

Prepared for:

GOLDER ASSOCIATES

**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY
FOR THE EXPANSION OF THE eMALAHLENI MINE WATER
RECLAMATION SCHEME NEAR EMALAHLENI (WITBANK)
IN THE MPUMALANGA PROVINCE OF SOUTH AFRICA**

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EXECUTIVE SUMMARY

This report contains the findings of the Phase I Heritage Impact Assessment (HIA) for the expansion of the existing eMalahleni Mine Water Reclamation Scheme which was done in accordance with Section 38 of the National Heritage Resources Act (No 25 of 1999). The expansion of the eMalahleni Mine Water Reclamation Scheme involves various routes and refinements of routes for mine water collection and treated water distribution pipelines as well as other infrastructure such as pump stations. These routes and other affected areas are collectively referred to as the Project Area.

The aims of the Phase I HIA were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) occur in or near the Project Area and, if so, what the nature, the extent and the significance of these remains are.
- To determine whether such heritage resources will be affected by the proposed expansion project.
- To evaluate what appropriate mitigation measures could be taken if any of the types and ranges of heritage resources may be affected by the proposed expansion project.

The survey revealed no heritage resources of significance in the Project Area.

The linear nature of the proposed project makes the avoidance of heritage sites possible due to the flexible nature of the pipeline routes. The pipeline routes can be shifted within corridors in all directions or can be deviated or rerouted in order to avoid significant heritage sites such as small graveyards.

There is consequently no reason from a heritage point of view why the proposed expansion of the existing eMalahleni Mine Water Reclamation Scheme should not proceed.

It is possible that this Phase I HIA may have missed heritage resources in the Project Area, as heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

Should any heritage resources of significance be exposed during the construction of the project, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities should be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the necessary mitigation measures.

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1 INTRODUCTION

This document contains the findings of a Phase I Heritage Impact Assessment (HIA) which was done for the expansion of the existing eMalahleni Mine Water Reclamation Scheme near Witbank in the Mpumalanga Province of South Africa.

The Mpumalanga Province of South Africa has a rich heritage comprised of remains dating from the pre-historic and from the historical (or colonial) periods of South Africa. Pre-historic and historical remains in the Mpumalanga Province present a record of the heritage of most groups living in South Africa today. Various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' (outlined in Section 3 of the National Heritage Resources Act, Act No 25 of 1999) occur in this province (see Box 1).

Box 1: Types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act (Act 25 of 1999, Section 3) outlines the following types and ranges of heritage resources that qualify as part of the national estate:

- (a) places, buildings structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds including-
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act (Act 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) moveable objects, including -
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act 43 of 1996).

The National Heritage Resources Act (Act 25 of 1999, Sec 3) also distinguishes nine criteria for a place and/or object to qualify as 'part of the national estate if they have cultural significance or other special value ...'. These criteria are the following:

- (a) its importance in the community, or pattern of South Africa's history;
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and/or
- (i) its significance relating to the history of slavery in South Africa.

2 BACKGROUND TO THIS REPORT

In 2004/2005 Anglo American Thermal Coal (Anglo) and BHP Billiton undertook a joint initiative in establishing the eMalahleni Mine Water Reclamation Scheme south of eMalahleni in the Mpumalanga Province of South Africa. A collection system was set up to pump excess mine water from Kleinkopje Colliery, Greenside Colliery and South Witbank Colliery to a central Water Reclamation Plant (WRP) where it is treated to potable water standards and distributed to the municipal water reservoir for redistribution to eMalahleni

Anglo proposes to expand the capacity of the existing Mine Water Reclamation Scheme in eMalahleni. The proposed project will involve the expansion of the capacity of the existing WRP at Greenside Colliery to treat approximately 50 Ml of mine water per day. The main objectives of the Mine Water Reclamation Scheme are:

- To supply the eMalahleni Local Municipality with a supplementary water resource to support local economic growth and job creation; and
- To supply a long-term solution for handling excess mine water in local collieries.

3 AIMS WITH THIS REPORT

In order to comply with legislation, Anglo requires knowledge of the presence, relevance and the significance of any heritage resources that may occur in or near the proposed Project Area. Anglo needs this information in order to take pro-active measures with regard to any heritage resources that may be affected by the proposed new development. Golder Associates Africa, the company responsible for compiling the Environmental Impact Assessment for the project, therefore commissioned the author to undertake a Phase I Heritage Impact Assessment (HIA) for the expansion of the existing eMalahleni Mine Water Reclamation Scheme.

The aims of the Phase I HIA were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) occur in the Project Area and, if so, what the nature, the extent and the significance of these remains are.
- To determine whether such heritage resources will be affected by the proposed expansion project.
- To evaluate what appropriate mitigation measures could be taken if any of the types and ranges of heritage resources may be affected by the proposed expansion project.

4 METHODOLOGY

This Phase I HIA was conducted by:

- Surveying the proposed Project Area and selected spots along the various pipeline routes/corridors via vehicle and on foot.
- Briefly surveying literature relating to the pre-historical and historical context of the Project Area.
- Consulting maps of the proposed Project Area.
- Consulting archaeological (heritage) databases.
- Synthesising all information obtained from the databases, fieldwork, maps and literature survey into this report.

4.1 Fieldwork

The proposed mine water collection and treated water distribution pipeline corridors/routes as well as stands for pump stations and other components for the proposed expansion of the eMalahleni Mine Water Reclamation Scheme were surveyed using a vehicle, while selected, sensitive spots or stretches along these pipelines routes were surveyed on foot.

4.2 Databases, literature survey and maps

Databases kept and maintained at institutions such as the Provincial Heritage Resources Agency and the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria were consulted to determine whether any heritage resources of significance have been identified during earlier heritage surveys in or near the Project Area.

The author is not totally unacquainted with the Project Area at large as has done several heritage impact assessment studies near the proposed Project Area (see 'Select Bibliography', Part 9).

Literature relating to the pre-historical and the historical unfolding of the Eastern Highveld where the Project Area is located was reviewed (see Part 5, 'Contextualising the Project Area'). It is important to contextualise the pre-historical and historical background of the Project Area in order to comprehend the identity and meaning of heritage sites in and near the Project Area (see Parts 6 & 9).

In addition, the Project Area was studied by means of 1:50 000 topographical maps (2529CC Witbank, 1: 50 000 topographical map)

4.3 Assumptions and limitations

It is possible that this Phase I HIA study may have missed heritage resources in the Project Area, as heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once the expansion project commences.

If any heritage resources of significance are exposed during the expansion of the eMahlaleni Mine Water Reclamation Scheme, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities should be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

4.4 Some remarks on terminology

Terms that may be used in this report are briefly outlined in Box 2.

Box 2- Terminology relevant to this report

The Heritage Impact Assessment (HIA) referred to in the title of this report includes a survey of heritage resources as outlined in the National Heritage Resources Act , Act 25 of 1999 (see Box 1).

Heritage resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

The term 'pre-historic' refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the Project Area, to the first appearance or use of 'modern' Western writing brought to the Eastern Highveld by the first colonists who settled in this area after c. 1839.

The term 'relatively recent past' refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains may, however, be almost sixty years old and these may qualify as heritage resources in the near future.

It is not always possible, based on observations alone, to distinguish clearly between archaeological remains and historical remains, or between historical remains and remains from the relatively recent past. Although certain criteria may help to make this distinction possible, these criteria are not always present, or, when they are present, they are not always clear enough to interpret with great accuracy. Criteria such as square floor plans (a historical feature) may serve as a guideline. However, circular and square floors may occur together on the same site.

The term 'sensitive remains' is sometimes used to distinguish graves and cemeteries, as well as ideologically significant features such as holy mountains, initiation sites or other sacred places. Graves in particular are not necessarily heritage resources if they date from the recent past and do not have headstones that are older than sixty years. The distinction between 'formal' and 'informal' graves in most instances also refers to graveyards that were used by colonists and by indigenous people. This distinction may be important, as different cultural groups may uphold different traditions and values with regard to their ancestors. These values have to be recognised and honoured whenever graveyards are exhumed and relocated.

The term 'Stone Age' refers to the prehistoric past, although Late Stone Age peoples lived in South Africa well into the historical period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).

The term 'Iron Age' refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the historical period.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the pre-historic, historical or the relatively recent past.

The term 'mining area' ('critical area') refers to the area where the developer wants to focus development activities. The term 'peripheral area' refers to the area that will not be affected by the proposed new development activities.

The 'South Shaft 3 Project Area' refers to both the mining and peripheral areas.

Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types of heritage resources in any given area.

Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation of bodies and the relocation of graveyards, etc. Phase II work may require the input of specialists and requires the cooperation and approval of SAHRA.

5 THE PROJECT AREA

5.1 Location

The expansion of the eMalahleni Mine Water Reclamation Scheme involves various routes for mine water collection and treated water distribution pipelines as well as other infrastructure such as pump stations on various farms between eMalahleni in the east and KwaGuqa in the west as well as farms to the south of the N4 Highway running between eMalahleni and Middelburg in the Mpumalanga Province of South Africa (2529CC Emalahleni [Witbank] 1:50 000 topographical map) (Figure 1).

These pipeline corridors/routes and other affected areas are collectively referred to as the Project Area.

The Project Area is located in the Eastern Highveld of Mpumalanga – a region which was occupied by humans from an early period. However, mining of the vast coal deposits of the region which has occurred for more than a century is leading to the disappearance of a local farming economy. The coal which is mined by numerous collieries is either exported or used in local power stations in order to produce electricity which is needed by a rapidly developing South African society.

5.2 Expanding the eMalahleni Mine Water Reclamation Scheme

The eMalahleni Mine Water Reclamation Scheme which was established in 2004/2005 involved the retrieval of water from existing mines such as South Witbank Colliery, Kleinkopje Colliery and Greenside Colliery who are all located to the south and southwest of eMalahleni. Excess mine water from these mines are stored in three mine water storage dams before the water is treated in the Water Reclamation Plant (WRP). In the WRP the excess mine water is processed into

potable water which is stored in two reservoirs before being pumped by means of a distribution pipeline to the Witbank Municipal Reservoir (Reservoir B). Here, the water is blended with the potable water that is produced in the Municipal Water Treatment Plant and delivered to the public. Disposal facilities for waste sludge and brine (generated during the treatment process) also form part of the scheme.

The expansion of the existing scheme involves the following developmental components, namely (Figure 1):

- The expansion of the capacity of the WRP from 25 Mℓ/day to 50 Mℓ/day (within the existing footprint of the WRP, i.e. the footprint of the plant will not need to be extended).
- The collection of an additional 20 Mℓ/day from the Excelsior, Kromdraai and Navigation Sections of Landau Colliery and the Middleburg Steam and Station Collieries via collection pipelines (the additional 5 Mℓ/day will be sourced from other mines in the area; this is still under investigation).
- The distribution of the treated water from the WRP to existing municipal reservoirs, namely the KwaGuqa Reservoir and/or Reservoirs A, B and D, via distribution pipelines.
- The disposal of waste sludge and brine at waste disposal facilities permitted as part of the existing scheme.

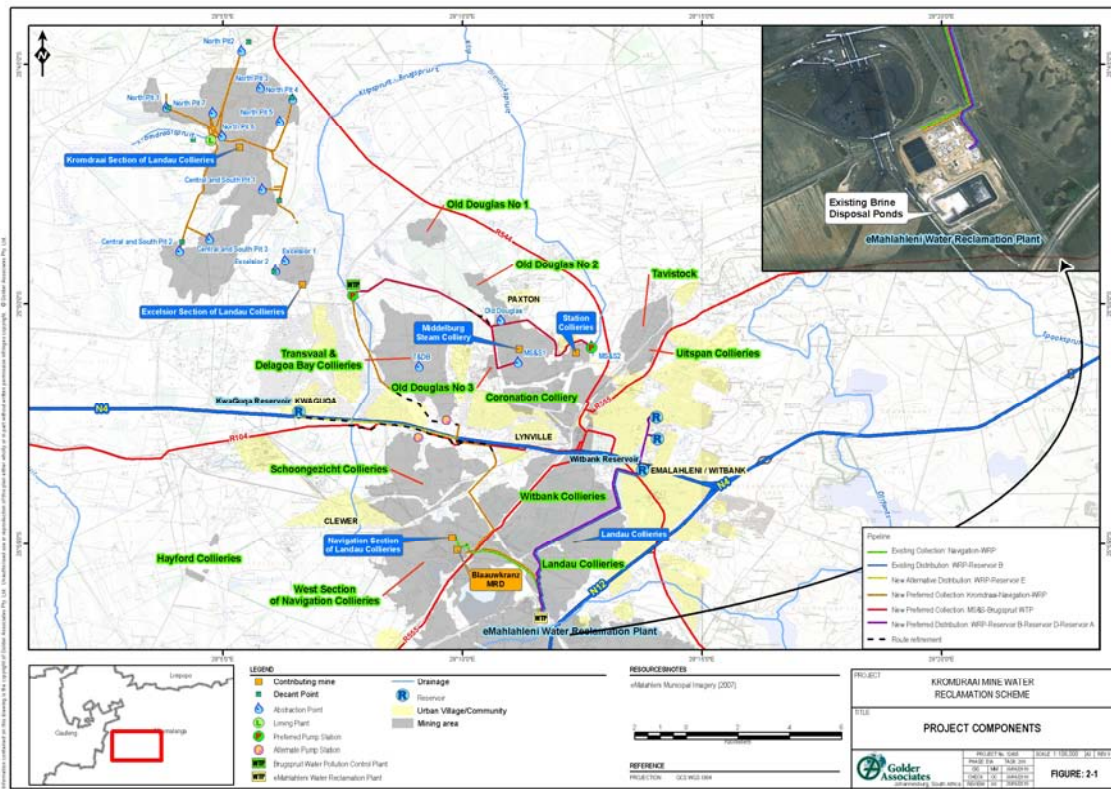


Figure 1- The Project Area with the proposed collection and distribution pipeline corridors located to the north and to the south of the N4 Highway near eMalahleni in the Mpumalanga Province of South Africa.

No heritage resources of significance were observed in the proposed pipeline corridors (above).

6 CONTEXTUALISING THE PROJECT AREA

Contextual evidence that serves as background to the proposed project includes the following: the Stone Age; the earliest farmers and stone builders; the arrival of the colonists; early coal mining and farm homesteads with graveyards from the recent past.

6.1 Stone Age sites

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (the period from 22 000 years ago to 200 years ago).

The Later Stone Age is also associated with rock paintings and engravings which were done by the San, Khoi Khoi and in more recent times by Iron Age farmers.

Heritage surveys up to now have recorded few outstanding Stone Age sites, rock paintings and engravings in the Eastern Highveld - primarily as a result of limited extensive archaeological surveys.

Stone tools have been recorded around some of the pans which occur on the Eastern Highveld.

6.2 The earliest farmers

The Iron Age is associated with the first agro-pastoralists who lived in semi-permanent villages and who practised metal working during the last two millennia. The Iron Age is usually divided into the Early Iron Age (covers the 1st millennium AD) and the Later Iron Age (covers the first 880 years of the 2nd millennium AD).

The Eastern Highveld has probably not been occupied by Early Iron Age communities but was occupied by Late Iron Age farming communities such as the Sotho, Swazi and Ndebele who established settlement complexes that were

built with stone walls. It seems as if these sites are more common towards the eastern perimeters of the Eastern Highveld. Small, inconspicuous stone walled sites have been observed along the Olifants River but are an exception and not the rule.

6.3 The colonists and the historical period

Historical towns closest to the Project Area include Witbank, Middelburg, Belfast and Carolina.

Witbank came into being as the railway line between Pretoria and Lourenço Marques which was built in 1894 and passed close to where Witbank is located today. The first Europeans who came to the area observed the abundance of coal, which was evident on the surface or in the beds of streams. A stage post for wagons close to a large outcrop of whitish stones (a 'white ridge') gave the town its name. Witbank was established in 1903 on a farm known as Swartbos which belonged to Jacob Taljaard.

Middelburg is one of the oldest towns that were established by the Voortrekkers in the previous Transvaal. The town was established on the farms of Klipfontein and Keerom on the banks of the Klein Olifants River in 1859. It is generally accepted that Middelburg's name is derived from the fact that the Transvaal Republic established the town midway between Pretoria and Lydenburg.

The choice for Middelburg's location was not well accepted by the inhabitants and it was moved to the farm Sterkfontein. Here, a town was established and named Nasaret (Nazareth). However, the name did not appeal to the local community and its original name was reinstated. Middelburg temporary served as the seat of the Transvaal Republic after the siege of Pretoria during the Second Anglo Boer War.

Today Middelburg and Witbank are important centres where coal is mined and transported to Richards Bay from where it is exported all over the world. The 20th century also saw the introduction of large-scale irrigation and dry land farming on the Eastern Highveld. Today the economic activities of the area include diamond and coal mining, light and heavy industries as well as steel and vanadium operations.

Belfast was founded on 30 June 1890. Farmer Richard O' Neil bought the farm Tweefontein near where the expected railway line between Pretoria and Lourenço Marques in Mozambique would run. He set up a store and applied for permission to lay out a village. He named it Belfast in honour of the city in Ireland from where his father had immigrated. The railway reached the village in 1894 and the first village council took office in 1902.

The area where the town of Carolina was proclaimed on 16 June 1886 served as a popular stop-over for transport riders for several years – especially after a gold reef was discovered in what was to become Barberton in 1884. Traffic increased to such an extent that a trading and staging post was soon established. However, there is uncertainty about the origins of Carolina. A notice in the Transvaal government gazette stated that it was laid out on the farms Groenvlei and Goede Hoop. According to another source Cornelis Coetzee made available part of his farm Steynsdraai for a village provided it was given the name of his wife, Carolina.

6.4 A coal mining heritage

Coal mining on the Eastern Highveld is older than a century. This region has become the most important coal mining centre in South Africa. Whilst millions of tonnes of high-grade coal are annually exported overseas, more than 80 % of the country's electricity is generated on low-grade coal in Eskom's power stations such as Duvha, Matla and Arnot situated near coal mines on the Eastern Highveld.

The earliest use of coal (charcoal) in South Africa was during the Iron Age (300-1880 AD) when metal workers used charcoal, iron and copper ores and fluxes (quartzite stone and bone) to smelt iron and copper in clay furnaces.

Colonists are said to have discovered coal in the French Hoek Valley near Stellenbosch in the Cape Province in 1699. The first reported discovery of coal in the interior of South Africa was in the mid-1830 when coal was mined in Kwa Zulu/Natal.

The first exploitation for coal was probably in Kwa Zulu/Natal as documentary evidence refers to a wagon load of coal brought to Pietermaritzburg to be sold in 1842. In 1860 the coal trade started in Dundee when a certain Pieter Smith charged ten shillings for a load of coal dug by the buyer from a coal outcrop in a stream. In 1864 a coal mine was opened in Molteno. The explorer, Thomas Baines mentioned that farmers worked coal deposits in the neighbourhood of Bethal (Transvaal) in 1868. Until the discovery of diamonds in 1867 and gold on the Witwatersrand in 1886, coal mining only satisfied a very small domestic demand.

With the discovery of gold in the Southern Transvaal and the development of the gold mining industry around Johannesburg came the exploitation of the Boksburg-Spring coal fields, which is now largely worked out. By 1899, at least four collieries were operating in the Middelburg-Witbank district, also supplying the gold mining industry. At this time coal mining also had started in Vereeniging. The Natal Collieries' importance was boosted by the need to find an alternative for imported Welsh anthracite used by the Natal Government Railways.

By 1920 the output of all operating collieries in South Africa attained an annual figure of 9,5 million tonnes. Total *in situ* reserves were estimated to be 23 billion tonnes in Witbank-Springs, Natal and Vereeniging. The total *in situ* reserves today

are calculated to be 121 billion tonnes. The largest consumers of coal are Sasol, Iscor (Mittal) and Eskom.

6.5 A vernacular stone architecture

A unique stone architectural heritage was established in the Eastern Highveld during the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used on the Eastern Highveld. These included sandstone, ferricrete ('oukclip'), dolerite ('bloukclip'), granite, shale and slate.

The origins of a vernacular stone architecture in the Eastern Highveld may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. The Eastern Highveld is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures while the scarcity of fire wood also prevented the manufacture (firing) of baked clay bricks. Stone therefore served as the most important building material on the Eastern Highveld.

Late Iron Age communities who contributed to the Eastern Highveld's stone walled architecture were the Sotho, Ndebele and Swazi. The tradition set by these indigenous groups may have influenced the first settlers from Natal and the Cape Colony to utilise the same resources as their predecessors. Many farmers from Scottish, Irish, Dutch, German and Scandinavian descent settled and farmed on the Eastern Highveld. They brought the knowledge of stone masonry from Europe which compensated for the lack of fire-wood which was necessary to fire clay bricks.

6.6 Farm homesteads and graveyards from the recent past

Farm homesteads with outbuildings that date from the more recent past occur throughout the Eastern Highveld. Many of these farm homesteads hold little historical significance. However, buildings and other infrastructure which are part of these farm homesteads may be older than sixty years or may approach this age.

All, structures and buildings older than sixty years are protected by Section 34 of the National Heritage Resources Act (No 25 of 1999).

Many of these farm homesteads are associated with formal and informal graveyards. Dwellings which have been used by farm labourers and which have disintegrated over time are in many instances associated with informal graves and sometimes with informal cemeteries. These informal graves and cemeteries may occur in the most unexpected places - such as in maize fields where they have not been ploughed over time.

7 THE PHASE I HERITAGE IMPACT ASSESSMENT

The survey for the Project Area revealed no heritage resources of significance in the various components of the project. The heritage survey is now briefly discussed and illuminated with photographs. The discussion follows the various components of the proposed project.

7.1 The Kromdraai Collection Pipeline Route

This part of the Project Area is located to the north of the N4 and is confined to a piece of land in the north-west and a second piece of land caught between eMalahleni and KwaGuqa in the east. The part of the Project Area includes parts of Landau Collieries' Kromdraai Open Cast Mine and Excelsior Mine, a number of

abstraction points, a pump house and a pump station. The Brugspruit Water Pollution Control Works (WPCW) which treats some of the decanting water from defunct mines in the area is also located in this part of the Project Area.

The Kromdraai Collection Pipeline Route follows the following stretches of land, namely:

- It runs from the Kromdraai abstraction point south-eastwards to cross the Klipspruit from where it continues eastwards to the eastern boundary of the Excelsior Section. From here it runs southwards following the eastern boundary of the Excelsior Mine where it turns eastwards to cross the Brugspruit, directly south of the Brugspruit WPCW.
- From the Brugspruit WPCW the pipeline route turns eastwards to follow the R104 (Colins Avenue) where it turns southwards running outside the Schoongesicht Colliery's mining area to the railway line running between Witbank and Clewer.
- The pipeline route then follows the railway line south-westwards for approximately 350 m before turning south in order to follow the R555 up to the existing pipeline servitude registered by Anglo.
- The pipeline then runs along this servitude and crosses the R555 before entering the Greenside WRP site.

(The latter part of the Kromdraai Collection Pipeline Route is discussed under the heading 'The Distribution Pipeline Route' [Part 7.3] which is the same route that is followed by the Kromdraai Collection Pipeline Route as soon as it has crossed the N4 highway).

The Kromdraai and Excelsior pipelines will collect excess water which will be pumped to the Kromdraai Liming Plant from where it will again be pumped to the WRP via the Navigation Section. The collection pipeline runs across open cast mining areas of the Kromdraai Section of Landau Colliery and along the eastern border of the Excelsior Section of Landau Colliery.

This is a disturbed piece of land which is characterised by an open cast mining landscape as well as parts of land which have been rehabilitated in the past.

Graveyards which used to exist in the Kromdraai Open Cast Mine were exhumed and relocated by the mine some years ago.



Figures 2 & 3- The Kromdraai Water Collection Pipeline where it crosses the Klipspruit (above) and along the eastern boundary of the Excelsior Mine where mine dumps and other evidence of mining occurs (below).



Figure 4- The Kromdraai Collection Pipeline Route runs from the Klipspruit southwards and then eastwards to cross the Brugspruit in order to join the Brugspruit Water Pollution Control Works (far background) above.

7.2 The Middelburg Steam and Station Collection Pipeline Route

This part of the Project Area is located to the north of the N4 and incorporates defunct mines such as Douglas No 1, Douglas No 2, Douglas No 3 and Middelburg Steam and Station Collieries. This part of the Project Area is characterised by outstretched veldt with pristine patches, with grass veldt as well as land which has been disturbed by various kinds of developmental activities.



Figures 5 & 6- Stretches of the Kromdraai Collection Pipeline along the banks of a river and along the banks of the same river near KwaGuqa (below).



The Middelburg Steam and Station Collection Pipeline Route runs from the abstraction points (MS&S1 and MS&S2) in a westerly direction north of the Old Douglas No 3 and T&DB workings to the Brugspruit WPCW from where it will tie into the Kromdraai Collection Pipeline Route running to the central WRP.

The two converging Middelburg and Station Collieries Collection Pipelines run westwards towards the Brugspruit WPCW. The northern pipeline closely shadows one of Eskom's power lines while the shorter southern stretch runs along the eastern border of the eMalahleni industrial area.



Figure 7- The Middelburg Steam and Station Collection Pipeline Route runs partly across open veldt with little infrastructure. Otherwise stretches of this route run close to areas which have been developed such as eMalahleni's industrial area (above).

7.3 The Distribution Pipeline Route

This part of the Project Area is situated on a piece of land between the Witbank Collieries and the Landau Collieries in the east, the Navigation Collieries in the west and the N4 Highway in the north. The Distribution Pipeline Route also runs along a stretch of the southern shoulder of the N4 highway. This part of the Project Area is characterised by the most southern suburb of eMalahleni, mining areas, agricultural fields and infrastructure such as roads, railway lines, conveyer belts and other development activities.

The existing distribution pipeline servitude which runs from the central WRP to the Witbank Reservoir (Reservoir B) runs in a northerly direction for the first few kilometres and then turns into a north-easterly direction running through the Witbank Collieries mine site and eventually enters the Witbank Reservoir (Reservoir B) just south of the N4 highway.

The new distribution pipeline route from the WRP to the KwaGuqa Reservoir will run within the same pipeline route as the Kromdraai Collection Pipeline Route, but in the opposite direction. Subsequent to crossing the N4 highway the route will swing to the west and follow the southern shoulder of the N4 highway up to the KwaGuqa Reservoir.



Figure 8- The Water Reclamation Plant where the Distribution Pipeline Route commences. The footprint of the WRP will not be affected by the expansion of the proposed project (above).



Figures 9 & 10- A stretch of the Distribution Pipeline Route follows the existing Anglo pipeline servitude (above) before running across open veldt between the southern tip of eMalahleni and Road 555 (above).





Figure 11- A stretch of the Distribution Pipeline Route runs along the southern shoulder of the R104 which runs parallel with the N4 before joining the KwaGuqa Reservoir further to the west (above).

An additional section of the distribution pipeline extends north of the existing Witbank Reservoir (Reservoir B), crossing under the highway through an existing culvert, running on the western side of Woltemade Street within the existing Municipal servitude up to Christiaan de Wet Street. From here, it turns in a north westerly direction following Christiaan de Wet until it reaches Nicol Street. At the intersection it crosses Christiaan de Wet Street and then Nicol Street and runs on the northern side of Nicol Street until it is adjacent to Reservoir A. From here it crosses Nicol Street once again and heads towards the tie-in point to Reservoir A.

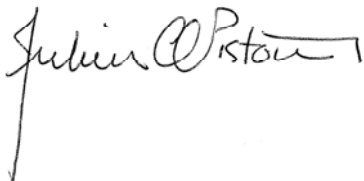
8 CONCLUSION AND RECOMMENDATIONS

The survey revealed no heritage resources of significance in the Project Area. However, it is possible that this Phase I HIA may have missed heritage resources in the Project Area, as heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

The linear nature of the proposed project makes the avoidance of heritage sites possible due to the flexible nature of the pipeline routes. The pipeline routes can be shifted within corridors in all directions or can be deviated or rerouted in order to avoid significant heritage sites such as small graveyards.

Should any heritage resources of significance be exposed during the construction of the project, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

There is consequently no reason from a heritage point of view why the proposed expansion of the existing eMalahleni Mine Water Reclamation Scheme should not proceed.



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