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INGWE COLLIERY

A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE PROPOSED NEW WATER TREATMENT PROJECT AT OPTIMUM COLLIERY NEAR HENDRINA IN THE MPUMALANGA PROVINCE OF SOUTH AFRICA

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EXECUTIVE SUMMARY

This Phase I Heritage Impact Assessment (HIA) study for a proposed new Water Treatment Project at Optimum Colliery near Hendrina in the Mpumalanga Province was done in accordance with Section 38 of the National Heritage Resources Act (No 25 of 1999).

The aims with the Phase I HIA were to determine if any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur within the Project Area (see Box 1); and, if so, to determine what the nature, the extent and the significance of these remains are; whether such heritage resources will be affected by the proposed new development project, and to evaluate what appropriate mitigation measures could be taken if any of these heritage resources may be affected by the development project.

However, the Phase I HIA study for the proposed new Water Treatment Project Area revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

There is consequently no reason from a heritage point of view why the development of the proposed new Water Treatment Project should not proceed.

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1 INTRODUCTION

This document contains the report on a Phase I Heritage Impact Assessment (HIA) study done for a proposed new Water Treatment Project at Optimum Colliery near Hendrina 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 Provinces 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 AIMS WITH THIS REPORT

BHP Billiton represented by Ingwe Colliery intends to establish a Water Treatment Project at Optimum Colliery near Hendrina in the Mpumalanga Province of South Africa. The Water Treatment Plant will treat and process excess mine water and will subsequently add potable water into the Hendrina municipal water supply network.

In order to comply with legislation, Ingwe Colliery requires knowledge of the presence, relevance and the significance of any heritage resources that may occur in or near the proposed new Water Treatment Project. Ingwe Colliery 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 International therefore commissioned the author to undertake a Phase I HIA study for the proposed new Water Treatment Project. The aims with the Phase I HIA study 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) do occur within the Water Treatment 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 new development project.
- To evaluate what appropriate mitigation measures could be taken if any of the types and ranges of heritage resources will be affected by the proposed new development project.

3 METHODOLOGY

This Phase I HIA study was conducted by means of the following:

- surveying accessible spots of the proposed Project Area on foot;
- briefly surveying literature relating to the pre-historical and historical context of the Project Area;
- consulting maps of Project Area;
- consulting archaeological (heritage) data bases; and.
- synthesising all information obtained from the data bases, fieldwork, maps and literature survey into this report.

3.1 Fieldwork

Accessible spots within the proposed new Water Treatment Project Area were surveyed on foot.

3.2 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 has been identified during earlier heritage surveys in or near the Project Area.

The author is not unacquainted with the Project Area at large as he had done several heritage impact assessment studies near the proposed new Water Treatment Project Area (see 'Select Bibliography', Part 8).

Literature relating to the pre-historical and the historical unfolding of the Eastern Highveld where the proposed new Water Treatment Project is located was reviewed (see Part 5, 'Contextualing 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 5 & 8).

In addition, the Project Area was studied by means of the 1:50 000 topographical map on which the Project Area appears.

3.3 Assumptions and limitations

It must be pointed out that heritage resources can be found in the most unexpected places. It must also be borne in mind that surveys may not detect all the heritage resources in a given project area. While some remains may simply be missed during surveys (observations), others may occur below the surface of the earth and may only be exposed once development (such as the construction of the new pipe lines) commences.

3.5 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 South Shaft 3 Project Area, to the first appearance or use of 'modern' Western writing brought to the Eastern Transvaal 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.

4 THE PROJECT AREA

4.1 Location

The Water Treatment Project is located on the farm Pullenshoop 155IS between Emalahleni (Witbank) in the north and Hendrina in the south. The Project Area is located directly to the west of Road R65 running between these two towns in the in the Mpumalanga Province of South Africa (Figure 2).

The Water Treatment Project therefore is located on the Eastern Highveld of Mpumalanga – a region which was occupied by humans from an early period. However, the vast coal deposits of the region which is mined for more than a century is leading to the disappearance of a local farming economy which is being replaced by mega coal mining ventures. The coal which is mined by numerous collieries is either exported or used in local power stations to produce electricity which is needed by a rapid developing South African society.

4.2 The Water Treatment Project

The Water Treatment Project involves the retrieval of excess water from underground workings of the Optimum Open Cast Mine. The excess mine water will be stored in a water storage dam before it s treated in the water treatment plant. Hereafter the potable water which will be stored in concrete reservoirs before it is pumped along existing pipelines to the Hendrina municipal reservoirs. Here, the water will be blended with potable water that was produced in the Municipal Water Treatment Plant and delivered *via* to the municipal water distributing system to local consumers.

The proposed project consists of the following physical components (infrastructure):

- An existing mine water evaporation dam with capacity to hold about 3 500 mega litres of water.

- A mine water treatment plant and supporting services.
- Two storage reservoirs to store treated water.
- Water supply pumps to transfer water along the existing municipal pipeline to the municipal reservoirs.
- Disposal facility for waste sludge and brine generated by the treatment process.

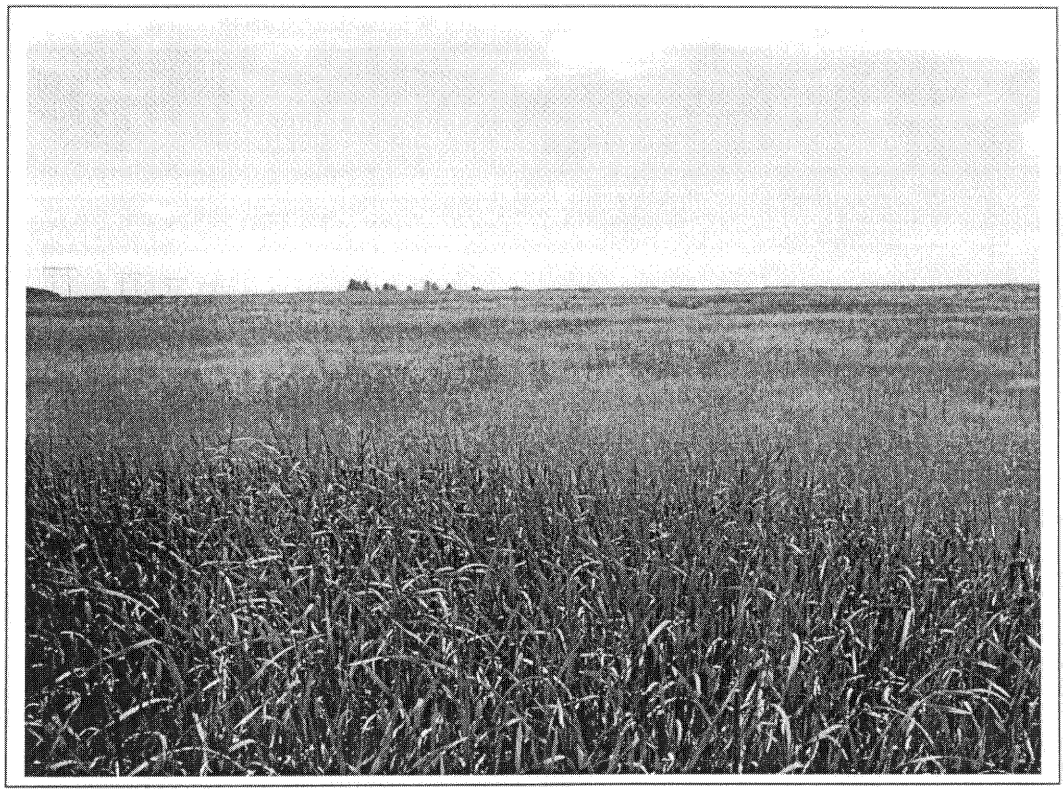


Figure 1- The Water Treatment Project Area viewed from the north-west to the south-east. The larger part of the Project Area is covered with maize fields (above).

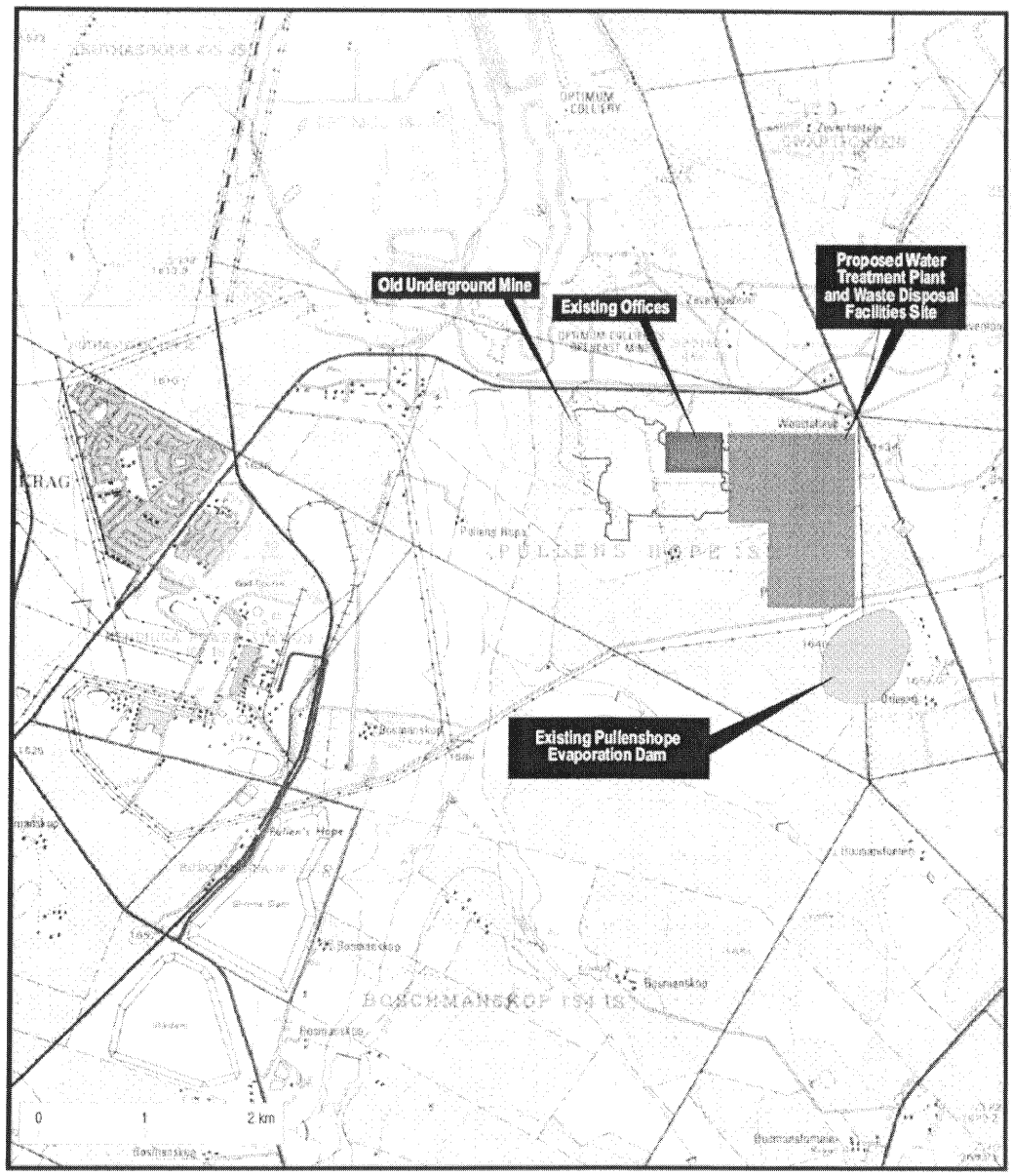


Figure 2- The Water Treatment Project Area near Hendrina on the Eastern Highveldt in the Mpumalanga Province of South Africa.
No heritage resources of significance occur in the Project Area.

5 CONTEXTUALISING THE PROJECT AREA

The pre-historical and historical context of the Project Area is briefly reviewed. This information is incorporated in this report in order to help to determine the significance of any heritage resources that may occur in the Project Area.

Contextual evidence that serves as background to the Water Treatment 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.

5.1 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.

5.2 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.

5.3 The colonists and the historical period

Historical towns closest to the new proposed Optimum Water Reclamation Project include Witbank and Hendrina.

Witbank came into being as the railway line between Pretoria and Lourenço Marques which was built in 1894 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.

Hendrina is best known as the village nearest to two of Eskom's large power stations, namely the Arnot and Hendrina power stations. Hendrina's history can

be traced to 1924 when the farm Garsfontein ('barley spring') was purchased from Gert Beukes. The new town was named for his wife. Apart from the power stations and coal mines, the local economy of the district is based on dairy farming, vegetables and maize.

5.4 A coal mining heritage

Coal mining on the Eastern Highveld is older than one century. This region has become the most important coal mining centre in South Africa. Whilst millions of tons 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 coalmines on the Eastern Highveld.

The earliest use of coal (charcoal) in South Africa was during the Iron Age (300-1880AD) 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 has 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 9,5million 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.

5.5 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 ('ouklip'), dolerite ('blouklip'), 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 utilize the same resources that their predecessors. Many farmers from Scottish, Irish, Dutch, German and Scandinavian descend, 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.

5.6 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 under over time.

6 THE PHASE I HERITAGE IMPACT ASSESSMENT

The Phase HIA study for the proposed new Water Treatment Project revealed none of the types and ranges of heritage resources that are outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

The absence of heritage resources in the Water Treatment Project Area can primarily be attributed to agriculture and mining which have changed the natural environment of this part of the Eastern Highveldt as the following photographs illustrate.

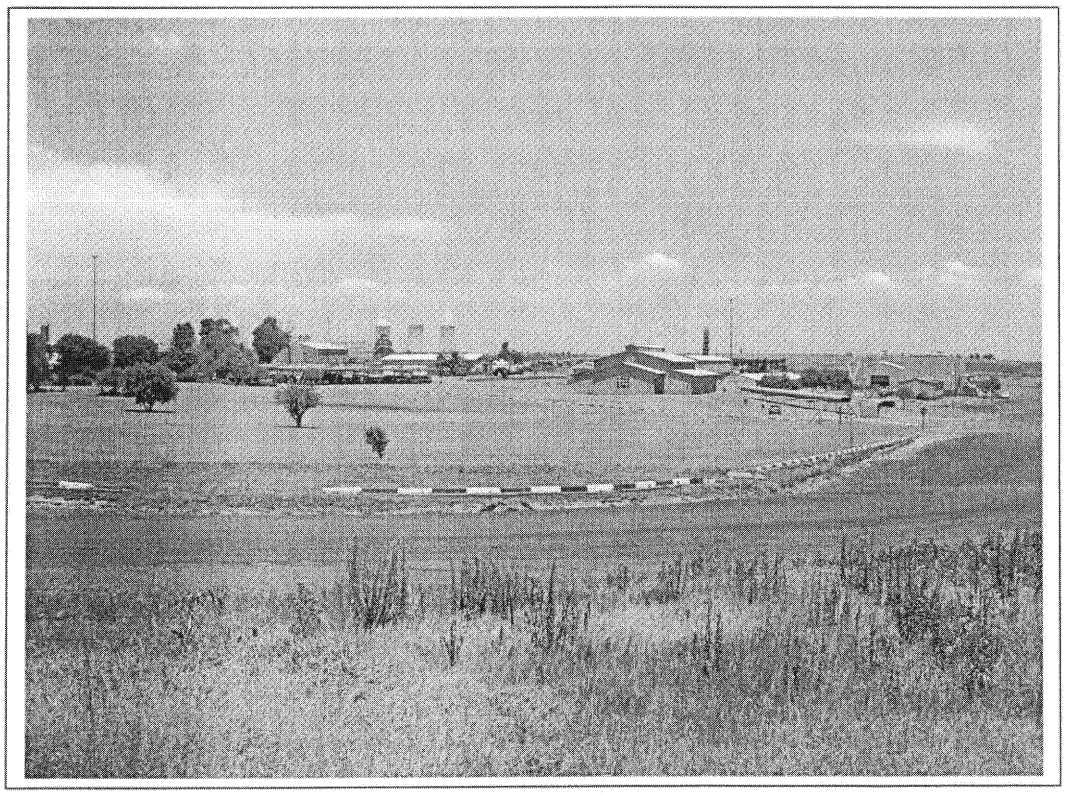


Figure 3- The proposed new Water Treatment Works will border on extensive infrastructure such as the Optimum Open Cast Mine, which has transformed the natural environment to a large extent (above).

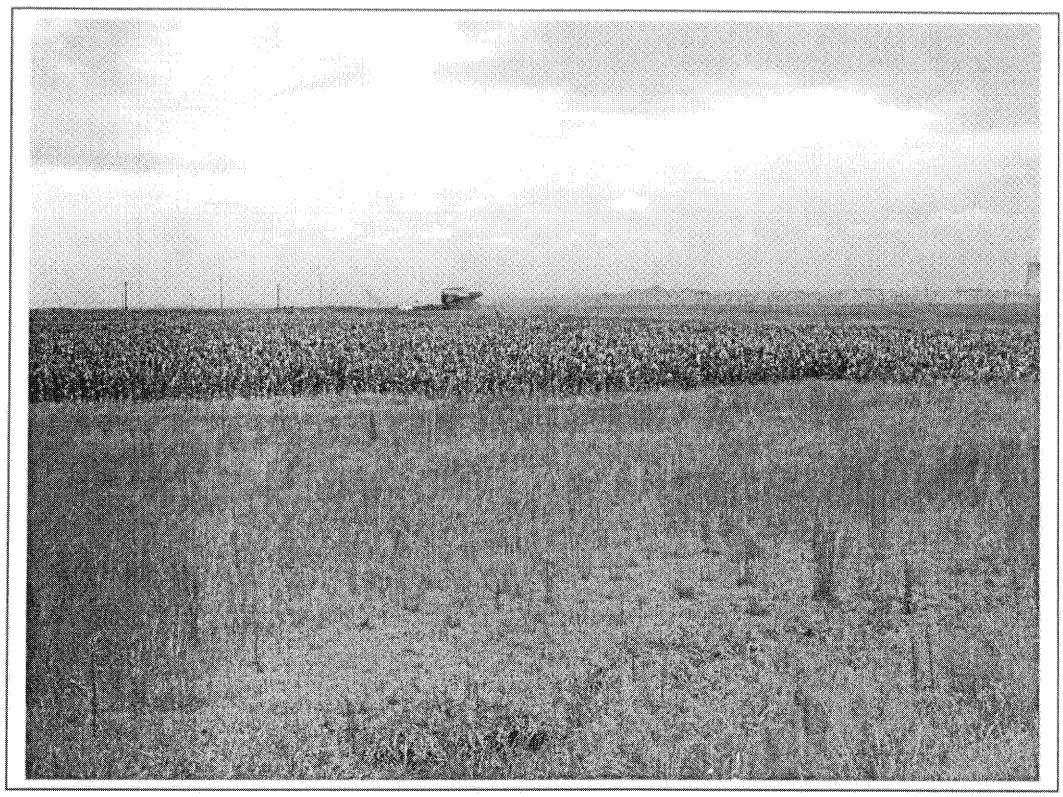


Figure 4- Optimum Colliery's open cast mine is a neighbour to the new proposed Water Treatment Plant (above).

Together with agricultural, mining have altered the pristine Water Treatment Project Area into a landscape with no heritage resources of significance.

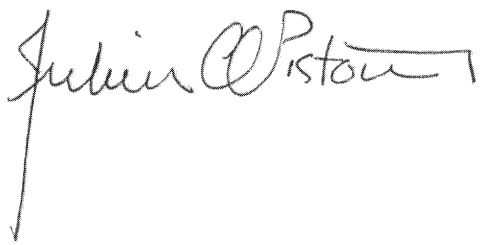
7 CONCLUSION AND RECOMMENDATIONS

This Phase I Heritage Impact Assessment (HIA) study for a proposed new Water Treatment Project at Optimum Colliery near Hendrina in the Mpumalanga Province was done in accordance with Section 38 of the National Heritage Resources Act (No 25 of 1999).

The aims with the Phase I HIA were to determine if any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur within the Project Area (see Box 1); and, if so, to determine what the nature, the extent and the significance of these remains are; whether such heritage resources will be affected by the proposed new development project, and to evaluate what appropriate mitigation measures could be taken if any of these heritage resources may be affected by the development project.

However, the Phase I HIA study for the proposed new Water Treatment Project Area revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

There is consequently no reason from a heritage point of view why the development of the proposed new Water Treatment Project should not proceed.



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