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**A REPORT ON A CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE
EMP AMENDMENT OF THE FORZANDO NORTH COAL MINE NEAR BETHAL,
MPUMALANGA PROVINCE**

For:

GCS

REPORT: **AE908**

by:

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SUMMARY

Archaetnos cc was appointed by GCS to conduct an archaeological and cultural heritage impact assessment for the Forzando North Coal Mine. This forms part of the amendment for the EMP of the mine. The Forzando mine is located 25 km north-east of the town of Bethal in the Mpumalanga Province.

The fieldwork undertaken revealed four sites of cultural heritage significance. Three of these are of high cultural significance. Depending on the options to be implemented, some of these will be directly impacted upon by the development. The report indicates how to deal with this.

Suitable mitigation measures are proposed. Once these have been implemented, the proposed development may continue.

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1. INTRODUCTION

Archaetnos cc was appointed by GCS to conduct an archaeological and cultural heritage impact assessment for the Forzando North Coal Mine. This forms part of the amendment for the EMP of the mine.

The proposed work entails the following:

- Three options for a conveyor and pipeline routes
- New co-disposal facility of 100-120 ha
- Vertical access shaft
- Coal stockpile area
- Water pollution control structures

The Forzando North mine is located 25 km north-east of the town of Bethal in the Mpumalanga Province. This is on the farms Bankpan 225 IS and Weltevreden 193 IS. The client indicated the area where the proposed development is to take place, and the survey was confined to this area.

2. TERMS OF REFERENCE

The Terms of Reference for the survey were to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the property (see Appendix A).
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value (see Appendix B).
3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions.
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources.
5. Recommend suitable mitigation measures should there be any sites of significance that might be impacted upon by the proposed development.
6. Review applicable legislative requirements.

3. CONDITIONS & ASSUMPTIONS

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. These include all sites, structure 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 B).
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 has to be mentioned that it is almost impossible to locate all the cultural resources in a given area, as it will be very time consuming. Developers should however note that the report should make it clear how to handle any other finds that might occur.
7. It should be noted that in this particular case the grass cover was very high and certain areas therefore inaccessible. As a result some areas could not be surveyed properly.

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 law 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.

Archaeology, palaeontology and meteorites

Section 35(4) of this act states that no person may, without a permit issued by the responsible heritage resources authority:

- a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- c. trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- d. bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and palaeontological 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.

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 of 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.

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)**.

Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

4.2 The National Environmental Management Act

This act 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 are made.

5. METHODOLOGY

5.1 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.

5.2 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 proposed development. If required, the location/position of any site was determined by means of a Global Positioning System (GPS), while photographs were also taken where needed.

The survey was undertaken on foot.

5.3 Documentation

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

6. DESCRIPTION OF THE AREA

The proposed work at the Forzando North mine are indicated above. The mine is owned by Total Coal South Africa. As the name indicates this is on the northern side of the company's mining property, which is located to the north-east of the town of Bethal in the Mpumalanga Province. It includes portions of the farms Bankpan 225 IS and Weltevreden 193 IS (Figure 1-4).

The area has a typical Highveld environment dominated by grassland and a few trees. A large part of the area is covered by agricultural fields and indications of old agricultural fields was also found (Figure 5). Natural grass cover are still found on the eastern side of the area that was surveyed (Figure 6). Due to the height of the grass after the good rains archaeological visibility here were extremely difficult.



Figure 1 Location of the Forzando North mine to the northeast of Bethal in Mpumalanga.

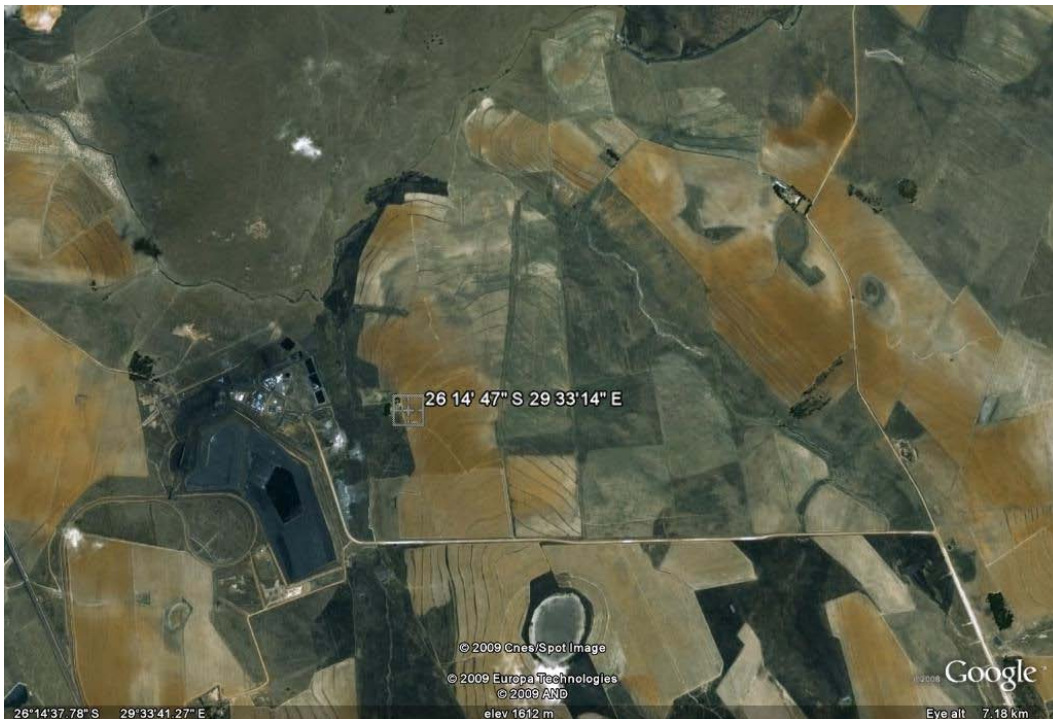


Figure 2 The Forzando North mine and the proposed area of development to the east thereof.

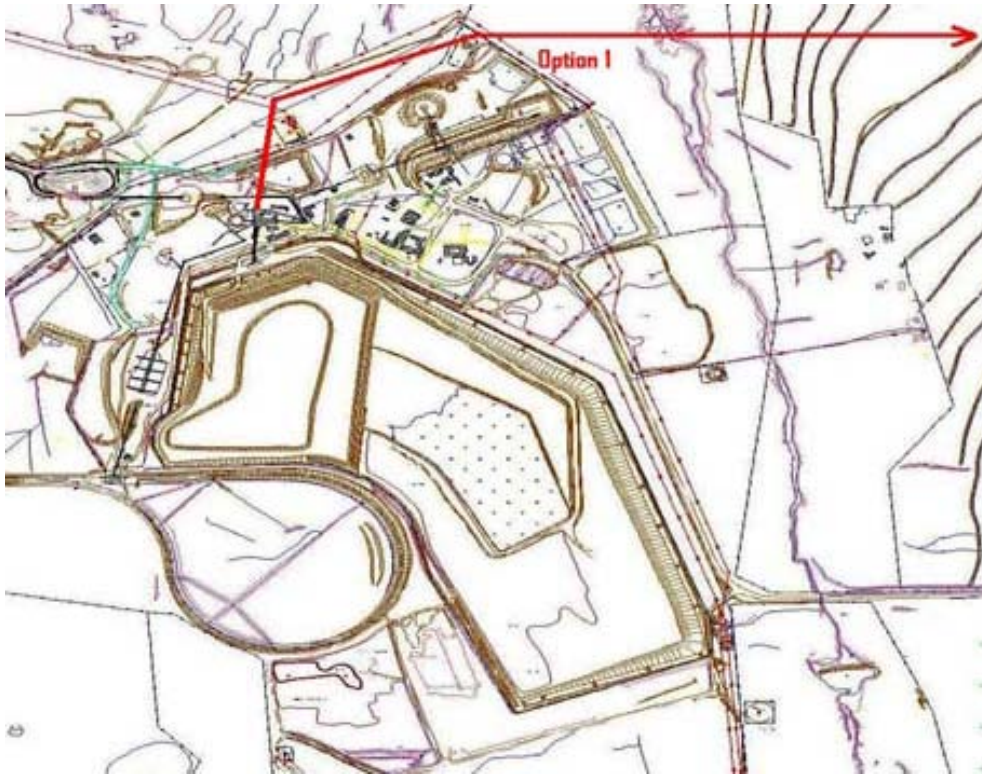


Figure 3 Proposed route option 1 of the conveyor and pipeline.

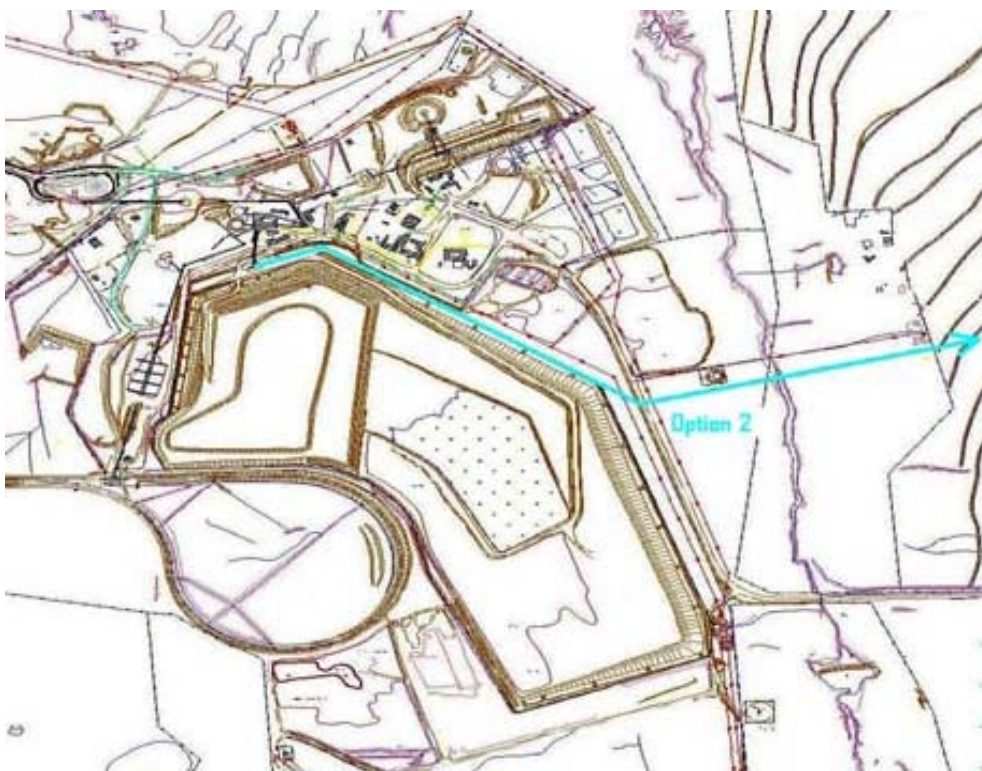


Figure 4 Proposed route option 2 of the conveyor and pipeline.



Figure 5 General view of the surveyed area showing maize fields and long natural grass.



Figure 6 General view of the area to the east of the plant showing former agricultural fields and long natural grassland.

The area where ventilation shaft are to be established are similar, but as the positions of these are clearly indicated it was possible to survey these in total (Figure 7-8). Most of the proposed changes to the infrastructure are planned inside of the existing plant. This area is disturbed by existing mining activities (Figure 9-10).

The Olifants River runs to the north of the property and a few tributaries of this river runs from south to north through the area where the co-disposal facility and return water dams are planned. The slope of the area therefore runs down from south to north, although the topography of the area shows slight rises and falls in between the indicated tributaries. Close to these streams the vegetation also is typical of marshlands with corresponding wetlands.

The environment therefore shows areas that have been disturbed by humans in the recent past, but also natural areas. At the latter one would rather expect to find indications of historical and archaeological nature. The environment is suitable for human habitation due to the good grazing and ample water it provides. However no natural shelter and building material or fuel is available and one would therefore expect that although the area would have been utilized during prehistoric times, it may not have been populated until recent historical times.

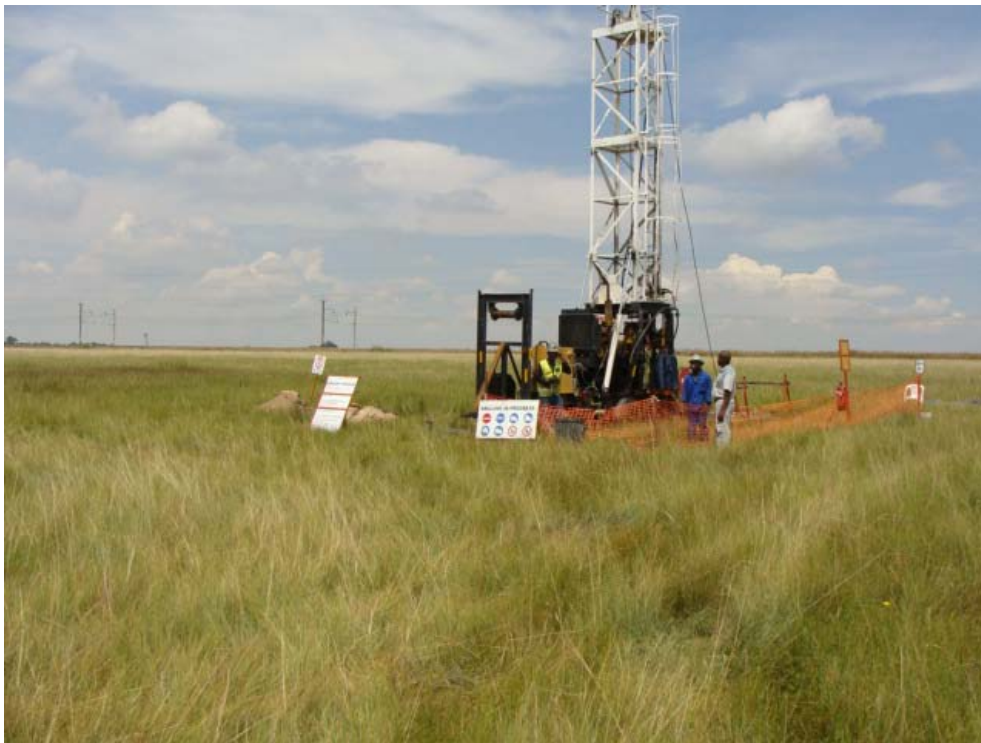


Figure 7 Area where a ventilation shaft is planned.



Figure 8 Area where another ventilation shaft is planned.



Figure 9 Area where some proposed infrastructure is planned.



Figure 10 Existing water storage area where the pollution control dams are planned.

7. DISCUSSION

During the survey four sites of cultural heritage significance was located in the area to be developed. This report indicates suitable mitigation measures in this regard. In order to enable the reader to better understand this, it is necessary to give a background regarding the different phases of human history.

7.1 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 Bethal 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). 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).

During the survey no rock shelters or any other indication of Stone Age activities were found.

7.2 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.

No sites from the Early Iron Age have been identified in the area (Bergh 1999: 6). 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 indications of metal working has been found (Bergh 1999: 6-7), meaning that it would mostly consist of stone walled living complexes. It is also known that the early trade routes did not run through this area (Bergh 1999: 9).

The type of environment around Forzando definitely is suitable for human habitation. There is ample water sources and good grazing. One would therefore expect that Iron Age people may have utilized the area. This is the same reason why white settlers later on moved into this environment.

During the survey no indication of Iron Age settlement was identified.

7.3 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.

At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Bethal. During the Difaquane they fled to the south (Bergh 1999: 10-11; 109).

In 1829 the traveler Robert Scoon past through an area to the north of Bethal (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). The town of Bethal was established in 1880 and it became an independent district in 1898 (Bergh 1999: 20-21).

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). It however is not possible to indicate how close these came to the farms Bankpan and Weltevreden where the mine is situated.

All sites found during the survey date to the historical age. These are discussed below.

7.4 Discussion of sites identified during the survey

The sites identified during the survey are discussed under the headings of the proposed activities which will form part of the upgrading of the mine.

Mining activities

The mining activities will be underground and therefore only the access and ventilation shafts will have an effect on the surface. The access shaft will be in the existing plant area. This area is disturbed and no indication of cultural resources was found here.

The area where the ventilations shaft will be placed lies further to the south. There was also no indication of cultural resources found in the two areas where the two ventilation shafts will be sunk.

Plant areas

As indicated this area is already disturbed by the recent mining activities. No indication of cultural resources was found here.

Conveyors

Two different options (see Figure 3-4) are proposed for this. In all three cases the first section of the route goes through the existing plant where no indication of cultural resources was found. In the area where the second section of the first and second option runs through, again no indication of cultural resources was found.

Although the scale of the maps provided makes locating the specific place of a site impossible, it does seem as if two sites were found in the general area where the conveyors are planned. If not directly impacted on, it is definitely fairly close to these sites and there may well be a secondary impact.

Site 1

This is a graveyard to the north of the gravel road that forms the southern boundary of the surveyed area. It consists of at least six graves. However the grass cover is very dense and there may be more.

Only one of these has a marked headstone (Figure 11). It is made of concrete, but the letters thereon is almost illegible. The date may be 1981. The rest of the graves are all stone dressed some with and some without headstones and the dates are therefore unknown. Due to the dense vegetation it was not possible to take photographs of these.

GPS: 26°15'09"S
29°33'19"E



Figure 11 The grave with the concrete dressing and headstone at site no 1.

Due to the sensitivity of this issue, graves are always regarded as having a **high** cultural significance. Graves with an unknown date are always handled as if older than 60 years.

Criteria for assessment	Category	Rating	Description
Probability	Definite	3	More than 90 percent sure of a particular fact or of the likelihood of the impact occurring
Extent	Site	1	Immediate project site
Duration	Permanent	6	Permanent
Intensity	Very high	4	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease
Significance	Very high	19	

Should the decision be to continue with this route for the conveyor, the graves will have to be exhumed and the bodies reburied. This process is a lengthy process including social consultation in order to find families of the deceased and to obtain their permission.

In the case of graves older than 60 years and those with an unknown date of death archaeologist as well as an undertaker will have to be part of the team involved. For graves with a date of death of younger than 60 years, only an undertaker is involved.

It needs to be stated that even if this option is not the one taken, there probably will be a secondary impact. The site should then at least be fenced off and access to the families be granted. As this may pose a problem to the mine, it may therefore in any case be the best option to exhume the graves.

Site 2

This is a graveyard right next to and to the south of the gravel road that forms the southern boundary of the surveyed area. It consists of at least twelve graves. However the grass cover is very dense and there may be more.

Most of the graves have either cement or granite dressing and headstones (Figure 12), but a few have stone dressings without any headstones. The two graves with granite headstones are fairly recent and have dates of death of 1978 and 1981. The information on the graves with the cement headstones is illegible. The rest of the graves are all stone dressed without headstones and the dates are therefore unknown.

GPS: 26°15'11"S
29°33'18"E



Figure 12 Some of the graves at site no 2.

Due to the sensitivity of this issue, graves are always regarded as having a **high** cultural significance. Graves with an unknown date are always handled as if older than 60 years.

Criteria for assessment	Category	Rating	Description
Probability	Probable	2	70 – 90 percent sure of a particular fact or of the likelihood of the impact occurring
Extent	Site	1	Immediate project site
Duration	Permanent	6	Permanent
Intensity	Very high	4	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease
Significance	Very high	19	

Although the graves are on the outside boundary of the area to be developed, there will probably be a secondary impact. Should the decision be to continue with this route for the conveyor, the graves will have to be exhumed and the bodies reburied. This process is a lengthy process including social consultation in order to find families of the deceased and to obtain their permission.

In the case of graves older than 60 years and those with an unknown date of death archaeologist as well as an undertaker will have to be part of the team involved. For graves with a date of death of younger than 60 years, only an undertaker is involved.

It needs to be stated that even if this option is not the one taken, there probably will still be a secondary impact. The site should then at least be fenced off and access to the families be granted. As this may pose a problem to the mine, it may therefore in any case be the best option to exhume the graves.

Pipelines

The pipelines will follow the same route as the conveyor. Therefore the information discussed under the heading ‘Conveyor’ is also applicable in this instance.

New Co-disposal facility and return water dams

This infrastructure is planned in the area between the Olifants River, the eastern tributary thereof on the property and the gravel road to the south. The preferred position is in the north of this area, but it may be moved in accordance with the results of the different specialist reports. Two sites of cultural significance were identified here.

Site 3

This site consists of the remains and ruins of some old historical buildings. One of these seems to be an old farm house and is currently used as dwelling by some farm laborers. Other laborers houses are erected next to this one.

The ruin of a farm workers dwelling made from stone, cement and clay is located a few meters to the south of these (Figure 13). It consists of two rooms. The cement indicates that it may be dating to the recent past.

GPS: 26°14'47"S
29°33'14"E



Figure 13 Ruin of a farm workers dwelling.

The ruin is regarded as having a **medium** cultural significance. It probably is not very old and also not very unique.

Criteria for assessment	Category	Rating	Description
Probability	Probable	2	70 - 90 percent sure of a particular fact or of the likelihood of the impact occurring
Extent	Site	1	Immediate project site
Duration	Permanent	6	Permanent
Intensity	Very high	4	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease
Significance	Moderate	10	

It is recommended that a plan of the ruin be drawn as documentation thereof. Thereafter it may be demolished. This report is seen as ample mitigation in this regard.

Site 4

This is a graveyard right next to, and to the west of the ruin (site no 4). It consists of at least five graves. However the grass cover is extremely dense and there may be more. Due to the density of the vegetation it was impossible to take any pictures.

None of the graves seem to have headstones, but this may change once the area is cleared and one can see it properly. All have stone dressings. The dates of death are therefore unknown.

GPS: 26°14'48"S
29°33'11"E

Due to the sensitivity of this issue, graves are always regarded as having a **high** cultural significance. Graves with an unknown date are always handled as if older than 60 years.

Criteria for assessment	Category	Rating	Description
Probability	Probable	2	70 - 90 percent sure of a particular fact or of the likelihood of the impact occurring
Extent	Site	1	Immediate project site
Duration	Permanent	6	Permanent
Intensity	Very high	4	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease
Significance	Very high	19	

It is almost that there will be an impact on the site, although this may be a secondary one. Should the co-disposal facility be moved to the south it will have a direct impact on this site as well as site no 3. It will then be necessary to exhume the graves and rebury the bodies. This process is a lengthy process including social consultation in order to find families of the deceased and to obtain their permission.

In the case of graves older than 60 years and those with an unknown date of death archaeologist as well as an undertaker will have to be part of the team involved. For graves with a date of death of younger than 60 years, only an undertaker is involved.

It needs to be stated that even if this option is not the one taken, there probably will still be a secondary impact. The site should then at least be fenced off and access to the families be granted. As this may pose a problem to the mine, it may therefore in any case be the best option to exhume the graves.

Power lines and internal gravel roads

Mr. W Seabi of the mine indicated that the exact locations of these are still unknown, but that it would be inside of the area that was surveyed. No other cultural resources than those mentioned above were identified.

Existing water storage

As indicated in the heading this is an existing area within the plant which has already been extremely disturbed. No indications of cultural resources were found.

Diesel storage

This is also planned in the existing area where the plant is situated and which has been disturbed. Nothing of cultural heritage value was found.

Coal storage

Again this area is within the existing plant. The specific location has been disturbed extensively and currently hosts a dam and some borrow pits. Nothing of cultural heritage value was found.

8. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it can be stated that the assessment of the area was conducted successfully. In the surveyed area four sites have been found and four of these fall within the proposed development area (Figure 14). The fourth site is on the boundary and is therefore included. Three is deemed to be of high cultural significance. The other has a medium cultural significance. The final recommendations are as follows:

- Usually the most acceptable solution for a graveyard (site no 1, 2 and 4) would be to incorporate the graves within the development plan for the site. This means that it should be left in situ and fenced off.
- In such a case access for the families must be possible. The mine should work out a way to accommodate these families should they wish to visit the graves.
- Due to the nature of the development and possible secondary impact, it is rather recommended that the graves be exhumed and the bodies reburied. The processes as indicated above should be followed. In the case of graves older than 60 years and those with an unknown date of death archaeologist as well as an undertaker will have to be part of the team involved. For graves with a date of death of younger than 60 years, only an undertaker is involved.
- As indicated above site number 3 should be mitigated by having a plan thereof drawn and by means of thorough photographic recording. After this has been done, it may be demolished. However, a destruction permit from the South African Heritage Resources Agency (SAHRA) will be needed.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts are always a distinct possibility. Care should therefore be taken when development work commences that if any of these are accidentally discovered, a qualified archaeologist be called in to investigate.
- Due to constraints indicated above it may be possible that certain sites were not identified. In such a case an archaeologist should also be called in to investigate. This is specifically true due to the extremely dense vegetation on the surveyed area. The graves that were found were literary stumbled over. It is possible to walk as few as 5 meters from graves without noticing it. To cover the whole surveyed area meter by meter would be extremely costly for the client. Therefore there is a possibility that not all such sites were identified. In the event of more sites being identified, an archaeologist should immediately be contacted to investigate it and to adapt this HIA report.



Figure 14 Site map indicating the location of the found sites.

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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

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 of a high importance. Also any important object found within a specific context.