professionals. Impacts on the cultural heritage should be minimized. This include the possible maintenance of such sites in situ, or when impossible, the restoration of the functionality of the cultural heritage in a different location.

When cultural historical and archaeological artifacts and structures need to be removed it should be done by professionals and by abiding to the applicable legislation. The removal of cultural heritage resources may, however, only be considered if there are no technically or financially feasible alternatives.

In considering the removal of cultural resources, it should be outweighed by the benefits of the overall project to the effected communities. Again professionals should carry out the work and adhere to the best available techniques.

Consultation with affected communities should be undertaken. This entails that access to such communities should be granted to their cultural heritage if this is applicable. Compensation for the loss of cultural heritage should only be given in extra-ordinary circumstances.

Critical cultural heritage may not be impacted on. Professionals should be used to advise on the assessment and protection thereof. Utilization of cultural heritage resources should always be done in consultation with the effected communities in order to be consistent with their customs and traditions and to come to agreements with relation to possible equitable sharing of benefits from commercialization.

6. METHODOLOGY

6.1 Survey of literature

A survey of literature was undertaken in order to obtain background information regarding the area. Sources consulted in this regard are indicated in the bibliography.

6.2 Field survey

The survey was conducted according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of the proposed development. One regularly looks a bit wider than the demarcated area, as the surrounding context needs to be taken into consideration.

If required, the location/position of any site was determined by means of a Global Positioning System (GPS)², while photographs were also taken where needed. The survey was undertaken by doing a physical survey via off-road vehicle and on foot and covered as much as possible of the area to be studied (Figure 7 & 8).

² A Garmin Oregon 550 with an accuracy factor of a few meters.

Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage. The size of the area that was surveyed in March 2014 is approximately 12 671ha and the survey took fifty hours to complete. In April 2016 (4-5 April) only the proposed route for the conveyor was surveyed. The length of the route is approximately 20 km and took 12 hours to complete.

6.3 Oral histories

People from local communities are interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

6.4 Documentation

All sites, objects, features and structures identified were documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities were determined by means of the GPS. The information was added to the description in order to facilitate the identification of each locality.

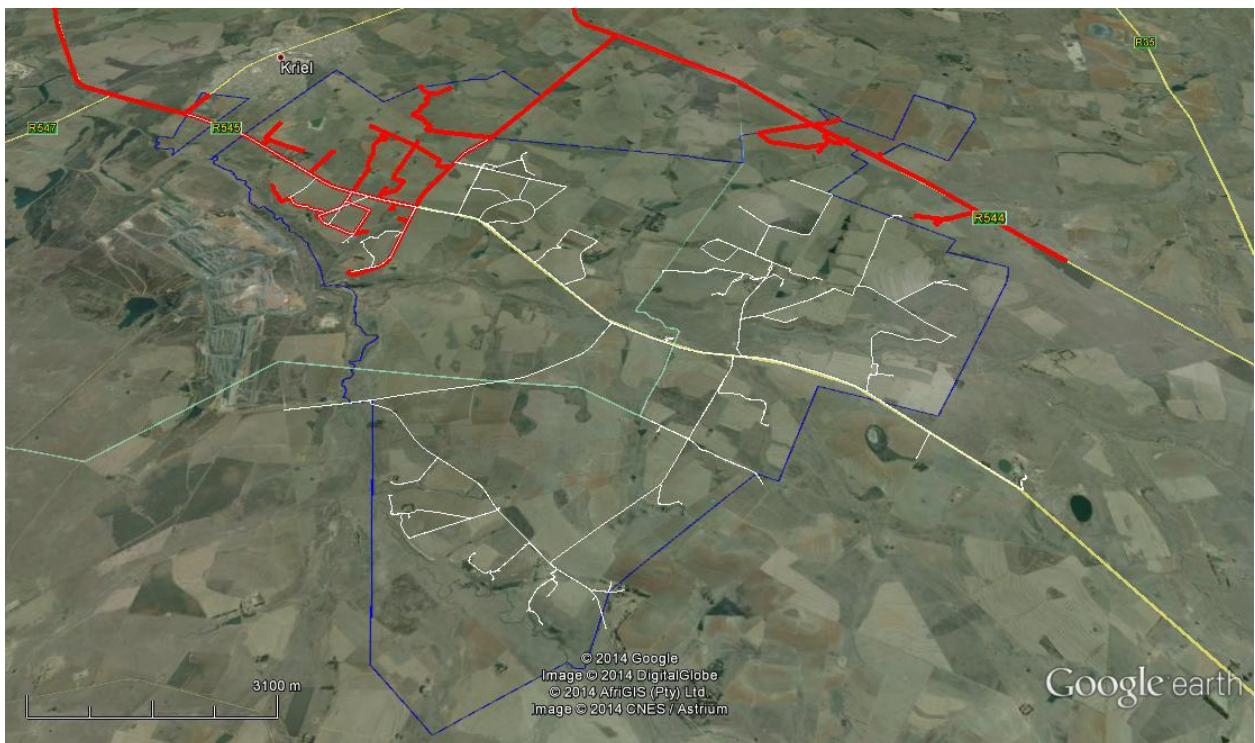


Figure 7 GPS track of the 2014 surveyed area³. North reference is to the top. The project boundary is in blue.

³ Since the survey was done over several days, the track route is shown in different colours, some very faint indicated on the map. These are red, white and grey in colour.

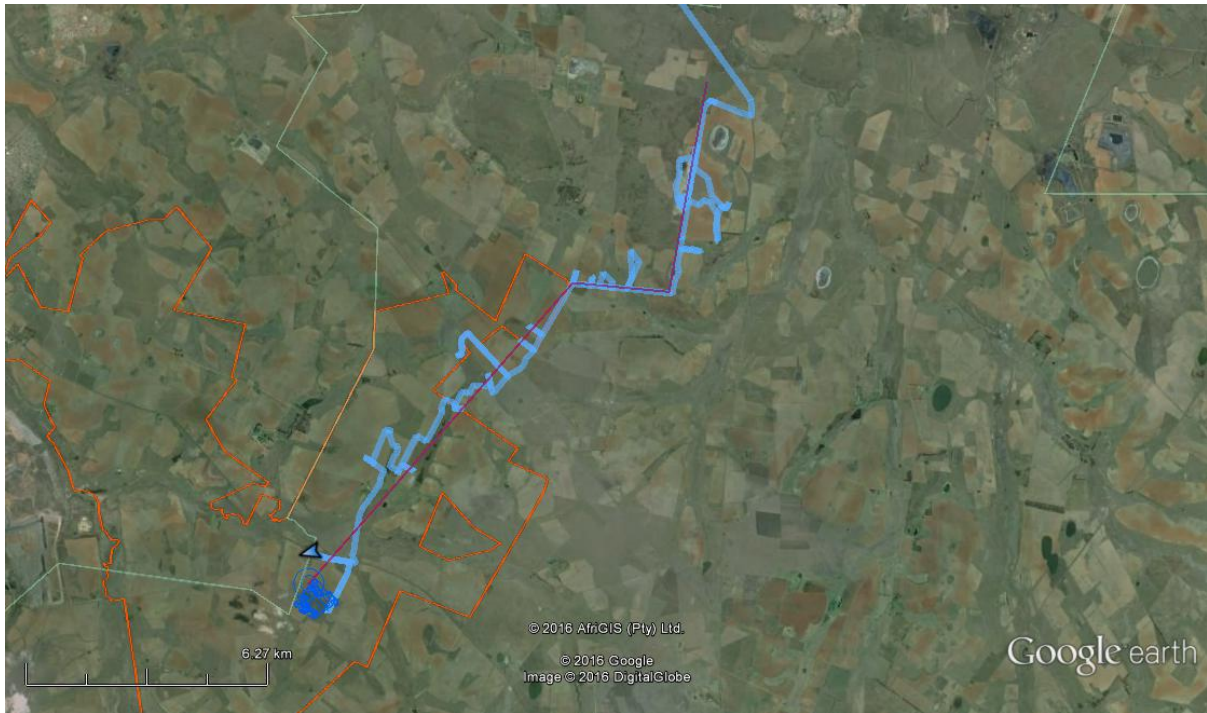


Figure 8 GPS track of the 2016 survey.

6.5 Evaluation of Heritage sites

The evaluation of heritage sites is done by giving a field rating of each (see Appendix C) using the following criteria:

- The unique nature of a site
- The integrity of the archaeological deposit
- The wider historic, archaeological and geographic context of the site
- The location of the site in relation to other similar sites or features
- The depth of the archaeological deposit (when it can be determined or is known)
- The preservation condition of the site
- Uniqueness of the site and
- Potential to answer present research questions.

7. DESCRIPTION OF THE AREA

The project is located in a typical Mpumalanga Highveld setting with farming as the main activity. Agriculture is the main recent activity that led to a disturbance of the natural environment. This mainly consists of maize and soya bean farming (Figure 9 - 11) in more than half of the area.

Livestock farming is also found in abundance – these areas are more natural consisting of grassland with a few trees. Most of the natural grass has showed a dense under footing during the field work phase and the height was mostly medium

sized (Figure 12). Accordingly this hampered both the horizontal and the vertical archaeological visibility.

Signs of former historical farming and prospecting activities were also identified throughout the surveyed area. Pioneer plant species such as weeds and grass covers the old fields which are also dominant in certain sections.

The topography of the surveyed area consists of rolling hills, but in most cases these have been ploughed for crop farming. Various streams and rivers drain the area. The lowest sections of the surveyed area are found along these. A few instances of erosion were also noted.



Figure 9 View of soya bean fields in the surveyed area.



Figure 10 General view of slope and maize fields in the surveyed area.



Figure 11 Ploughed field in the surveyed area.



Figure 12 General view of the surveyed area indicating grassland, maize fields and a few trees.

During the 2016 survey of the proposed conveyor route, a much similar environment was noticed. At the starting point of the conveyor in the north, the vegetation cover high and dense and mostly consisted of pioneer species such as weeds and grass, therefore giving an indication that it was disturbed in the recent past (Figure 13). Similar areas were found along certain sections of the route.

Close to the starting point the environment had been disturbed to a large extent by mining activities (Figure 14). A large water body, which seems to have an unnatural origin are also found in close proximity (Figure 15). Quite a number of dams and natural pans are also found along the route (Figure 16).

Again agriculture is the main recent activity that led to a disturbance of the natural environment, mainly consisting of maize and soya bean farming (Figure 17 & 18). Some old agricultural field were also noted (Figure 19).

Due to livestock farming in the area, there are sections showing natural grassland with a few trees. Again this has a dense under footing during the field work phase and the height was mostly medium sized (Figure 20). Accordingly this hampered both the horizontal and the vertical archaeological visibility.

In the final section of the route signs of former historical farming and prospecting activities were also identified. Pioneer plant species such as weeds and grass covers such areas (Figure 21). The last section of the route, close to the proposed position of the shaft, is covered by maize fields (Figure 22). Here the gates were locked and

access could not be gained, but looking from a high vantage point, no outstanding environmental features were noted.



Figure 13 View of the environment close to the starting point of the proposed conveyor route.



Figure 14 Disturbed environment caused by mining activities.



Figure 15 Large dam close to the starting point of the proposed conveyor route.



Figure 16 Large pan, one of many found in the surveyed area.



Figure 17 One of various maize fields along the proposed conveyor route.



Figure 18 One of many soya bean fields along the surveyed route.



Figure 19 An old agricultural field along the surveyed route.



Figure 20 Medium high, but dense grass along the proposed conveyor route.



Figure 21 Disturbed environment close to the end of the route showing a dam and pioneer plant species.



Figure 22 Maize field in the area where the proposed conveyor route ends, at the proposed position of the shaft.

8. HISTORICAL CONTEXT

Twenty nine sites of cultural heritage significance were located in the broader mining right application area. None of these were found along the proposed conveyor route. In order to place this within context and to understand possible finds that could be unearthed during construction activities, it is necessary to give a background regarding the different phases of human history in the area.

Many heritage reports have been done in the wider geographical area (SAHRA's SAHRIS database; Archaetnos' database). This information is included in the discussion.

8.1 Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze 1996: 293). In South Africa the Stone Age can be divided in three periods. It is, however, important to note that dates are relative and only provide a broad framework for interpretation. The division for the Stone Age according to Korsman & Meyer (1999: 93-94) is as follows:

Early Stone Age (ESA) 2 million – 150 000 years ago
Middle Stone Age (MSA) 150 000 – 30 000 years ago
Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

The geographical area around the town of Kriel is not known as an area containing prehistoric sites dating to the Stone Age. For instance no such sites are indicated on maps contained in a historical atlas of this area (Bergh 1999: 4-5). However this may only be since no research has actually been done in this area. The closest known Stone Age occurrences are a Late Stone Age site at the town of Ermelo and rock art sites in the Chrissiesmeer area (Bergh 1999: 4-5) which lies much further to the south-east.

However, no natural shelters were seen during the survey and therefore it is possible that these people did not stay here for long periods. The good vegetation in the surrounding area and the rivers indicated that ample grazing and water may have been available, making it a prime spot for hunting in the past. Therefore one may assume that Stone Age people probably would have moved through the area.

8.2 Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts (Coertze & Coertze 1996: 346). In South Africa it can be divided in two separate phases according to Van der Ryst & Meyer (1999: 96-98), namely:

Early Iron Age (EIA) 200 – 1000 A.D.
Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however, indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.

Middle Iron Age (MIA) 900 – 1300 A.D.

Late Iron Age (LIA) 1300 – 1840 A.D.

In the historical atlas no sites from the Early Iron Age are indicated in this area (Bergh 1999: 6). Again it needs to be stated that this may only be a result of the lack of research done in this part of the country.

In contrast to the mentioned periods in time, it is known that Late Iron Age sites are found in a large area around the towns of Bethal and Standerton. It includes at least 585 such sites. At none of these has indications of metal working been found (Bergh 1999: 6-7), meaning that it would mostly consist of stone walled living complexes. Similar sites, although few, has been found in close proximity to the surveyed area during past heritage surveys (Archaetnos' database). It is also known that the early trade routes did not run through this area (Bergh 1999: 9).

During the survey two Late Iron Age sites were identified, indicating that these people did utilize the area. The good grazing in the broader environment would have provided a good environment for Iron Age people although building material would have been reasonably scarce. One would therefore expect not to find many Iron Age sites, but these people definitely utilized the area. The white settlers moved into this environment later on for the same reason.

8.3 Historical Age

The historical age started with the first recorded oral histories in the area. It includes the moving into the area of people that were able to read and write. This era is sometimes called the Colonial era or the recent past.

Due to factors such as population growth and a decrease in mortality rates, more people inhabited the country during the recent historical past. Therefore and because less time has passed, much more cultural heritage resources from this era have been left on the landscape. It is important to note that all cultural resources older than 60 years are potentially regarded as part of the heritage and that detailed studies are needed in order to determine whether these indeed have cultural significance. Factors to be considered include aesthetic, scientific, cultural and religious value of such resources.

At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Kriel and Bethal. During the Difaquane they fled to the south (Bergh 1999: 10-11; 109). In 1829 the traveler Robert Scoon passed through an area to the south of Kriel (Bergh 1999: 13). The first white farmers only settled here during the late 1850's. By the 1890's this area was inhabited by many white farmers (Bergh 1999: 18-20).

During the Anglo-Boer War the Highveld areas saw much action consisting of various skirmishes between Boer and Brit (Bergh 1999: 51, 54). It includes skirmishes on the farms Oshoek (4 December 1901), Trigaardsfontein (10 December 1901), Witbank (11 January 1902) and Nelspan (26 January 1902). The farm Witbank is within the project area, but battlefields usually do not contain structures, but only artefacts such as bullet casings.

One may therefore expect to find farm buildings, structures and objects in the area. One can also expect to find signs of recent historical mining activities, possible remains of artefacts on battlefields and graves. Many graveyards from this period in time have indeed been identified in surrounding areas during past surveys (SAHRA's SAHRIS database; Archaetnos' database).

9. DISCUSSION OF SITES FOUND DURING THE SURVEY

The sites identified either dates to the Iron Age or the Historical Age. All of these were identified during the 2014 survey in the proposed mining area and have been discussed in full in the previous report (Van Vollenhoven & Collins 2014). It nevertheless needs to be indicated that although 29 sites of cultural heritage importance were identified in the project area, this indeed is an under-representation. The denseness of the vegetation over such a large area as well as the crops that were in full season during both surveys, simply made it impossible to thoroughly investigate every farm portion in detail.

Certain farm portions which form part of the project area were also excluded from the survey as per instruction from the client (due to farmers not willing to assist). A further issue was farm gates being found locked which excluded these sections from the survey. Lastly the exceptionally high rainfall during the months of January to March 2014, when the first survey was done, also made certain sections impossible to survey. Apart from not being able to drive there (even with an off-road vehicle), some were not accessible by foot because of deep and soft mud, making it impossible to walk through.

It therefore needs to be stated, that although this survey was done according to standard archaeological practice, there more than likely are sites that were not identified. As indicated there always is a possibility that some sites may have been missed. In such a case it should be handled in accordance with the recommendations in this report.

The sites will not be discussed since none of these are impacted on by the current proposed development. A detailed discussion can be found in the 2014 report (Van Vollenhoven & Collins 2014).

10. CONCLUSION AND RECOMMENDATIONS

The sites of cultural importance identified during the 2014 survey are indicated in figures 23-26). Apart from reasons already given above, farmers have spoken of

more grave sites in the areas that were not surveyed (Personal Communication: F. van Dyk; P. van der Merwe; M. van der Merwe). This therefore definitely is an under representation.

However, the survey of the indicated area was completed successfully as it does give a fair idea of the heritage resources in the area. Based on current information, it seems that there are no heritage sites close to the infrastructure development of the project (Figure 26).

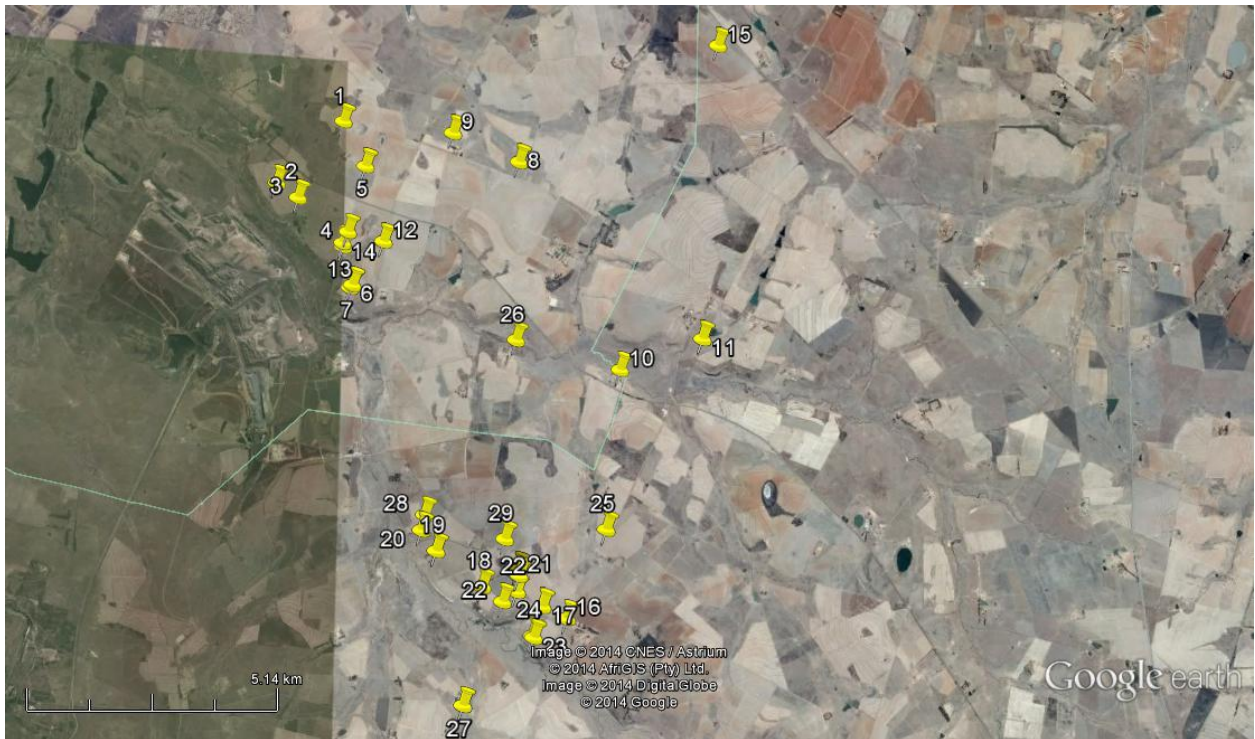


Figure 23 Google image of the sites identified during the 2014 survey.

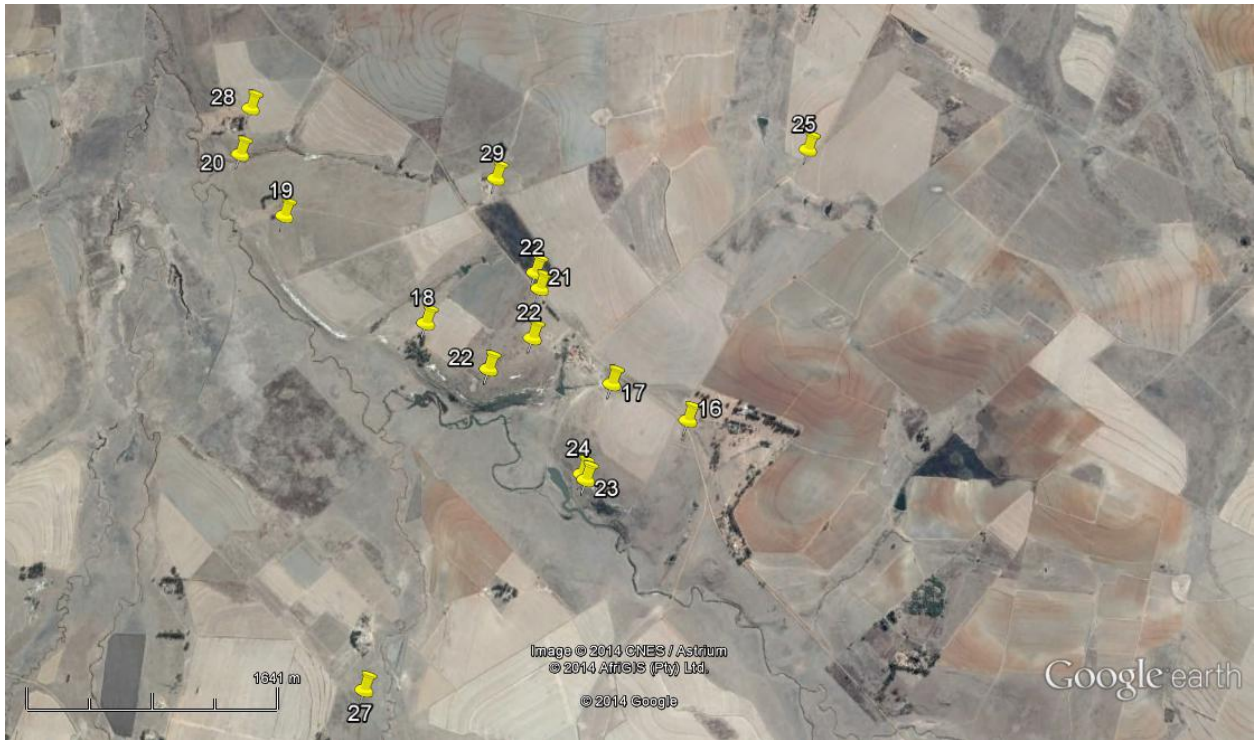


Figure 24 Google image of a the south-western section of the surveyed area indicating some of the sites identified.



Figure 25 Google image of the north-western section of the surveyed area indicating the location of some of the sites identified.

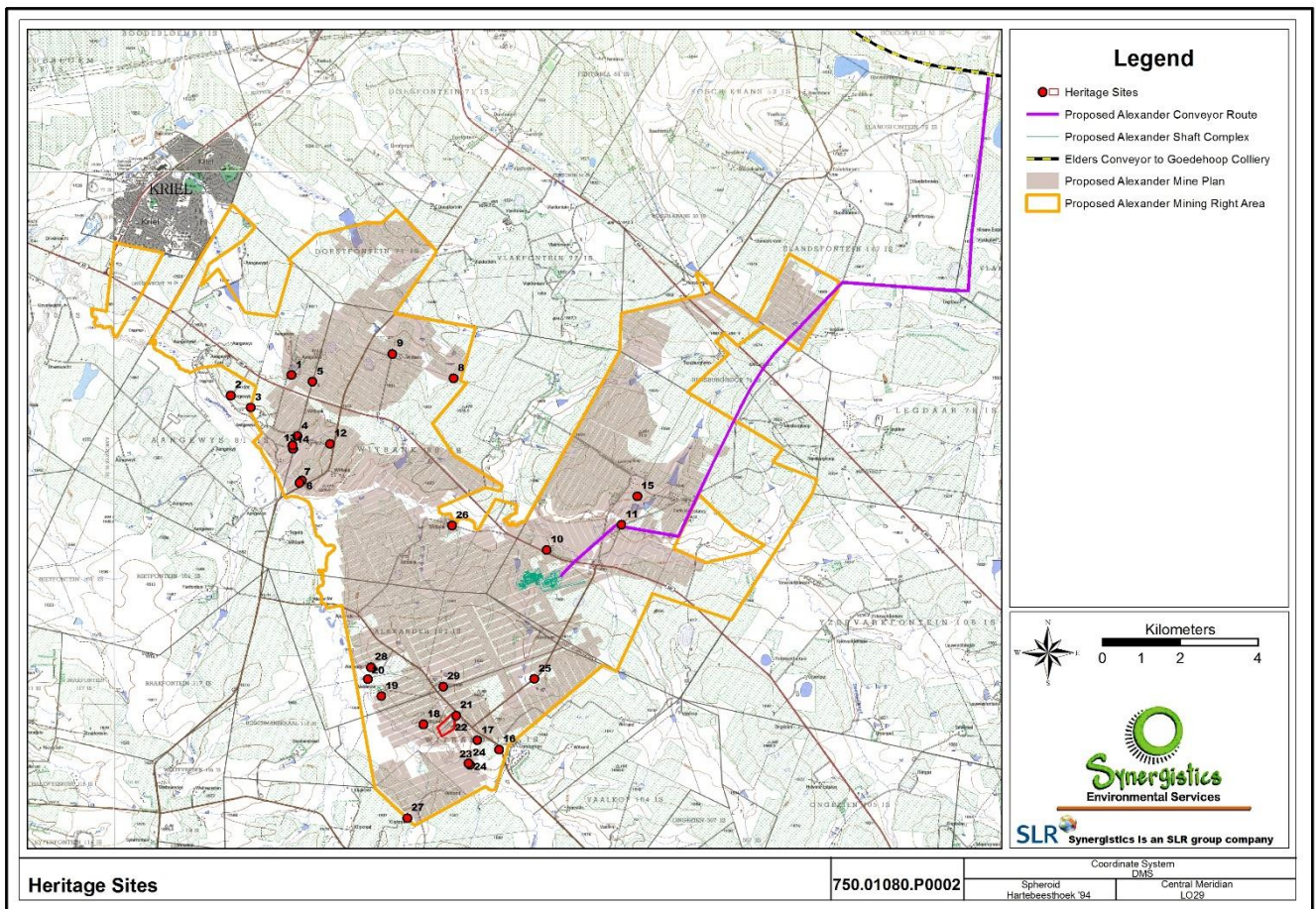


Figure 26 Indication of the sites identified within the boundary of the project area. Due to the scale, some of these may appear to be close to the proposed development, but in fact the only site near to the development is site no. 11 (approximately 50m). The rest are much further (approximately 500m).

The following is recommended:

- No sites of heritage significance were found close to the proposed shaft position. However, this area could not be surveyed due to locked gates. It contains a large maize field, and was observed from a high vantage point and no other environmental features were observed. Such features, e.g. a clump of grass in between the maize plants, may indicate the existence of graves. Although caution should therefore be at the order of the day, this development may continue.
- Also, no sites of heritage significance was identified on the proposed conveyor route. Although to a lesser extent, similar issues than those mentioned above, were experienced here.

- Site no. 11 (graves) is approximately 50m from the proposed conveyor. This is an acceptable distance as buffer zone and the mine should ensure that this buffer is kept.
- After implementation of the mitigation measures recommended, the proposed development may continue.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence and amend this report.

11. REFERENCES

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APPENDIX A

DEFINITION OF TERMS:

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artifacts, found on a single location.

Structure: A permanent building found in isolation or which forms a site in conjunction with other structures.

Feature: A coincidental find of movable cultural objects.

Object: Artifact (cultural object).

(Also see Knudson 1978: 20).

APPENDIX B

DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE:

- Historic value: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
- Aesthetic value: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
- Scientific value: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
- Social value: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
- Rarity: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.
- Representivity: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

APPENDIX C

SIGNIFICANCE AND FIELD RATING:

Cultural significance:

- Low A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- High Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as having high importance. Also any important object found within a specific context.

Heritage significance:

- Grade I Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III Other heritage resources of local importance and therefore worthy of conservation

Field ratings:

- i. National Grade I significance should be managed as part of the national estate
- ii. Provincial Grade II significance should be managed as part of the provincial estate
- iii. Local Grade IIIA should be included in the heritage register and not be mitigated (high significance)
- iv. Local Grade IIIB should be included in the heritage register and may be mitigated (high/ medium significance)
- v. General protection A (IV A) site should be mitigated before destruction (high/ medium significance)
- vi. General protection B (IV B) site should be recorded before destruction (medium significance)
- vii. General protection C (IV C) phase 1 is seen as sufficient recording and it may be demolished (low significance)

APPENDIX D

PROTECTION OF HERITAGE RESOURCES:

Formal protection:

National heritage sites and Provincial heritage sites – grade I and II

Protected areas - an area surrounding a heritage site

Provisional protection – for a maximum period of two years

Heritage registers – listing grades II and III

Heritage areas – areas with more than one heritage site included

Heritage objects – e.g. archaeological, palaeontological, meteorites, geological specimens, visual art, military, numismatic, books, etc.

General protection:

Objects protected by the laws of foreign states

Structures – older than 60 years

Archaeology, palaeontology and meteorites

Burial grounds and graves

Public monuments and memorials

APPENDIX E

HERITAGE IMPACT ASSESSMENT PHASES

1. Pre-assessment or scoping phase – establishment of the scope of the project and terms of reference.
2. Baseline assessment – establishment of a broad framework of the potential heritage of an area.
3. Phase I impact assessment – identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
4. Letter of recommendation for exemption – if there is no likelihood that any sites will be impacted.
5. Phase II mitigation or rescue – planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
6. Phase III management plan – for rare cases where sites are so important that development cannot be allowed.